GE8152 ENGINEERING GRAPHICS MCQ

SEMESTER - 1

Regulations 2017

UNIT I PLANE CURVES AND FREEHAND SKETCHING

TOPIC 1.1 CONSTRUCTION OF PARALLEL & PERPENDICULAR LINES

1. Given are the steps to draw a perpendicular to a line at a point within the line when the point is near the centre of a line.
Arrange the steps. Let AB be the line and P be the point in it
i. P as centre, take convenient radius R1 and draw arcs on the two sides of P on the line at C, D.
ii. Join E and P
iii. The line EP is perpendicular to AB
iv. Then from C, D as centre, take R2 radius (greater than R1), draw arcs which cut at E.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, i, iv, iii

Answer: a
Explanation: Here uses the concept of a locus. Every 2 points have a particular line that is every point on line is equidistant from both the points. The above procedure shows how the line is build up using arcs of the similar radius.

2. Given are the steps to draw a perpendicular to a line at a point within the line when the point is near an end of the line.
Arrange the steps. Let AB be the line and P be the point in it.
i. Join the D and P.
ii. With any point O draw an arc (more than a semicircle) with a radius of OP, cuts AB at C.
iii. Join the C and O and extend till it cuts the large arc at D.
iv. DP gives the perpendicular to AB.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, i, iv

Answer: d
Explanation: There exists a common procedure for obtaining perpendiculars for lines. But changes are due changes in conditions whether the point lies on the line, off the line, near the centre or near the ends etc.

3. Given are the steps to draw a perpendicular to a line at a point within the line when the point is near the centre of line.
Arrange the steps. Let AB be the line and P be the point in it
i. Join F and P which is perpendicular to AB.
ii. Now C as centre take the same radius and cut the arc at D and again D as centre with same radius cut the arc further at E.
iii. With centre as P take any radius and draw an arc (more than a semicircle) cuts AB at C.
iv. Now D, E as centre take radius (more than half of DE) draw arcs which cut at F.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, i, iv, iii

Answer: b
Explanation: Generally in drawing perpendiculars to lines involves in drawing a line which gives equidistance from either side of the line to the base, which is called the locus of points. But here since the point P is nearer to end, there exists some peculiar steps in drawing arcs.

4. Given are the steps to draw a perpendicular to a line from a point outside the line, when the point is near the centre of line.
Arrange the steps. Let AB be the line and P be the point outside the line
i. The line EP is perpendicular to AB
ii. From P take convenient radius and draw arcs which cut AB at two places, say C, D.
iii. Join E and P.
iv. Now from centers C, D draw arc with radius (more than half of CD), which cut each other at E.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iv, iii, i

Answer: d
Explanation: At first two points are taken from the line to which perpendicular is to draw with respect to P. Then from two points equidistant arcs are drawn to meet at some point which is always on the perpendicular. So by joining that point and P gives perpendicular.

5. Given are the steps to draw a perpendicular to a line from a point outside the line, when the point is near an end of the line.
Arrange the steps. Let AB be the line and P be the point outside the line
i. The line ED is perpendicular to AB
ii. Now take C as centre and CP as radius cut the previous arc at two points say D, E.
iii. Join E and D.
iv. Take A as center and radius AP draw an arc (semicircle), which cuts AB or extended AB at C.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, ii, i, iii
d) ii, iv, iii, i

Answer: c
Explanation: The steps here show how to draw a perpendicular to a line from a point when the point is nearer to end of line. Easily by drawing arcs which are equidistance from either sides of line and coinciding with point P perpendicular has drawn.

6. Given are the steps to draw a perpendicular to a line from a point outside the line, when the point is nearer the centre of line.
Arrange the steps. Let AB be the line and P be the point outside the line
i. Take P as centre and take some convenient radius draw arcs which cut AB at C, D.
ii. Join E, F and extend it, which is perpendicular to AB.
iii. From C, D with radius R1 (more than half of CD), draw arcs which cut each other at E.
iv. Again from C, D with radius R2 (more than R1), draw arcs which cut each other at F.
a) i, iii, iv, ii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iv, iii, i

Answer: a
Explanation: For every two points there exists a line which has points from which both the points are equidistant otherwise called perpendicular to line joining the two points. Here at 1st step, we created two on the line we needed perpendicular, then with equal arcs from either sides we created the perpendicular.

7. Given are the steps to draw a parallel line to given line AB at given point P.
Arrange the steps.
i. Take P as centre draw a semicircle which cuts AB at C with convenient radius.
ii. From C with radius of PD draw an arc with cuts the semicircle at E.
iii. Join E and P which gives parallel line to

AB.
iv. From C with same radius cut the AB at D.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iv, iii, i

Answer: a
Explanation: There exists some typical steps in obtaining parallel lines for required lines at given points which involves drawing of arcs, necessarily, here to form a parallelogram since the opposite sides in parallelogram are parallel.

8. Given are the steps to draw a parallel line to given line AB at a distance R.
Arrange the steps.
i. EF is the required parallel line.
ii. From C, D with radius R, draw arcs on the same side of AB.
iii. Take two points say C, D on AB as far as possible.
iv. Draw a line EF which touches both the arc (tangents) at E, F.
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iv, iii, i

Answer: b
Explanation: Since there is no reference point P to draw parallel line, but given the distance, we can just take arcs with distance given from the base line and draw tangent which touches both arcs.

9. Perpendiculars can't be drawn using _____
a) T- Square
b) Set-squares
c) Pro- circle
d) Protractor

Answer: c
Explanation: T-square is meant for drawing a straight line and also perpendiculars. And also using set-squares we can draw perpendiculars. Protractor is used to measure angles and also we can use to draw perpendiculars. But pro-circle consists of circles of different diameters.

10. The length through perpendicular gives the shortest length from a point to the line.
a) True
b) False

Answer: a
Explanation: The statement given here is right. If we need the shortest distance from a point to the line, then drawing perpendicular along the point to a line is the best method. Since the perpendicular is the line which has points equidistant from points either side of given line.

TOPIC 1.2 DRAWING REGULAR POLYGONS & SIMPLE CURVES

1. A Ogee curve is a _____
a) semi ellipse
b) continuous double curve with convex and concave
c) freehand curve which connects two parallel lines
d) semi hyperbola

Answer: b
Explanation: An ogee curve or a reverse curve is a combination of two same curves in which the second curve has a reverse shape to that of the first curve. Any curve or line or mould consists of a continuous double curve with the upper part convex and lower part concave, like ''S".

2. Given are the steps to construct an equilateral triangle, when the length of side is given. Using, T-square, set-squares only.
Arrange the steps.
i. The both 2 lines meet at C. ABC is required triangle
ii. With a T-square, draw a line AB with given length

iii. With 30o-60o set-squares, draw a line making 60o with AB at A
iv. With 30o-60o set-squares, draw a line making 60o with AB at B
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: d
Explanation: Here gives the simple procedure since T-square and 30^o-60^o set-squares. And also required triangle is equilateral triangle. The interior angles are 60^o, 60^o, 60^o (180^o /3 = 60^o). Set- squares are used for purpose of 60^o.

3. Given are the steps to construct an equilateral triangle, with help of a compass, when the length of a side is given. Arrange the steps.
i. Draw a line AB with given length
ii. Draw lines joining C with A and B
iii. ABC is required equilateral triangle
iv. With centers A and B and radius equal to AB, draw arcs cutting each other at C
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: a
Explanation: Here gives the simple procedure to construct an equilateral triangle. Since we used compass we can construct any type of triangle but with set-squares it is not possible to construct any type of triangles such as isosceles, scalene etc.

4. Given are the steps to construct an equilateral triangle when the altitude of a triangle is given. Using, T-square, set-squares only. Arrange the steps.
i. Join R, Q; T, Q. Q, R, T is the required triangle
ii. With a T-square, draw a line AB of any length
iii. From a point P on AB draw a perpendicular PQ of given altitude length
iv. With 30o-60o set-squares, draw a line making 30o with PQ at Q on both sides cutting at R, T
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

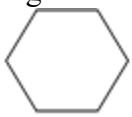
Answer: d
Explanation: Here gives the simple procedure since T-square and 30^o-60^o set-squares. The interior angles are 60^o, 60^o, 60^o (180^o /3 = 60^o). Altitude divides the sides of equilateral triangle equally. Set- squares are used for purpose of 30o.

5. Given are the steps to construct an equilateral triangle, with help of a compass, when the length of altitude is given. Arrange the steps.
i. Draw a line AB of any length. At any point P on AB, draw a perpendicular PQ equal to altitude length given
ii. Draw bisectors of CE and CF to intersect AB at R and T respectively.QRT is required triangle
iii. With center Q and any radius, draw an arc intersecting PQ at C
iv. With center C and the same radius, draw arcs cutting the 1st arc at E and F
a) i, iii, iv, ii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: a
Explanation: This is the particular procedure used for only constructing an equilateral triangle using arcs when altitude is given since we used similar radius arcs to get 30^o on both sides of a line. Here we also bisected arc using the same procedure from bisecting lines.

6. How many pairs of parallel lines are there in regular Hexagon?
a) 2
b) 3
c) 6
d) 1

Answer: b
Explanation: Hexagon is a closed figure which has six sides, six corners. Given is regular hexagon which means it has equal interior angles and equal side lengths. So, there will be 3 pair of parallel lines in a regular hexagon.



7. Given are the steps to construct a square when the length of a side is given. Using, T-square, set-squares only. Arrange the steps.
i. Repeat the previous step and join A, B, C and D to form a square
ii. With a T-square, draw a line AB with given length.
iii. At A and B, draw verticals AE and BF
iv. With 45o set-squares, draw a line making 45o with AB at A cuts BF at C
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: d
Explanation: Square is closed figure with equal sides and equal interior angles which is 90o. In the above steps, it is given the procedure to draw a square using set-squares. 45o set-square is used since 90/2 = 45.

8. How many pairs of parallel lines are there in a regular pentagon?
a) 0
b) 1
c) 2
d) 5

Answer: a
Explanation: Pentagon is a closed figure which has five sides, five corners. Given is regular pentagon which means it has equal interior angles and equal side lengths. Since five is odd number so, there exists angles 36o, 72o, 108o, 144o, 180o with sides to horizontal.

9. Given are the steps to construct a square using a compass when the length of the side is given. Arrange the steps.
i. Join A, B, C and D to form a square
ii. At A with radius AB draw an arc, cut the AE at D
iii. Draw a line AB with given length. At A draw a perpendicular AE to AB using arcs
iv. With centers B and D and the same radius, draw arcs intersecting at C
a) i, iv, ii, iii
b) iii, ii, iv, i
c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: b
Explanation: Here we just used simple techniques like drawing perpendiculars using arcs and then used the compass to locate the fourth point. Using the compass it is easier to draw different types of closed figures than using set-squares.

10. Given are the steps to construct regular polygon of any number of sides. Arrange the steps.
i. Draw the perpendicular bisector of AB to cut the line AP in 4 and the arc AP in 6
ii. The midpoint of 4 and 6 gives 5 and extension of that line along the equidistant points 7, 8, etc gives the centers for different polygons with that number of sides and the radius is AN (N is from 4, 5, 6, 7, so on to N)
iii. Join A and P. With center B and radius AB, draw the quadrant AP
iv. Draw a line AB of given length. At B, draw a line BP perpendicular and equal to AB
a) i, iv, ii, iii
b) iii, ii, iv, i

c) iv, iii, i, ii
d) ii, iii, iv, i

Answer: c
Explanation: Given here is the method for drawing regular polygons of a different number of sides of any length. This includes finding a line where all the centers for regular polygons lies and then with radius taking any end of 1st drawn line to center and then completing circle at last, cutting the circle with the same length of initial line. Thus we acquire polygons.

TOPIC 1.3 DRAWING TANGENTS AND NORMALS FOR DIFFERENT CONDITIONS OF CIRCLE

1. Given are the steps to draw a tangent to any given circle at any point P on it. Arrange the steps.
i. Draw the given circle with center O and mark the point P anywhere on the circle.
ii. With centers O and Q draw arcs with equal radius to cut each other at R.
iii. Join R and P which is the required tangent.
iv. Draw a line joining O and P. Extend the line to Q such that OP = PQ.
a) i, iv, ii, iii
b) iv, i, iii, ii
c) iii, i, iv, ii
d) ii, iv, i, iii

Answer: a
Explanation: Tangent is a line which touches a curve at only one point. Every tangent is perpendicular to its normal. Here we first found the normal which passes through center and point. Then drawing a perpendicular to it gives the tangent.

2. Given are the steps to draw a tangent to given circle from any point outside the circle. Arrange the steps.
i. With OP as diameter, draw arcs on circle at R and R1.
ii. Draw the given circle with center O.
iii. Join P and R which is one tangent and PR1 is another tangent.
iv. Mark the point P outside the circle.
a) ii, iv, iii, i
b) iv, i, iii, ii
c) iii, i, iv, ii
d) ii, iv, i, iii

Answer: d
Explanation: Usually when a point is outside the circle there exists two tangents. For which we first join the center with point P and then taking distance from center to P as diameter circle is drawn from the midpoint of center and P to cut circle at two points where tangents touch the circle.

3. Given are the steps to draw a tangent to given arc even if center is unknown and the point P lies on it. Arrange the steps. Let AB be the arc.
i. Draw EF, the bisector of the arc CD. It will pass through P.
ii. RS is the required tangent.
iii. With P as center and any radius draw arcs cutting arc AB at C and D.
iv. Draw a perpendicular RS to EF through P.
a) ii, iv, iii, i
b) iv, i, iii, ii
c) iii, i, iv, ii
d) ii, iv, i, iii

Answer: c
Explanation: Even if the center of the arc is unknown, just by taking any some part of arc and bisecting that with a line at required point p gives us normal to tangent at P. So then from normal drawing perpendicular gives our required tangent.

4. Given are the steps to draw a tangent to given circle and parallel to given line. Arrange the steps.
i. Draw a perpendicular to given line and extend to cut the circle at two points P and Q.

ii. At P or Q draw perpendicular to normal then we get the tangents.
iii. PQ is the normal for required tangent.
iv. Draw a circle with center O and line AB as required.
a) ii, iv, iii, i
b) iv, i, iii, ii
c) iii, i, iv, ii
d) ii, iv, i, iii

Answer: b
Explanation: Normal of curve will be perpendicular to every parallel tangent at that point. We just drawn the longest chord (diameter) and then perpendicular it gives the required tangents. Since circle is closed figure there exist two tangents parallel to each other.

5. How many external tangents are there for two circles?
a) 1
b) 2
c) 3
d) 4

Answer: b
Explanation: External tangents are those which touch both the circles but they will not intersect in between the circles. The tangents touch at outmost points of circles that are ends of diameter if the circles have the same diameter.

6. How many internal tangents are there for two circles?
a) 4
b) 3
c) 2
d) 1

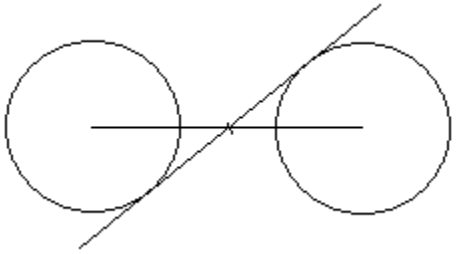
Answer: c
Explanation: Internal tangents are those which touch both the circle and also intersect each other on the line joining the centers of circles. And the internal tangents intersect each other at midpoint of line joining the center of circles only if circles have the same diameter.

7. For any point on any curve there exist two normals.
a) True
b) False

Answer: b
Explanation: Here we take point on the curve. There exist multiple tangents for some curve which are continuous, trigonometric curves, hyperbola etc. But for curves like circles, parabola, ellipse, cycloid etc. have only one tangent and normal.

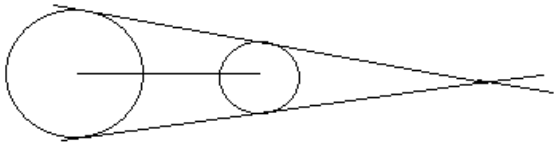
8. Arrange the steps. These give procedure to draw internal tangent to two given circles of equal radii.
i. Draw a line AB which is the required tangent.
ii. Draw the given circles with centers O and P.
iii. With center R and radius RA, draw an arc to intersect the other circle on the other circle on the other side of OP at B.
iv. Bisect OP in R. Draw a semi circle with OR as diameter to cut the circle at A.
a) ii, iv, iii, i
b) iv, i, iii, ii
c) iii, i, iv, ii
d) ii, iv, i, iii

Answer: a
Explanation: Since the circles have same radius. The only two internal tangents will intersect at midpoint of line joining the centers. So we first found the center and then point of intersection of tangent and circle then from that point to next point it is drawn a arc midpoint as center and join the points gave us tangent.



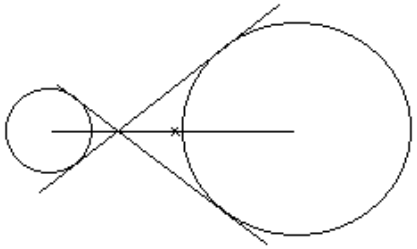
9. There are 2 circles say A, B. A has 20 units radius and B has 10 units radius and distance from centers of A and B is 40 units. Where will be the intersection point of external tangents?
a) to the left of two circles
b) to the right of the two circles
c) middle of the two circles
d) they intersect at midpoint of line joining the centers

Answer: b
Explanation: A has 20 units radius and B has 10 units radius. So, the tangents go along the circles and meet at after the second circle that is B that is the right side of both circles. And we asked for external tangents so they meet away from the circles but not in between them.



10. There are 2 circles say A, B. A is smaller than B and they are not intersecting at any point. Where will be the intersection point of internal tangents for these circles?
a) to the left of two circles
b) to the right of the two circles
c) middle of the two circles
d) they intersect at midpoint of line joining the centers

Answer: b
Explanation: A is smaller than B so the intersection point of internal tangents will not be on the midpoint of the line joining the centers. And we asked for internal tangents so they will not meet away from the circles. They meet in between them.



TOPIC 1.3 CONSTRUCTION OF ELLIPSE - 1

1. Which of the following is incorrect about Ellipse?
a) Eccentricity is less than 1
b) Mathematical equation is $X^2/a^2 + Y^2/b^2 = 1$
c) If a plane is parallel to axis of cone cuts the cone then the section gives ellipse
d) The sum of the distances from two focuses and any point on the ellipse is constant

Answer: c
Explanation: If a plane is parallel to the axis of cone cuts the cone then the cross-section gives hyperbola. If the plane is parallel to base it gives circle. If the plane is inclined with an angle more than the external angle of cone it gives parabola. If the plane is inclined and cut every generators then it forms an ellipse.

2. Which of the following constructions doesn't use elliptical curves?
a) Cooling towers
b) Dams
c) Bridges
d) Man-holes

Answer: a
Explanation: Cooling towers, water channels use Hyperbolic curves as their design. Arches, Bridges, sound reflectors, light reflectors etc use parabolic curves. Arches,

bridges, dams, monuments, man-holes, glands and stuffing boxes etc use elliptical curves.

3. The line which passes through the focus and perpendicular to the major axis is

_____

a) Minor axis
b) Latus rectum
c) Directrix
d) Tangent

Answer: b
Explanation: The line bisecting the major axis at right angles and terminated by curve is called the minor axis. The line which passes through the focus and perpendicular to the major axis is latus rectum. Tangent is the line which touches the curve at only one point.

4. Which of the following is the eccentricity for an ellipse?
a) 1
b) 3/2
c) 2/3
d) 5/2

Answer: c
Explanation: The eccentricity for ellipse is always less than 1. The eccentricity is always 1 for any parabola. The eccentricity is always 0 for a circle. The eccentricity for a hyperbola is always greater than 1.

5. Axes are called conjugate axes when they are parallel to the tangents drawn at their extremes.
a) True
b) False

Answer: a
Explanation: In ellipse there exist two axes (major and minor) which are perpendicular to each other, whose extremes have tangents parallel them. There exist two conjugate axes for ellipse and 1 for parabola and hyperbola.

6. Steps are given to draw an ellipse by loop of the thread method. Arrange the steps.
i. Check whether the length of the thread is enough to touch the end of minor axis.
ii. Draw two axes AB and CD intersecting at O. Locate the foci F1 and F2.
iii. Move the pencil around the foci, maintaining an even tension in the thread throughout and obtain the ellipse.
iv. Insert a pin at each focus-point and tie a piece of thread in the form of a loop around the pins.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: b
Explanation: This is the easiest method of drawing ellipse if we know the distance between the foci and minor axis, major axis. It is possible since ellipse can be traced by a point, moving in the same plane as and in such a way that the sum of its distances from two foci is always the same.

7. Steps are given to draw an ellipse by trammel method. Arrange the steps.
i. Place the trammel so that R is on the minor axis CD and Q on the major axis AB. Then P will be on the ellipse.
ii. Draw two axes AB and CD intersecting each other at O.
iii. By moving the trammel to new positions, always keeping R on CD and Q on AB, obtain other points and join those to get an ellipse.
iv. Along the edge of a strip of paper which may be used as a trammel, mark PQ equal to half the minor axis and PR equal to half of major axis.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: b
Explanation: This method uses the trammels PQ and PR which ends Q and R should be placed on major axis and minor axis

respectively. It is possible since ellipse can be traced by a point, moving in the same plane as and in such a way that the sum of its distances from two foci is always the same.

8. Steps are given to draw a normal and a tangent to the ellipse at a point Q on it. Arrange the steps.
i. Draw a line ST through Q and perpendicular to NM.
ii. ST is the required tangent.
iii. Join Q with the foci F1 and F2.
iv. Draw a line NM bisecting the angle between the lines drawn before which is normal.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: c
Explanation: Tangents are the lines which touch the curves at only one point. Normals are perpendiculars of tangents. As in the circles first, we found the normal using foci (centre in circle) and then perpendicular at given point gives tangent.

9. Which of the following is not belonged to ellipse?
a) Latus rectum
b) Directrix
c) Major axis
d) Asymptotes

Answer: d
Explanation: Latus rectum is the line joining one of the foci and perpendicular to the major axis. Asymptotes are the tangents which meet the hyperbola at infinite distance. Major axis consists of foci and perpendicular to the minor axis.

TOPIC 1.4 CONSTRUCTION OF ELLIPSE - 2

1. Mathematically, what is the equation of ellipse?
a) $x^2/a^2 + y^2/b^2 = -1$
b) $x^2/a^2 – y^2/b^2 = 1$
c) $x^2/a^2 + y^2/b^2 = 1$
d) $x^2/a^2 – y^2/b^2 = 1$

Answer: c
Explanation: Equation of ellipse is given by; $x^2/a^2 + y^2/b^2 = 1$. Here, a and b are half the distance of lengths of major and minor axes of the ellipse. If the value of a = b then the resulting ellipse will be a circle with centre (0,0) and radius equal to a units.

2. In general method of drawing an ellipse, a vertical line called as ____ is drawn first.
a) Tangent
b) Normal
c) Major axis
d) Directrix

Answer: d
Explanation: In the general method of drawing an ellipse, a vertical line called as directrix is drawn first. The focus is drawn at a given distance from the directrix drawn. The eccentricity of the ellipse is less than one.

3. If eccentricity of ellipse is 3/7, how many divisions will the line joining the directrix and the focus have in general method?
a) 10
b) 7
c) 3
d) 5

Answer: a
Explanation: In the general method of drawing an ellipse, if eccentricity of the ellipse is given as 3/7 then the line joining the directrix and the focus will have 10 divisions. The number is derived by adding the numerator and denominator of the eccentricity.

4. In the general method of drawing an ellipse, after parting the line joining the directrix and the focus, a _____ is made.
a) Tangent
b) Vertex
c) Perpendicular bisector
d) Normal

Answer: b
Explanation: In the general method of drawing after parting the line joining the directrix and the focus, a vertex is made. An arc with a radius equal to the length between the vertex and the focus is drawn with the vertex as the centre.

5. An ellipse is defined as a curve traced by a point which has the sum of distances between any two fixed points always same in the same plane.
a) True
b) False

Answer: a
Explanation: An ellipse can also be defined as a curve that can be traced by a point moving in the same plane with the sum of the distances between any two fixed points always same. The two fixed points are called as a focus.

6. An ellipse has ____ foci.
a) 1
b) 2
c) 3
d) 4

Answer: b
Explanation: An ellipse has 2 foci. These foci are fixed in a plane. The sum of the distances of a point with the foci is always same. The ellipse can also be defined as the curved traced by the points which exhibit this property.

7. If information about the major and minor axes of ellipse is given then by how many methods can we draw the ellipse?
a) 2
b) 3
c) 4
d) 5

Answer: d
Explanation: There are 5 methods by which we can draw an ellipse if we know the major and minor axes of that ellipse. Those five methods are arcs of circles method, concentric circles method, loop of the thread method, oblong method, trammel method.

8. In arcs of circles method, the foci are constructed by drawing arcs with centre as one of the ends of the ____ axis and the radius equal to the half of the ____ axis.
a) Minor, major
b) Major, major
c) Minor, minor
d) Major, minor

Answer: a
Explanation: In arcs of circles method, the foci are constructed by drawing arcs with centre as one of the ends of the minor axis and the radius equal to the half of the major axis. This method is used when we know only major and minor axes of the ellipse.

9. If we know the major and minor axes of the ellipse, the first step of drawing the ellipse, we draw the axes ____ each other.
a) Parallel to
b) Perpendicular bisecting
c) Just touching
d) Coinciding

Answer: b
Explanation: If we know the major and minor axes of the ellipse, the first step of the drawing the ellipse is to draw the major and minor axes perpendicular bisecting each other. The major and the minor axes are perpendicular bisectors of each other.

10. Loop of the thread method is the practical application of _____ method.

a) Oblong method
b) Trammel method
c) Arcs of circles method
d) Concentric method

Answer: c
Explanation: Loop of the thread method is the practical application of the arcs of circles method. The lengths of the ends of the minor axis are half of the length of the major axis. In this method, a pin is inserted at the foci point and the thread is tied to a pencil which is used to draw the curve.

TOPIC 1.5 CONSTRUCTION OF PARABOLA

1. Which of the following is incorrect about Parabola?
a) Eccentricity is less than 1
b) Mathematical equation is $x^2 = 4ay$
c) Length of latus rectum is 4a
d) The distance from the focus to a vertex is equal to the perpendicular distance from a vertex to the directrix

Answer: a
Explanation: The eccentricity is equal to one. That is the ratio of a perpendicular distance from point on curve to directrix is equal to distance from point to focus. The eccentricity is less than 1 for an ellipse, greater than one for hyperbola, zero for a circle, one for a parabola.

2. Which of the following constructions use parabolic curves?
a) Cooling towers
b) Water channels
c) Light reflectors
d) Man-holes

Answer: c
Explanation: Arches, Bridges, sound reflectors, light reflectors etc use parabolic curves. Cooling towers, water channels use Hyperbolic curves as their design. Arches, bridges, dams, monuments, man-holes, glands and stuffing boxes etc use elliptical curves.

3. The length of the latus rectum of the parabola y2 =ax is _____
a) 4a
b) a
c) a/4
d) 2a

Answer: b
Explanation: Latus rectum is the line perpendicular to axis and passing through focus ends touching parabola. Length of latus rectum of $y^2 = 4ax$, $x^2 = 4ay$ is 4a; $y^2 = 2ax$, $x^2 = 2ay$ is 2a; $y^2 = ax$, $x^2 = ay$ is a.

4. Which of the following is not a parabola equation?
a) $x^2 = 4ay$
b) $y^2 - 8ax = 0$
c) $x^2 = by$
d) $x^2 = 4ay^2$

Answer: d
Explanation: The remaining represents different forms of parabola just by adjusting them we can get general notation of parabola but $x^2 = 4ay^2$ gives equation for hyperbola. And $x^2 + 4ay^2 = 1$ gives equation for ellipse.

5. The parabola $x^2 = ay$ is symmetric about x-axis.
a) True
b) False

Answer: b
Explanation: From the given parabolic equation $x^2 = ay$ we can easily say if we give y values to that equation we get two values for x so the given parabola is symmetric about y-axis. If the equation is $y^2 = ax$ then it is symmetric about x-axis.

6. Steps are given to find the axis of a parabola. Arrange the steps.

i. Draw a perpendicular GH to EF which cuts parabola.
ii. Draw AB and CD parallel chords to given parabola at some distance apart from each other.
iii. The perpendicular bisector of GH gives axis of that parabola.
iv. Draw a line EF joining the midpoints lo AB and CD.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: b
Explanation: First we drawn the parallel chords and then line joining the midpoints of the previous lines which is parallel to axis so we drawn the perpendicular to this line and then perpendicular bisector gives the axis of parabola.

7. Steps are given to find focus for a parabola. Arrange the steps.
i. Draw a perpendicular bisector EF to BP, Intersecting the axis at a point F.
ii. Then F is the focus of parabola.
iii. Mark any point P on the parabola and draw a perpendicular PA to the axis.
iv. Mark a point B on the on the axis such that BV = VA (V is vertex of parabola). Join B and P.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: c
Explanation: Initially we took a parabola with axis took any point on it drawn a perpendicular to axis. And from the point perpendicular meets the axis another point is taken such that the vertex is equidistant from before point and later point. Then from that one to point on parabola a line is drawn and perpendicular bisector for that line meets the axis at focus.

8. Which of the following is not belonged to ellipse?
a) Latus rectum
b) Directrix
c) Major axis
d) Axis

Answer: c
Explanation: Latus rectum is the line joining one of the foci and perpendicular to the major axis. Major axis and minor axis are in ellipse but in parabola, only one focus and one axis exist since eccentricity is equal to 1.

TOPIC 1.6 CONSTRUCTION OF HYPERBOLA

1. Which of the following is Hyperbola equation?
a) $y^2 + x^2/b^2 = 1$
b) $x^2 = 1ay$
c) $x^2/a^2 - y^2/b^2 = 1$
d) $X^2 + Y^2 = 1$

Answer: c
Explanation: The equation $x^2 + y^2 = 1$ gives a circle; if the x^2 and y^2 have same co-efficient then the equation gives circles. The equation $x^2 = 1ay$ gives a parabola. The equation $y^2 + x^2/b^2 = 1$ gives an ellipse.

2. Which of the following constructions use hyperbolic curves?
a) Cooling towers
b) Dams
c) Bridges
d) Man-holes

Answer: a
Explanation: Cooling towers, water channels use Hyperbolic curves as their design. Arches, Bridges, sound reflectors, light reflectors etc use parabolic curves. Arches, bridges, dams, monuments, man-holes, glands and stuffing boxes etc use elliptical curves.

3. The lines which touch the hyperbola at an infinite distance are _____
a) Axes
b) Tangents at vertex
c) Latus rectum
d) Asymptotes

Answer: d
Explanation: Axis is a line passing through the focuses of a hyperbola. The line which passes through the focus and perpendicular to the major axis is latus rectum. Tangent is the line which touches the curve at only one point.

4. Which of the following is the eccentricity for hyperbola?
a) 1
b) 3/2
c) 2/3
d) 1/2

Answer: b
Explanation: The eccentricity for an ellipse is always less than 1. The eccentricity is always 1 for any parabola. The eccentricity is always 0 for a circle. The eccentricity for a hyperbola is always greater than 1.

5. If the asymptotes are perpendicular to each other then the hyperbola is called rectangular hyperbola.
a) True
b) False

Answer: a
Explanation: In ellipse there exist two axes (major and minor) which are perpendicular to each other, whose extremes have tangents parallel them. There exist two conjugate axes for ellipse and 1 for parabola and hyperbola.

6. A straight line parallel to asymptote intersects the hyperbola at only one point.
a) True
b) False

Answer: a
Explanation: A straight line parallel to asymptote intersects the hyperbola at only one point. This says that the part of hyperbola will lay in between the parallel lines through outs its length after intersecting at one point.

7. Steps are given to locate the directrix of hyperbola when axis and foci are given. Arrange the steps.
i. Draw a line joining A with the other Focus F.
ii. Draw the bisector of angle FAF1, cutting the axis at a point B.
iii. Perpendicular to axis at B gives directrix.
iv. From the first focus F1 draw a perpendicular to touch hyperbola at A.
a) i, ii, iii, iv
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: d
Explanation: The directrix cut the axis at the point of intersection of the angular bisector of lines passing through the foci and any point on a hyperbola. Just by knowing this we can find the directrix just by drawing perpendicular at that point to axis.

8. Steps are given to locate asymptotes of hyperbola if its axis and focus are given. Arrange the steps.
i. Draw a perpendicular AB to axis at vertex.
ii. OG and OE are required asymptotes.
iii. With O midpoint of axis (centre) taking radius as OF (F is focus) draw arcs cutting AB at E, G.
iv. Join O, G and O, E.
a) i, iii, iv, ii
b) ii, iv, i, iii
c) iii, iv, i, ii
d) iv, i, ii, iii

Answer: b
Explanation: Asymptotes pass through centre is the main point and then the asymptotes cut the directrix and perpendiculars at focus are

known and simple. Next comes is where the asymptotes cuts the perpendiculars, it is at distance of centre to vertex and centre to focus respectively.

9. The asymptotes of any hyperbola intersects at _____
a) On the directrix
b) On the axis
c) At focus
d) Centre

Answer: d
Explanation: The asymptotes intersect at centre that is a midpoint of axis even for conjugate axis it is valid. Along with the hyperbola asymptotes are also symmetric about both axes so they should meet at centre only.

TOPIC 1.7 CONSTRUCTION OF CYCLOIDAL CURVES

1. _____ is a curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line.
a) Cycloid
b) Epicycloid
c) Epitrochoid
d) Trochoid

Answer: d
Explanation: Cycloid form if generating point is on the circumference of generating a circle. Epicycloid represents generating circle rolls on the directing circle. Epitrochoid is that the generating point is within or outside the generating circle but generating circle rolls on directing circle.

2. _____ is a curve generated by a point on the circumference of a circle, which rolls without slipping along another circle outside it.
a) Trochoid
b) Epicycloid
c) Hypotrochoid
d) Involute

Answer: b
Explanation: Trochoid is curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line. 'Hypo' represents the generating circle is inside the directing circle.

3. _____ is a curve generated by a point on the circumference of a circle which rolls without slipping on a straight line.
a) Trochoid
b) Epicycloid
c) Cycloid
d) Evolute

Answer: c
Explanation: Trochoid is curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line. Cycloid is a curve generated by a point on the circumference of a circle which rolls along a straight line. 'Epi' represents the directing path is a circle.

4. When the circle rolls along another circle inside it, the curve is called a _____
a) Epicycloid
b) Cycloid
c) Trochoid
d) Hypocycloid

Answer: d
Explanation: Cycloid is a curve generated by a point on the circumference of a circle which rolls along a straight line. 'Epi' represents the directing path is a circle. Trochoid is a curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line. 'Hypo' represents the generating circle is inside the directing circle.

5. Match the following

1.	**Generating point is within the circumference**	**i.**	**Inferior trochoid**

	of circle and generating circle rolls on straight line.	
2.	Generating point is on the circumference of circle and generating circle rolls on straight line.	ii. Epicycloid
3.	Generating point is outside the circumference of circle and generating circle rolls on straight line.	iii. Cycloid
4.	Generating point is on the circumference of circle and generating circle rolls along another circle outside it.	iv. Superior trochoid

a) 1, i; 2, iii; 3, iv; 4, ii
b) 1, ii; 2, iii; 3, i; 4, iv
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: a
Explanation: Trochoid is curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line. Inferior or superior depends on whether the generating point in within or outside the generating circle. If directing path is straight line then the curve is cycloid.

6. Match the following

1.	Generating point is within the circumference of circle and generating circle rolls on another circle outside it	i. Superior Epitrochoid
2.	Generating point is within or outside the circumference of circle and generating circle rolls inside another circle.	ii. Inferior Epitrochoid
3.	Generating point is outside the circumference of circle and generating circle rolls on another circle outside it.	iii. Hypotrochoid
4.	Generating point is on the circumference of circle and generating circle rolls along another circle inside it.	iv. Hypocycloid

a) 1, i; 2, iii; 3, iv; 4, ii
b) 1, ii; 2, iii; 3, i; 4, iv
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: b
Explanation: Inferior or superior depends on whether the generating point in within or outside the generating circle. 'Hypo' represents the generating circle is inside the directing circle. Trochoid is curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line.

7. Steps are given to find the normal and tangent for a cycloid. Arrange the steps if C is the centre for generating circle and PA is the directing line. N is the point on cycloid.
i. Through M, draw a line MO perpendicular to the directing line PA and cutting at O.
ii. With centre N and radius equal to radius of generating circle, draw an arc cutting locus of C at M.
iii. Draw a perpendicular to ON at N which is tangent.
iv. Draw a line joining O and N which is normal.
a) iii, i, iv, ii
b) ii, i, iv, iii
c) iv, ii, i, iii
d) i, iv, iii, ii

Answer: b
Explanation: The normal at any point on a cycloidal curve will pass through the corresponding point of contact between the generating circle and the directing line. So

with help of locus of centre of generating circle we found the normal and the tangent.

8. Steps are given to find the normal and tangent to an epicycloid. Arrange the steps if C is the centre for generating circle and O is the centre of directing cycle. N is the point on epicycloid.
i. Draw a line through O and D cutting directing circle at M.
ii. Draw perpendicular to MN at N. We get tangent.
iii. With centre N and radius equal to radius of generating circle, draw an arc cutting the locus of C at D.
iv. Draw a line joining M and N which is normal.
a) iii, i, iv, ii
b) ii, i, iv, iii
c) iv, ii, i, iii
d) i, iv, iii, ii

Answer: a
Explanation: The normal at any point on an epicycloidal curve will pass through the corresponding point of contact between the generating circle and the directing circle. And also with help of locus of centre of generating circle we found the normal and the tangent.

9. The generating circle will be inside the directing circle for _____
a) Cycloid
b) Inferior trochoid
c) Inferior epitrochoid
d) Hypocycloid

Answer: d
Explanation: The generating circle will be inside the directing circle for hypocycloid or hypotrochoid. Trochoid is a curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line or over circle if not represented with hypo as a prefix.

10. The generating point is outside the generating circle for_____
a) Cycloid
b) Superior Trochoid
c) Inferior Trochoid
d) Epicycloid

Answer: b
Explanation: If the generating point is on the circumference of generating circle then the curve formed may be cycloids or hypocycloids. Trochoid is a curve generated by a point fixed to a circle, within or outside its circumference, as the circle rolls along a straight line or a circle. But here given is outside so it is superior trochoid.

TOPIC 1.8 CONSTRUCTION OF INVOLUTE

1. Mathematical equation for Involute is _____
a) $x = a \cos^3 \theta$
b) $x = r \cos\theta + r\,\theta \sin\theta$
c) $x = (a+b)\cos\theta - a \cos(^{a+b}/_{a}\,\theta)$
d) $y = a(1-\cos\theta)$

Answer: b
Explanation: x= a cos3 Θ is equation for hypocycloid, x= (a+ b) cosΘ – a cos ((a+b)/aΘ) is equation for epicycloid, y = a (1-cosΘ) is equation for cycloid and x = r cosΘ + r Θ sinΘ is equation for Involute.

2. Steps are given to draw involute of given circle. Arrange the steps f C is the centre of circle and P be the end of the thread (starting point).
i. Draw a line PQ, tangent to the circle and equal to the circumference of the circle.
ii. Draw the involute through the points P1, P2, P3 ……..etc.
iii. Divide PQ and the circle into 12 equal parts.
iv. Draw tangents at points 1, 2, 3 etc. and mark on them points P1, P2, P3 etc. such that 1P1 =P1l, 2P2 = P2l, 3P3= P3l etc.
a) ii, i, iv, iii

b) iii, i , iv, ii
c) i, iii, iv, ii
d) iv, iii, i, ii

Answer: c
Explanation: Involute is a curve which is formed by the thread which is yet complete a single wound around a circular object so thus the thread having length equal to the circumference of the circular object. And the involute curve follows only the thread is kept straight while wounding.

3. Steps are given to draw tangent and normal to the involute of a circle (center is C) at a point N on it. Arrange the steps.
i. With CN as diameter describe a semi-circle cutting the circle at M.
ii. Draw a line joining C and N.
iii. Draw a line perpendicular to NM and passing through N which is tangent.
iv. Draw a line through N and M. This line is normal.
a) ii, i, iv, iii
b) iii, i , iv, ii
c) i, iii, iv, ii
d) iv, iii, i, ii

Answer: a
Explanation: The normal to an involute of a circle is tangent to that circle. So simply by finding the appreciable tangent of circle passing through the point given on involute gives the normal and then by drawing perpendicular we can find the tangent to involute.

4. Steps given are to draw an involute of a given square ABCD. Arrange the steps.
i. With B as centre and radius BP1 (BA+ AD) draw an arc to cut the line CB-produced at P2.
ii. The curve thus obtained is the involute of the square.
iii. With centre A and radius AD, draw an arc to cut the line BA-produced at a point P1.
iv. Similarly, with centres C and D and radii CP2 and DP3 respectively, draw arcs to cut DC-produced at P3 and AD-produced at P4.
a) ii, i, iv, iii
b) iii, i , iv, ii
c) i, iii, iv, ii
d) iv, iii, i, ii

Answer: b
Explanation: It is easy to draw involutes to polygons. First, we have to point the initial point and then extending the sides. Then cutting the extended lines with cumulative radiuses of length of sides gives the points on involute and then joining them gives involute.

5. Steps given are to draw an involute of a given triangle ABC. Arrange the steps.
i. With C as centre and radius C1 draw arc cutting AC-extended at 2.
ii. With A as center and radius A2 draw an arc cutting BA- extended at 3 completing involute.
iii. B as centre with radius AB draw an arc cutting the BC- extended at 1.
iv. Draw the given triangle with corners A, B, C.
a) ii, i, iv, iii
b) iii, i , iv, ii
c) i, iii, iv, ii
d) iv, iii, i, ii

Answer: d
Explanation: It will take few simple steps to draw involute for a triangle since it has only 3 sides. First, we have to point the initial point and then extending the sides. Then cutting the extended lines with cumulative radiuses of length of sides gives the points on involute and then joining them gives involute.

6. Steps given are to draw an involute of a given pentagon ABCDE. Arrange the steps.
i. B as centre and radius AB, draw an arc cutting BC –extended at 1.
ii. The curve thus obtained is the involute of the pentagon.
iii. C as centre and radius C1, draw an arc cutting CD extended at 2.
iv. Similarly, D, E, A as centres and radius

D2, E3, A4, draw arcs cutting DE, EA, AB at 3, 4, 5 respectively.
a) ii, i, iv, iii
b) iii, i , iv, ii
c) i, iii, iv, ii
d) iv, iii, i, ii

Answer: c
Explanation: It is easy to draw involutes to polygons. First, we have to point the initial point and then extending the sides. Then cutting the extended lines with cumulative radiuses of length of sides gives the points on involute and then joining them gives involute.

7. For inferior trochoid or inferior epitrochoid the curve touches the directing line or directing circle.
a) True
b) False

Answer: b
Explanation: Since in the inferior trochoids the generating point is inside the generating circle the path will be at a distance from directing line or circle even if the generating circle is inside or outside the directing circle.

8. 'Hypo' as prefix to cycloids give that the generating circle is inside the directing circle.
a) True
b) False

Answer: a
Explanation: 'Hypo' represents the generating circle is inside the directing circle. 'Epi' represents the directing path is a circle. Trochoid represents the generating point is not on the circumference of generating a circle.

TOPIC 1.9 CONSTRUCTION OF SPIRAL

1. Which of the following represents an Archemedian spiral?
a) Tornado
b) Cyclone
c) Mosquito coil
d) Fibonacci series

Answer: c
Explanation: Archemedian spiral is a curve traced out by a point moving in such a way that its movement towards or away from the pole is uniform with the increase of the vectorial angle from the starting line. It is generally used for teeth profiles of helical gears etc.

2. Steps are given to draw normal and tangent to an archemedian curve. Arrange the steps, if O is the center of curve and N is point on it.
i. Through N, draw a line ST perpendicular to NM. ST is the tangent to the spiral.
ii. Draw a line OM equal in length to the constant of the curve and perpendicular to NO.
iii. Draw the line NM which is normal to the spiral.
iv. Draw a line passing through the N and O which is radius vector.
a) ii, iv, i, iii
b) i, iv, iii, ii
c) iv, ii, iii, i
d) iii, i, iv, ii

Answer: c
Explanation: The normal to an archemedian spiral at any point is the hypotenuse of the right angled triangle having the other two sides equal in length to the radius vector at that point and the constant of the curve respectively.

3. Which of the following does not represents an Archemedian spiral?
a) Coils in heater
b) Tendrils
c) Spring
d) Cyclone

Answer: d
Explanation: Tendrils are a slender thread-like structures of a climbing plant, often

growing in a spiral form. For cyclones the moving point won't have constant velocity. The archemedian spirals have a constant increase in the length of a moving point. Spring is a helix.

4. Match the following. Given points are about spirals.

1.	The point about which the line rotates is called _____	i. Radius vector
2.	The line joining any point on the curve with the pole is called _____	ii. Convolution
3.	Each complete revolution of the spiral is termed as _____	iii. Vectorial angle
4.	Angle between radius vector and the line in its initial position is called _____	iv. Pole

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, i; 4, iv
c) 1, iv; 2, i; 3, ii; 4, iii
d) 1, ii; 2, iv; 3, iii; 4, i

Answer: c
Explanation: The line joining any point on the curve with the pole is called radius vector. Angle between radius vector and the line in its initial position is called vectorial angle. Each complete revolution of the spiral is termed as convolutions. A spiral may make any number of convolutions before it reaches the pole.

5. Match the following.

1.	Tendrils	i. Helix
2.	Spring	ii. Archemedian spiral
3.	Mosquito coil	iii. Fibonacci spiral
4.	Cyclone	iv. Lituus spiral

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, i; 4, iv
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iv; 2, i; 3, ii; 4, iii

Answer: d
Explanation: These are general structures we used to see in our daily life which have certain particular names when comes to spirals. Since some of them are natural structures they may obey or disobey the perfect spiral shapes but looks alike to particular spirals.

6. Match the following, given are the equations of different types of spirals.

1.	Lituus spiral	i. $r = a + b.\ \Theta$
2.	Logarithmic spiral	ii. $r=\Theta-1/2$
3.	Archemedian spiral	iii $r= a\ e^{b\Theta}$
4.	Fermat's spiral	iv. $r=\Theta^{1/2}$

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, i; 4, iv
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iv; 2, i; 3, ii; 4, iii

Answer: b
Explanation: Given are equations in polar co-ordinate system, which have r (radius) and theta Θ (angle). Where a, b are some constants and e represents exponential function.

7. Logarithmic spiral is also called Equiangular spiral.
a) True
b) False

Answer: a
Explanation: The logarithmic spiral is also known as equiangular spiral because of its property that the angle which the tangent at any point on the curve makes with the radius vector at that point is constant. The values of vectorial angles are in arithmetical progression.

8. In logarithmic Spiral, the radius vectors are in arithmetical progression.
a) True
b) False

Answer: b
Explanation: In the logarithmic Spiral, the values of vectorial angles are in arithmetical progression and radius vectors are in the geometrical progression that is the lengths of consecutive radius vectors enclosing equal angles are always constant.

9. The mosquito coil we generally see in house hold purposes and heating coils in electrical heater etc are generally which spiral.
a) Logarithmic spiral
b) Equiangular spiral
c) Fibonacci spiral
d) Archemedian spiral

Answer: d
Explanation: Archemedian spiral is a curve traced out by a point moving in such a way that its movement towards or away from the pole is uniform with the increase of the vectorial angle from the starting line. The use of this curve is made in teeth profiles of helical gears, profiles of cam etc.

TOPIC 1.10 BASICS OF CONIC SECTIONS - 1

1. The sections cut by a plane on a right circular cone are called as _____
a) Parabolic sections
b) Conic sections
c) Elliptical sections
d) Hyperbolic sections

Answer: b
Explanation: The sections cut by a plane on a right circular cone are called as conic sections or conics. The plane cuts the cone on different angles with respect to the axis of the cone to produce different conic sections.

2. Which of the following is a conic section?
a) Circle
b) Rectangle
c) Triangle
d) Square

Answer: a
Explanation: Circle is a conic section. When the plane cuts the right circular cone at right angles with the axis of the cone, the shape obtained is called as a circle. If the angle is oblique we get the other parts of the conic sections.

3. In conics, the _____ is revolving to form two anti-parallel cones joined at the apex.
a) Ellipse
b) Circle
c) Generator
d) Parabola

Answer: c
Explanation: In conics, the generator is revolving to form two anti-parallel cones joined at the apex. The plane is then made to cut these cones and we get different conic sections. If we cut at right angles with respect to the axis of the cone we get a circle.

4. While cutting, if the plane is at an angle and it cuts all the generators, then the conic formed is called as _____
a) Circle
b) Ellipse
c) Parabola
d) Hyperbola

Answer: b
Explanation: If the plane cuts all the generators and is at an angle to the axis of the cone, then the resulting conic section is called as an ellipse. If the cutting angle was right angle and the plane cuts all the generators then the conic formed would be circle.

5. If the plane cuts at an angle to the axis but does not cut all the generators then what is the name of the conics formed?

a) Ellipse
b) Hyperbola
c) Circle
d) Parabola

Answer: d
Explanation: If the plane cuts at an angle with respect to the axis and does not cut all the generators then the conics formed is a parabola. If the plane cuts all the generators then the conic section formed is called as ellipse.

6. When the plane cuts the cone at angle parallel to the axis of the cone, then _____ is formed.
a) Hyperbola
b) Parabola
c) Circle
d) Ellipse

Answer: a
Explanation: When the plane cuts the cone at an angle parallel to the axis of the cone, then the resulting conic section is called as a hyperbola. If the plane cuts the cone at an angle with respect to the axis of the cone then the resulting conic sections are called as ellipse and parabola.

7. Which of the following is not a conic section?
a) Apex
b) Hyperbola
c) Ellipse
d) Parabola

Answer: a
Explanation: Conic sections are formed when a plane cuts through the cone at an angle with respect to the axis of the cone. If the angle is right angle then the conics is a circle, if the angle is oblique then the resulting conics are parabola and ellipse.

8. The locus of point moving in a plane such that the distance between a fixed point and a fixed straight line is constant is called as _____
a) Conic
b) Rectangle
c) Square
d) Polygon

Answer: a
Explanation: The locus of a point moving in a plane such that the distance between a fixed point and a fixed straight line is always constant. The fixed straight line is called as directrix and the fixed point is called as the focus.

9. The ratio of the distance from the focus to the distance from the directrix is called as eccentricity.
a) True
b) False

Answer: a
Explanation: The ratio of the distance from the focus to the distance from the directrix is called eccentricity. It is denoted as e. The value of eccentricity can give information regarding which type of conics it is.

10. Which of the following conics has an eccentricity of unity?
a) Circle
b) Parabola
c) Hyperbola
d) Ellipse

Answer: b
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. It is denoted as e. The value of eccentricity can give information regarding which type of conics it is. The eccentricity of a parabola is the unity that is 1.

11. Which of the following has an eccentricity less than one?
a) Circle
b) Parabola

c) Hyperbola
d) Ellipse

Answer: d
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. It is denoted as e. The value of eccentricity can give information regarding which type of conics it is. The eccentricity of an ellipse is less than one.

12. If the distance from the focus is 10 units and the distance from the directrix is 30 units, then what is the eccentricity?
a) 0.3333
b) 0.8333
c) 1.6667
d) 0.0333

Answer: a
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. Hence from the formula of eccentricity, e = 10 ÷ 30 = 0.3333. Since the value of eccentricity is less than one the conic is an ellipse.

13. If the value of eccentricity is 12, then what is the name of the conic?
a) Ellipse
b) Hyperbola
c) Parabola
d) Circle

Answer: b
Explanation: Eccentricity is defined as the ration of the distance from the focus to the distance from the directrix. It is denoted as e. If the value of eccentricity is greater than unity then the conic section is called as a hyperbola.

14. If the distance from the focus is 3 units and the distance from the directrix is 3 units, then how much is the eccentricity?
a) Infinity
b) Zero
c) Unity
d) Less than one

Answer: c
Explanation: Eccentricity is defined as the ration of the distance from the focus to the distance from the directrix and it is denoted as e. Hence from the definition, e = 3 ÷ 3 = 1. Hence the value of eccentricity is equal to unity.

15. If the distance from the focus is 2 mm and the distance from the directrix is 0.5 mm then what is the name of the conic section?
a) Circle
b) Ellipse
c) Parabola
d) Hyperbola

Answer: d
Explanation: The eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. It is denoted as e. If the value of the eccentricity is greater than unity then the conic section is called as a hyperbola.

TOPIC 1.11 BASICS OF CONIC SECTIONS - 2

1. Which of the following is a conic section?
a) Apex
b) Circle
c) Rectangle
d) Square

Answer: b
Explanation: Conic sections are formed when a plane cuts through the cone at an angle with respect to the axis of the cone. If the angle is right angle then the conics is a circle, if the angle is oblique then the resulting conics are parabola and ellipse.

2. Which of the following has an eccentricity more than unity?
a) Parabola

b) Circle
c) Hyperbola
d) Ellipse

Answer: c
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. It is denoted as e. The value of eccentricity can give information regarding which type of conics it is. The eccentricity of a hyperbola is more than one.

3. If the distance from the focus is 10 units and the distance from the directrix is 30 units, then what is the name of the conic?
a) Circle
b) Parabola
c) Hyperbola
d) Ellipse

Answer: d
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix. Hence from the formula of eccentricity, e = 10 ÷ 30 = 0.3333. Since the value of eccentricity is less than one the conic is an ellipse.

4. If the distance from the focus is 2 mm and the distance from the directrix is 0.5 mm then what is the value of eccentricity?
a) 0.4
b) 4
c) 0.04
d) 40

Answer: b
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Therefore, by definition, e = 2 ÷ 0.5 = 4. Hence the conic section is called as hyperbola.

5. If the distance from the focus is 3 units and the distance from the directrix is 3 units, then what is the name of the conic section?
a) Ellipse
b) Hyperbola
c) Circle
d) Parabola

Answer: d
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Therefore, by definition, e = 3 ÷ 3 = 1. Hence the conic section is called as a parabola.

6. If the distance from the directrix is 5 units and the distance from the focus is 3 units then what is the name of the conic section?
a) Ellipse
b) Parabola
c) Hyperbola
d) Circle

Answer: a
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Hence, by definition, e = 3 ÷ 5 = 0.6. Hence the conic section is called an ellipse.

7. If the distance from a fixed point is greater than the distance from a fixed straight line then what is the name of the conic section?
a) Parabola
b) Circle
c) Hyperbola
d) Ellipse

Answer: c
Explanation: The fixed point is called as focus and the fixed straight line is called as directrix. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. If e is greater than one then the conic section is called as a hyperbola.

8. If the distance from a fixed straight line is equal to the distance from a fixed point then what is the name of the conic section?

a) Ellipse
b) Parabola
c) Hyperbola
d) Circle

Answer: b
Explanation: The fixed straight line is called as directrix and the fixed point is called as a focus. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Eccentricity of a parabola is unity.

9. If the distance from the directrix is greater than the distance from the focus then what is the value of eccentricity?
a) Unity
b) Less than one
c) Greater than one
d) Zero

Answer: b
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Therefore, by definition the value of eccentricity is less than one hence the conic section is an ellipse.

10. If the distance from the directrix is 5 units and the distance from the focus is 3 units then what is the value of eccentricity?
a) 1.667
b) 0.833
c) 0.60
d) 0.667

Answer: c
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Therefore, by definition, e = 3 ÷ 5 = 0.6. Hence the conic section is called an ellipse.

11. If the distance from a fixed straight line is 5mm and the distance from a fixed point is 14mm then what is the name of the conic section?
a) Hyperbola
b) Parabola
c) Ellipse
d) Circle

Answer: a
Explanation: The fixed straight line is called directrix and the fixed point is called as a focus. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Hence from definition e = 14 ÷ 5 = 2.8. The eccentricity of a hyperbola is greater than one.

12. If the distance from the directrix is greater than the distance from the focus then what is the name of the conic section?
a) Hyperbola
b) Parabola
c) Ellipse
d) Circle

Answer: c
Explanation: Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Therefore, by definition the value of eccentricity is less than one hence the conic section is an ellipse.

13. If the distance from a fixed straight line is equal to the distance from a fixed point then what is the value of eccentricity?
a) Unity
b) Greater than one
c) Infinity
d) Zero

Answer: a
Explanation: The fixed straight line is called as directrix and the fixed point is called as a focus. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Hence from definition e = x ÷ x = 1.

14. If the distance from a fixed point is greater than the distance from a fixed straight line then what is the value of eccentricity?
a) Unity
b) Infinity
c) Zero
d) Greater than one

Answer: d
Explanation: The fixed point is called as focus and the fixed straight line is called as directrix. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Hence from the definition, the value of eccentricity is greater than one.

15. If the distance from a fixed straight line is 5mm and the distance from a fixed point is 14mm then what is the value of eccentricity?
a) 0.357
b) 3.57
c) 2.8
d) 0.28

Answer: c
Explanation: The fixed straight line is called as directrix and the fixed point is called as a focus. Eccentricity is defined as the ratio of the distance from the focus to the distance from the directrix and it is denoted by e. Hence from definition e = 14 ÷ 5 = 2.8.

TOPIC 1.12 BASICS OF CONIC SECTIONS - 3

1. Choose the correct option.
a)

$$\text{Eccentricity} = \frac{\textit{distance of the point from the focus}}{\textit{distance of the point from the vertex}}$$

b)

$$\text{Eccentricity} = \frac{\textit{distance of the point from the focus}}{\textit{distance of the point from the directrix}}$$

c)

$$\text{Eccentricity} = \frac{\textit{distance of the point from the directrix}}{\textit{distance of the point from the focus}}$$

d)

$$\text{Eccentricity} = \frac{\textit{distance of the point from the latus rectum}}{\textit{distance of the point from the focus}}$$

Answer: b
Explanation: The point where the extension of major axis meets the curve is called vertex. The conic is defined as the locus of a point in such a way that the ratio of its distance from a fixed point and a fixed straight line is always constant. The ratio gives the eccentricity. The fixed point is called the focus and the fixed line is called directrix.

2. Match the following.
A. E < 1 i. Rectangular hyperbola
B. E = 1 ii. Hyperbola
C. E > 1 iii. Ellipse
D. E > 1 iv. Parabola
a) A, i; B, ii; C, iii; D, iv
b) A, ii; B, iii; C, iv; D, i
c) A, iii; B, iv; C, ii; D, i
d) A, iv; B, iii; C, ii; D, i

Answer: c
Explanation: The conic is defined as the locus of a point in such a way that the ratio of its distance from a fixed point and a fixed straight line is always constant. The fixed point is called the focus and the fixed line is called directrix. The change in ratio as given above results in different curves.

3. A plane is parallel to a base of regular cone and cuts at the middle. The cross-section is _____
a) Circle
b) Parabola
c) Hyperbola
d) Ellipse

Answer: a
Explanation: A cone is formed by reducing the cross-section of a circle the point. So there exist circles along the cone parallel to the base. Since the given plane is parallel to the base of the regular cone. The cross-section will be circle.

4. The cross-section is a _____ when a plane is inclined to the axis and cuts all the generators of a regular cone.
a) Rectangular Hyperbola
b) Hyperbola
c) Circle
d) Ellipse

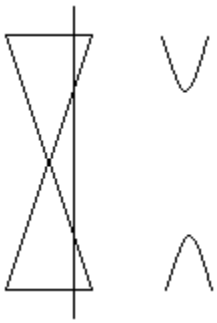
Answer: d
Explanation: A cone is a solid or hollow object which tapers from a circular base to a point. Here given an inclined plane which cuts all the generators of a regular cone. So the cross-section will definitely ellipse.

5. The curve formed when eccentricity is equal to one is _____
a) Parabola
b) Circle
c) Semi-circle
d) Hyperbola

Answer: a
Explanation: The answer is parabola. Circle has an eccentricity of zero and semi circle is part of circle and hyper eccentricity is greater than one.

6. The cross-section gives a _____ when the cutting plane is parallel to axis of cone.
a) Parabola
b) Hyperbola
c) Circle
d) Ellipse

Answer: b
Explanation: If the cutting plane makes angle less than exterior angle of the cone the cross-section gives a ellipse. If the cutting plane makes angle greater than the exterior angle of the cone the cross- section may be parabola or hyperbola.



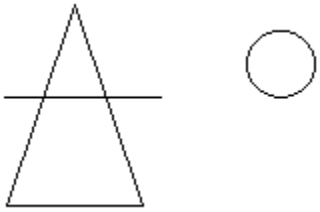
7. A plane cuts the cylinder the plane is not parallel to the base and cuts all the generators. The Cross-section is _____
a) Circle
b) Ellipse
c) Parabola
d) Hyperbola

Answer: b
Explanation: Given is a plane which is inclined but cutting all the generators so it will be an ellipse. Cutting of all generators gives us information that the cross-section will be closed curve and not parabola or hyperbola. Circle will form only if plane is parallel to the base.

8. A plane cuts the cylinder and the plane is parallel to the base and cuts all the generators. The Cross-section is _____
a) Circle
b) Ellipse
c) Parabola
d) Rectangular hyperbola

Answer: a
Explanation: The plane which is parallel to base will definitely cut the cone at all generators. Here additional information also given that the plane is parallel to base so the

cross-section will be circle.



9. The curve which has eccentricity zero is _____

a) Parabola
b) Ellipse
c) Hyperbola
d) Circle

Answer: d
Explanation: The eccentricity is the ratio of a distance from a point on the curve to focus and to distance from the point to directrix. For parabola it is 1 and for ellipse it is less than 1 and for hyperbola it is greater than 1. And for circle it is zero.

10. Rectangular hyperbola is one of the hyperbola but the asymptotes are perpendicular in case of rectangular hyperbola.
a) True
b) False

Answer: a
Explanation: Asymptotes are the tangents which meet the curve hyperbola at infinite distance. If the asymptotes are perpendicular to each other then hyperbola takes the name of a rectangular hyperbola.

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACE

TOPIC 2.1 BASICS OF ORTHOGRAPHIC PROJECTIONS

1. The straight lines which are drawn from various points on the contour of an object to meet a plane are called as _____
a) connecting lines
b) projectors
c) perpendicular lines
d) hidden lines.

Answer: b
Explanation: The object will generally kept at a distance from planes so to represent the shape in that view projectors are drawn perpendicular to plane in orthographic projection. Projectors are simply called lines of sights when an observer looks towards an object from infinity.

2. When the projectors are parallel to each other and also perpendicular to the plane, the projection is called _____
a) Perspective projection
b) Oblique projection
c) Isometric projection
d) Orthographic projection

Answer: d
Explanation: In orthographic projection, the projectors are parallel to each other and also perpendicular to the plane but in oblique projection, the projectors are inclined to the plane of projection and projectors are parallel to each other.

3. In the Oblique projection an object is represented by how many views?
a) one view
b) two views
c) three views
d) four views

Answer: a
Explanation: Oblique projection is one method of pictorial projection. Oblique projection shows three dimensional objects on the projection plane in one view only. This

type of drawing is useful for making an assembly of an object and provides directly a production drawing.

4. The object we see in our surrounding usually without drawing came under which projection?
a) Perspective projection
b) Oblique projection
c) Isometric projection
d) Orthographic projection

Answer: a
Explanation: Perspective projection gives the view of an object on a plane surface, called the picture plane, as it would appear to the eye when viewed from a fixed position. It may also be defined as the figure formed on the projection plane when visual rays from the eye to the object cut the plane.

5. In orthographic projection, each projection view represents how many dimensions of an object?
a) 1
b) 2
c) 3
d) 0

Answer: b
Explanation: In orthographic projection and oblique projection the projection planes which represent one view of an object only shows width, height; width, thickness; height, thickness only but in isometric and perspective projections width, height and thickness can also be viewed.

6. In orthographic projection an object is represented by two or three views on different planes which _____
a) gives views from different angles from different directions
b) are mutually perpendicular projection planes
c) are parallel along one direction but at different cross-section
d) are obtained by taking prints from 2 or 3 sides of object

Answer: b
Explanation: By viewing in mutual perpendicular planes- Vertical plane, horizontal plane, profile plane which indirectly gives us front view in x-direction, top-view in y –direction and thickness in z-direction which are mutually perpendicular. Ortho means perpendicular.

7. To represent the object on paper by orthographic projection the horizontal plane (H.P) should be placed in which way?
a) The H.P is turned in a clockwise direction up to 90 degrees
b) The H.P is turned in anti-clockwise direction up to 90 degrees
c) H.P plane is placed to left side of vertical plane parallel to it
d) H.P plane is placed to right side of vertical plane parallel to it

Answer: a
Explanation: The vertical plane and horizontal plane are perpendicular planes intersected at reference line. So on paper to represent perpendicular planes any of the planes should arrange to get a real picture of required projection.

8. The hidden parts inside or back side of object while represented in orthographic projection are represented by which line?
a) Continuous thick line
b) Continuous thin line
c) Dashed thin line
d) Long-break line

Answer: c
Explanation: Continuous thick line is used for visible outlines, visible edges, crests of screw threads, limits of full depth thread etc. Continuous thin line is used for extension, projection, short centre, leader, reference lines, imaginary lines of intersection etc.

9. Orthographic projection is the representation of two or more views on the mutual perpendicular projection planes.
a) True
b) False

Answer: a
Explanation: Orthographic projection is the representation of two or more views on the mutual perpendicular projection planes. But for oblique projection, the object is viewed in only one view. And in isometric view the object is kept resting on the ground on one of its corners with a solid diagonal perpendicular to the V.P.

10. In perspective projection and oblique projection, the projectors are not parallel to each other.
a) True
b) False

Answer: b
Explanation: In Oblique projection the projectors are parallel to each other but inclined to projection plane but in perspective projection all the projectors are not parallel to each other and so to projection plane.

11. What is additional 3rd view on orthographic projection in general for simple objects?
a) Front view
b) Top view
c) Side view
d) View at 45 degrees perpendicular to horizontal plane

Answer: c
Explanation: In general for simple objects engineers use only front view and top view or else front view and side view or else top view and side view. If every view is visualized side view gives height and thickness of object.

12. The front view of an object is shown on which plane?
a) Profile plane
b) Vertical plane
c) Horizontal plane
d) Parallel plane

Answer: b
Explanation: The front view will be represented on vertical plane, top view will be represented on horizontal plane and side view will be shown on profile plane. The front view shows height and width of object.

13. The Top view of an object is shown on which plane?
a) Profile plane
b) Vertical plane
c) Horizontal plane
d) Parallel plane

Answer: c
Explanation: The front view will be shown on vertical plane, top view will be represented on horizontal plane and side view will be represents on profile plane. The top view gives thickness and width of the object.

14. The side view of an object is shown on which plane?
a) Profile plane
b) Vertical plane
c) Horizontal plane
d) Parallel plane

Answer: a
Explanation: The front view will be represents on vertical plane, top view will be shown on horizontal plane and side view will be represents on profile plane. The side view gives height and thickness of object.

TOPIC 2.2 PLANES OF PROJECTIONS AND FOUR QUADRANTS

1. The 2nd quadrant is in which position?
a) Below H.P, behind V.P
b) Above H.P, behind V.P

c) Above H.P, in-front of V.P
d) Below H.P, in-front of V.P

Answer: b
Explanation: The position of reference planes will be similar to quadrants in x, y plane co-ordinate system. As the 2nd quadrant lies above the x-axis and behind the y-axis here also the 2nd quadrant is above H.P, behind V.P.

2. The 3rd quadrant is in which position?
a) Below H.P, behind V.P
b) Above H.P, behind V.P
c) Above H.P, in-front of V.P
d) Below H.P, in-front of V.P

Answer: a
Explanation: The position of reference planes will be similar to quadrants in x, y plane co-ordinate system. As the 3rd quadrant lies below the x-axis and behind the y-axis here also the 3rd quadrant is below H.P, behind V.P.

3. The 4th quadrant is in which position?
a) Below H.P, behind V.P
b) Above H.P, behind V.P
c) Above H.P, in-front of V.P
d) Below H.P, in-front of V.P

Answer: d
Explanation: The position of reference planes will be similar to quadrants in x, y plane co-ordinate system. As the 4th quadrant lies below the x-axis and in front of the y-axis here also the 4th quadrant is below H.P, in front of V.P.

4. The 1st quadrant is in which position?
a) Below H.P, behind V.P
b) Above H.P, behind V.P
c) Above H.P, in-front of V.P
d) Below H.P, in-front of V.P

Answer: c
Explanation: The position of reference planes will be similar to quadrants in x, y plane co-ordinate system. As the 1st quadrant lies above the x-axis and in front of the y-axis here also the 1st quadrant is above H.P, in front of V.P.

5. The position of the views with respect to the reference line will not change according to the quadrant in which the object may be situated.
a) True
b) False

Answer: b
Explanation: The position of the views with respect to the reference line will change according to the quadrant in which the object may be situated because the representation of views will on 2 dimensional sheet for that the planes has to rotate and with respective to reference line and this will be different for different quadrant.

6. The first and the third quadrants are always opened out while rotating the planes.
a) True
b) False

Answer: a
Explanation: According to the standards it is made that the planes rotate in a clockwise direction while drawing the orthographic projections of objects on the different quadrant. So as the horizontal rotates 90 degrees in clockwise with respect to reference line the views in 2nd and 4th quadrants overlap but in 1st and 3rd the views will not coincide so they are said to be opened.

7. An object is kept in one of the quadrants of principal planes of projection, for both the front view and top view of the object, the view came first and then the object (the observer is at the top right side of principal planes). The object is in which quadrant?
a) 1st quadrant
b) 2nd quadrant
c) 3rd quadrant
d) 4th quadrant

Answer: c
Explanation: If we imagine the principal planes and the observer at the top right side of those planes we can clearly watch the positions of object with respect to their view. Here the object is in 3rd quadrant so view will come first.

8. An object is kept in one of the quadrants of principal planes of projection, for both the front view and top view of the object the object came first and then the views on planes (the observer is at top right side of principal planes). The object is in which quadrant?
a) 1st quadrant
b) 2nd quadrant
c) 3rd quadrant
d) 4th quadrant

Answer: a
Explanation: If we imagine the principal planes and the observer at top right side of those planes we can clearly watch the positions of object with respect to their view. Here the object is in 1st quadrant so object will come first in both the views.

9. An object is kept in one of the quadrants of principal planes of projection, for the front view the view is first and object is next and for top view the object came first and then the view on plane (the observer is at top right side of principal planes). The object is in which quadrant?
a) 1st quadrant
b) 2nd quadrant
c) 3rd quadrant
d) 4th quadrant

Answer: b
Explanation: If we imagine the principal planes and the observer at top right side of those planes we can clearly watch the positions of object with respect to their view. Here the object is in 2nd quadrant so view will come first for front view and object will come first for top view.

10. The line formed by intersection of principal planes is called _____
a) projection line
b) origin line
c) line of intersection
d) reference line

Answer: d
Explanation: The line formed by an intersection of principal planes or reference planes of projection that is the vertical plane or frontal plane and horizontal plane is called reference line which is denoted by the letters xy.

11. The vertical plane is also called _____
a) straight plane
b) perpendicular plane
c) frontal plane
d) pole plane

Answer: c
Explanation: Vertical plane will be vertical to ground and perpendicular with horizontal plane. As the observer will always be at right-top side of planes of projections the front view will always be placed on vertical plane only so the vertical plane is also called frontal plane.

12. The negative horizontal plane and positive horizontal makes _____ angle with each other.
a) 90 degrees
b) 180 degrees
c) 120 degrees
d) 270 degrees

Answer: b
Explanation: The negative horizontal plane means the part of horizontal plane which lies in 2nd quadrant. The positive and negative planes are parallel to each other so the angle between the parallel planes is always 180 degrees.

13. The positive vertical plane and positive horizontal plane makes _____ angle with each other in anti clockwise direction.
a) 180 degrees
b) 270 degrees
c) 0 degrees
d) 90 degrees

Answer: b
Explanation: Given the direction is anti-clockwise direction so the angle in 270 degrees if it is given clockwise direction the angle should be 90 degrees since the given planes are consecutive planes in planes of projection.

TOPIC 2.3 FIRST ANGLE PROJECTION METHOD

1. In 1st angle projection the object is kept in _____
a) 1st quadrant
b) 2nd quadrant
c) 3rd quadrant
d) 4th quadrant

Answer: a
Explanation: We can keep an object in any quadrant of projection planes but every time we keep in different quadrants gives different relative positions in projections. Here 1st angle represents the initial stage in forming projection of planes so 1st quadrant represents 1st angle projection.

2. 1st angle projection is recommended by _____
a) USA
b) ISI
c) Bureau of Indian Standards
d) ASME

Answer: c
Explanation: First angle projection is recommended by Bureau of Indian Standards but USA and other countries recommend third angle projection. The changes in both the projections are relative positions in projection.

3. In 1st angle projection the _____ lies between _____ and _____
a) object, projection plane, observer
b) projection plane, object, observer
c) reference line, side view, front view
d) reference line, left side view, right side view

Answer: a
Explanation: The observer is always at the right side top end. So as the observer watches the object comes first and then the projection plane as the object in the 1st quadrant in 1st angle projection. So object lies between projection plane and observer.

4. In 1st angle projection, the front view will be below the top view.
a) True
b) False

Answer: b
Explanation: As the object is in first quadrant and the front view projects on vertical plane and top view projects on horizontal plane. And for representing the projection the horizontal plane has to turn 90 degrees in clockwise direction. The top view will be below the front view.

5. In 1st angle projection the positions of front and top views are _____
a) top view lies above the front view
b) front view lies above the top view
c) front view lie left side to top view
d) top view lie left side to front view

Answer: b
Explanation: As the object is in first quadrant and the front view projects on vertical plane and top view projects on horizontal plane. And for representing the projection the horizontal plane has to turn 90 degrees in clockwise direction.

6. In 1st angle projection, the left side view will be left side of front view.
a) True
b) False

Answer: b
Explanation: In first angle projection the object's left side will be projected only if we watch from left side of object and the impression will fall to the right side of front view similar to the other side also so the left side view is placed on the right side of front view.

7. The positions of right side view and front view of an object kept in 1st quadrant and projection are drawn?
a) Right side view is right side of front view
b) Right side view is left side of front view
c) Right side view is above the front view
d) Right side view is below the front view

Answer: b
Explanation: In first angle projection the object's right side will be projected only if we watch from right side of object and the impression will fall to the left side of front view similar to the other side also so the right side view is placed on the left side of front view.

8. The positions of reference line and top view in 1st angle projection are _____
a) reference line lies above the top view
b) reference line lies below the top view
c) reference line lie left side to top view
d) reference line lie right side to top view

Answer: a
Explanation: Reference line will be the xy line which is formed by intersection of vertical plane and horizontal plane. In the first angle projection the projections of object is taken by placing object in 1st quadrant and top view is projected on to horizontal plane which is after the reference line.

9. If an object is placed in 1st quadrant such that one of the surfaces of object is coinciding with vertical plane, what is the correct position of views from the following?
a) The front view touches the reference line
b) The side view touches the reference line
c) The top view touches the reference line
d) The bottom view touches the reference line

Answer: c
Explanation: In the first angle projection the projections of object is taken by placing object in 1st quadrant. If the object's surface is coinciding the vertical plane which indirectly saying the distance from vertical plane is zero so top view of that object touches the reference line.

10. If an object is placed in 1st quadrant such that one of the surfaces of object is coinciding with horizontal plane, what is the correct position of views from the following?
a) The front view touches the reference line
b) The side view touches the reference line
c) The top view touches the reference line
d) The bottom view touches the reference line

Answer: a
Explanation: In the first angle projection the projections of object is taken by placing object in 1st quadrant. If the object's surface is coinciding the horizontal plane which indirectly saying the distance from horizontal plane is zero so front view of that object touches the reference line.

11. If an object is placed in 1st quadrant such that one of the surfaces of object is coinciding with both vertical plane and horizontal plane, what is the correct position of views from the following?
a) The top view touches the reference line
b) The top view and side view touch each other
c) Both side views touch each other
d) The top view and front touches each other at reference line

Answer: d
Explanation: If the object is placed in 1st quadrant and the object's surface is coinciding with both the horizontal plane and vertical plane which indirectly saying the distance from both the planes is zero so both top and front views of that object touches the reference line.

12. Where is the position of bottom view in 1st angle projection?
a) left side of right hand side view
b) right side of right hand side view
c) above the front view
d) below the top view

Answer: c
Explanation: First angle projection means the object is placed in first quadrant and the top view of the object is below the front view so the bottom view is above the front view. This is obtained as the bottom view is viewed from bottom and so is projected upwards.

13. Where is the position of back view in 1st angle projection?
a) left side of right hand side view
b) right side of right hand side view
c) above the front view
d) below the top view

Answer: b
Explanation: In the first angle projection the top view of the object is below the front view and then come the side views to the left and right of front view and then back view which can either be kept on ends of side views but as standard notation it is placed on right side of right side view.

TOPIC 2.4 THIRD ANGLE PROJECTION METHOD

1. In 3rd angle projection the object is kept in _____
a) 1st quadrant
b) 2nd quadrant
c) 3rd quadrant
d) 4th quadrant

Answer: c
Explanation: We can keep object in any quadrant of projection planes but every time we keep in different quadrants gives different relative positions in projections. Here 3rd angle represents the initial stage in forming projection of planes so 3rd quadrant represents 3rd angle projection.

2. 3rd angle projection is recommended by _____
a) USA
b) ISI
c) Bureau of Indian Standards
d) IS

Answer: a
Explanation: Third angle projection is recommended by USA and other countries and 1st angle projection is recommended by Bureau of Indian Standards. The changes in both the projections are relative positions in projection.

3. In 3rd angle projection the _____ lies between _____ and _____
a) object, projection plane, observer
b) projection plane, object, observer
c) reference line, side view, front view
d) reference line, left side view, right side view

Answer: b
Explanation: The observer is always at the right side top end. So as the observer watches the projection plane comes first and then the object as the object in the 3rd quadrant in 3rd angle projection, so plane of projection lies between object and observer.

4. In 3rd angle projection, the front view will be below the top view.
a) True
b) False

Answer: a
Explanation: As the object is in third quadrant and the front view projects on a vertical plane and top view projects on horizontal plane. And for representing the projection the horizontal plane has to turn 90 degrees in clockwise direction. The top view will be above the front view.

5. In 3rd angle projection, the positions of front view and top views are?
a) Top view lies above the front view
b) Front view lies above the top view
c) Front view lie left side to top view
d) Top view lie left side to front view

Answer: a
Explanation: As the object is in third quadrant and the front view projects on a vertical plane and top view projects on horizontal plane. And for representing the projection the horizontal plane has to turn 90 degrees in clockwise direction.

6. In 3rd angle projection, the left side view will be left side of front view.
a) True
b) False

Answer: a
Explanation: In third angle projection the object's left side will be projected only if we watch from right side of the object so impression will fall to the left side of front view since the plane of projection is back side of object and also the right side view is placed on the right side of front view.

7. The positions of right side view and front view of an object kept in 3rd quadrant and projection are drawn?
a) right side view is right side of front view
b) right side view is left side of front view
c) right side view is above the front view
d) right side view is below the front view

Answer: a
Explanation: In third angle projection the object's right side will be projected only if we watch from left side of the object and the impression will fall to the right side of front view similar to the other side also so the left side view is placed on the left side of front view.

8. The positions of reference line and top view in 3rd angle projection are?
a) reference line lies above the top view
b) reference line lies below the top view
c) reference line lie left side to top view
d) reference line lie right side to top view

Answer: b
Explanation: Reference line will be the xy line which is formed by an intersection of vertical plane and horizontal plane. In the third angle projection the projections of object are taken by placing object in 3rd quadrant and top view is projected on to horizontal plane which is above the reference line.

9. If an object is placed in 3rd quadrant such that one of the surfaces of object is coinciding with vertical plane, what is the correct position of views from the following?
a) The front view touches the reference line
b) The side view touches the reference line
c) The top view touches the reference line
d) The bottom view touches the reference line

Answer: c
Explanation: In the third angle projection the projections of object is taken by placing object in 3rd quadrant. If the object's surface is coinciding the vertical plane which indirectly saying the distance from vertical plane is zero so top view of that object touches the reference line.

10. If an object is placed in 3rd quadrant such that one of the surfaces of object is coinciding with horizontal plane, what is the correct position of views from the following?
a) The front view touches the reference line
b) The side view touches the reference line

c) The top view touches the reference line
d) The bottom view touches the reference line

Answer: a
Explanation: In the third angle projection the projections of object is taken by placing object in 3rd quadrant. If the object's surface is coinciding the horizontal plane which indirectly saying the distance from horizontal plane is zero so front view of that object touches the reference line.

11. If an object is placed in 3rd quadrant such that one of the surfaces of object is coinciding with both vertical plane and horizontal plane, what is the correct position of views from the following?
a) The top view touches the reference line
b) The top view and side view touch each other
c) Both side views touch each other
d) The top view and front touches each other at reference line

Answer: d
Explanation: If the object is placed in 3rd quadrant and the object's surface is coinciding with both the horizontal plane and vertical plane which indirectly saying the distance from both the planes is zero so both top and front views of that object touches the reference line.

12. Where is the position of bottom view in 3rd angle projection?
a) left side of right hand side view
b) right side of right hand side view
c) above the front view
d) below the top view

Answer: d
Explanation: Third angle projection means the object is placed in third quadrant and the top view of the object is above the front view so the bottom view is below the front view. This is obtained as the top view is placed above so bottom should be placed below.

13. Where is the position of back view in 3rd angle projection?
a) left side of right hand side view
b) right side of right hand side view
c) above the front view
d) below the top view

Answer: b
Explanation: In the third angle projection the top view of the object is above the front view and then come the side views to the left and right of front view and then back view which can either be kept on ends of side views but as standard notation it is placed on right side of right side view.

TOPIC 2.5 PROBLEMS ON ORTHOGRAPHIC PROJECTION

1. A regular cone is rested on base on horizontal plane the front view will be _____
a) circle
b) scalene triangle
c) equilateral triangle
d) isosceles triangle

Answer: d
Explanation: Given the cone is regular cone that means the tip of cone will be at center if viewed from top, so for such a cone the front view will be a triangle and in particular isosceles triangle and the top view will be circle.

2. A Cube is placed on horizontal plane such that one of the space diagonal is perpendicular to horizontal plane the top view will be _____
a) octagon
b) square
c) hexagon
d) rectangle

Answer: c
Explanation: A cube is a 3 dimensional object whose length, width and thickness will

be same and also given space diagonal is perpendicular to horizontal plane the top view, side view and front view will be hexagon only.

3. A cylinder's axis is perpendicular to profile plane the top view will be _____
a) circle
b) cylinder
c) rectangle
d) parallelogram

Answer: c
Explanation: Given a cylinder whose axis is perpendicular to a profile plane so the top view and front view will be rectangle and side view will be circle. If the cylinder is slightly tilted with respect to profile then top view and front view will be parallelogram.

4. An egg is placed vertical to horizontal plane the top view will be _____
a) ellipse
b) circle
c) oval
d) sphere

Answer: b
Explanation: Given the egg is placed vertical to horizontal plane the front view and side view will be same and it might be conical, oval or elliptical etc. the top view always be circle. That's why the egg boxes are made impression of semi spheres.

5. A Cardboard is made to cut in shape of 'A' and as we placed in projection planes and from top view the legs of cardboard touch the profile plane and cardboard is parallel to horizontal plane. Which of the following is wrong?
a) The front view gives thickness of cardboard
b) The side views give width of cardboard
c) The front view gives height of cardboard
d) The top view gives thickness of cardboard

Answer: d
Explanation: From given information, we can understand that the cardboard is parallel to horizontal plane and direction of 'A' placed in projection planes so the front view and side view gives thickness, the front view and top view gives a height of cardboard and side view and top view gives width of cardboard.

6. An object is placed in between projection planes, the front view and side view gives the same rectangle and top view is giving square the object is _____
a) a square cylinder, such that square base is parallel to horizontal plane
b) a square cylinder, such that square base is parallel to vertical plane
c) a square cylinder, such that square base is parallel to profile plane
d) a square cylinder, such that axis is parallel to horizontal

Answer: a
Explanation: Given that the object is viewing from front and side as rectangle and top view is square so we can understand that pyramid has height more than the side of square and accordingly the view the object can be cuboid (square cylinder).

7. A plate of a negligible thickness of circular shape is placed parallel to horizontal plane the front view will be _____
a) line
b) circle
c) rectangle
d) ellipse

Answer: a
Explanation: Given a plate which is in circular shape given plate is parallel to horizontal plane so the front view and side views will be line whose length is equal to diameter of circle as the thickness is negligible the front view, side view can't be rectangle and top view will be circle.

8. A regular tetrahedron is placed on horizontal plane on one of its base, the front view, top view and side view gives triangle.
a) True
b) False

Answer: a
Explanation: A regular tetrahedron is formed by enclosing 4 equal triangles. And given one of the base is parallel to horizontal so in what angle the tetrahedron might be turned the front view and side view will be a triangle.

9. A regular cone is placed on horizontal plane on its base the top view is _____
a) circle
b) rectangle
c) square
d) triangle

Answer: a
Explanation: A regular cone generally will have a base circle and constant difference in cross-section. When a cone placed on horizontal that is base is parallel to horizontal plane then the front view and side views will show triangle for both and top view will shows circle.

10. The views will change if we keep the object in different quadrants.
a) True
b) False

Answer: b
Explanation: Whenever we change the object from one quadrant to other quadrants the relative positions of projection drawn will change accordingly but the views of the object will not change.

11. A Square pyramid is resting on vertical plane with base parallel to vertical plane. The side view will be _____
a) triangle
b) polygon with 4 sides
c) square
d) polygon with 5 sides

Answer: a
Explanation: A Square pyramid have base of square which is resting on vertical plane as said above so the side views, top view and bottom view gives the triangle and front view and back view gives square.

12. A triangular prism is placed in projection plane such that the square surface is parallel to horizontal plane. The top view, front view will be _____
a) square, rectangle respectively
b) rectangle, triangle respectively
c) rectangle, rectangle respectively
d) triangle, rectangle respectively

Answer: c
Explanation: Given a triangular prism is placed in projection plane such that the square base is parallel to horizontal plane. A triangular prism is nothing but triangular cylinder as per position given the front view and top view will be rectangle and side view will be triangle.

13. A pentagonal prism is placed the axis is perpendicular to horizontal plane, the top view and front view are _____
a) pentagon, rectangle
b) rectangle, rectangle
c) pentagon, triangle
d) rectangle, triangle

Answer: a
Explanation: Given a pentagonal prism is placed in projection plane such that the axis is perpendicular to horizontal plane. A pentagonal prism is nothing but pentagonal cylinder as per position given the front view and side view will be rectangle and top view will be pentagon.

14. A regular rhombic bi-pyramid is placed in projection planes such that one of its longest diagonal is perpendicular to vertical plane the

front view will be _____
a) square
b) rhombus
c) triangle
d) rectangle

Answer: b
Explanation: Given a regular rhombic bi-pyramid is placed in projection planes such that one of its longest diagonal is perpendicular to a vertical plane. As per position given the front view and side view will be rhombus and top view will be square.

15. A hexagonal nut is placed on a horizontal plane such that the axis is perpendicular to profile plane. The top view and side view will be _____
a) rectangle, hexagon
b) hexagon, rectangle
c) rectangle, rectangle
d) rectangle, circle

Answer: a
Explanation: Given a hexagonal nut is placed on horizontal plane such that the axis is perpendicular to profile plane. As per position given the front view, back view, top view and bottom view will be rectangle and side view will be hexagon.

TOPIC 2.6 PROJECTION OF POINTS IN FIRST QUADRANT

1. Two points are placed in 1st quadrant of projection planes such that the line joining the points is perpendicular to profile plane the side view and top view will be _____
a) single point, two points
b) two points, single point
c) single point, single point
d) two points, two points

Answer: a
Explanation: Here given the two points such that the joining line is perpendicular to profile plane in 1st quadrant asked side view and top view. The views in any quadrant will remain same but the relative positions in projection will change accordingly the quadrant.

2. A point is 5 units away from the vertical plane and 4 units away from profile plane and 3 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the front view and top view of point is _____
a) 7 units
b) 8 units
c) 9 units
d) 5 units

Answer: b
Explanation: Since the point is 3 units away from the horizontal plane the distance from the point to xy reference line will be 3 units. And then the point is at a distance of 5 units from the vertical plane the distance from reference line and point will be 5, sum is 8.

3. A point is 8 units away from the vertical plane and 2 units away from profile plane and 4 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the side view and front view of point is _____
a) 12 units
b) 6 units
c) 10 units
d) 8 units

Answer: c
Explanation: Since the point is 2 units away from the profile plane the distance from the point to reference line will be 2 units. And then the point is at a distance of 8 units from the vertical plane the distance from reference line and point will be 8, sum is 10.

4. A point is 2 units away from the vertical plane and 3 units away from profile plane and 7 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the front view and

side view of point is _____
a) 10
b) 5
c) 9
d) 7

Answer: b
Explanation: Since the point is 3 units away from the profile plane the distance from the point to reference line will be 3 units. And then the point is at a distance of 2 units from the profile plane the distance from reference line and point will be 2 units, sum is 5.

5. A point is 20 units away from the vertical plane and 12 units away from profile plane and 9 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the side view and front view of point is _____
a) 29 units
b) 21 units
c) 32 units
d) 11 units

Answer: c
Explanation: Since the point is 12 units away from the profile plane the distance from the point to reference line will be 12 units. And then the point is at a distance of 20 units from profile plane the distance from reference line and point will be 20 units, sum is 32.

6. A point is 2 units away from the vertical plane and 3 units away from profile plane and 7 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the shortest distance from top view and side view of point is _____
a) 10.29
b) 5.14
c) 9
d) 7

Answer: c
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (3+2); front view and top view (7+2)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(5^2+9^2)}$ =10.29 units.

7. If a point P is placed in between the projection planes. The distance from side view to reference line towards front view and the distance between top view and reference line towards top view will be same.
a) True
b) False

Answer: a
Explanation: The projection will be drawn by turning the other planes parallel to a vertical plane in clockwise direction along the lines of intersecting of planes. And so as we fold again the planes at respective reference lines and then drawing perpendiculars to the planes at those points the point of intersection gives the point P.

8. A point is 20 units away from the vertical plane and 12 units away from profile plane and 9 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the side view and top view of point is _____
a) 29 units
b) 21 units
c) 35.8 units
d) 17.9 units

Answer: c
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (12+9); front view and top view (9+20)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(21^2+29^2)}$ = 35.80 units.

9. A point is 5 units away from the vertical plane and profile plane and 10 units away from the horizontal plane in 1st quadrant then

the projections are drawn on paper the distance between the side view and top view of point is _____
a) 15
b) 10
c) 32.5
d) 18.02 units

Answer: d
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (5+5); front view and top view (10+5)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(10^2+15^2)} = 18.02$ units.

10. A point is 15 units away from the vertical plane and 12 units away from profile plane and horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the front view and top view of point is _____
a) 27
b) 15
c) 12
d) 24

Answer: a
Explanation: Since the point is 12 units away from the horizontal plane the distance from the point to xy reference line will be 12 units. And then the point is at a distance of 15 units from the vertical plane the distance from reference line and point will be 15, sum is 27.

11. A point is 12 units away from the vertical plane and profile plane 15 units away from horizontal plane in 1st quadrant then the projections are drawn on paper the distance between the front view and side view of point is _____
a) 27
b) 15
c) 12
d) 24

Answer: d
Explanation: Since the point is 12 units away from the profile plane the distance from the point to xy reference line will be 12 units. And then the point is at a distance of 12 units from the profile plane the distance from reference line and point will be 12, sum is 24.

12. A point is 7 units away from the vertical plane and horizontal plane 9 units away from profile plane in 1st quadrant then the projections are drawn on paper the distance between the front view and top view of point is _____
a) 27
b) 15
c) 16
d) 14

Answer: d
Explanation: Since the point is 7 units away from the horizontal plane the distance from the point to xy reference line will be 7 units. And then the point is at a distance of 7 units from the vertical plane the distance from reference line and point will be 7, sum is 14 units.

13. A point is 16 units away from the vertical plane and horizontal plane 4 units away from profile plane in 1st quadrant then the projections are drawn on paper the distance between the side view and top view of point is _____
a) 37.73 units
b) 32.98 units
c) 16
d) 8

Answer: d
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (4+16); front view and top view (16+16)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{20^2+32^2} = 37.73$ units.

TOPIC 2.7 PROJECTION OF POINTS IN SECOND QUADRANT

1. A point is in 2nd quadrant 20 units away from the horizontal plane and 10 units away from the vertical plane. Orthographic projection is drawn. What is the distance from point of front view to reference line, top view point to reference line?
a) 20, 10
b) 10, 20
c) 0, 20
d) 10, 0

Answer: a
Explanation: Given object is point placed in 2nd quadrant the top view gives the distance from vertical plane (10) and front view gives the distance from horizontal plane (20) both are placed overlapped in orthographic projection since the object is placed in the 2nd quadrant.

2. A point is in 2nd quadrant 15 units away from the vertical plane and 10 units away from the horizontal plane. Orthographic projection is drawn. What is the distance from point of front view to reference line, top view point to reference line?
a) 15, 10
b) 10, 15
c) 0, 15
d) 10, 0

Answer: b
Explanation: Given object is point the top view gives the distance from vertical plane (15) and front view gives the distance from horizontal plane (10) both are placed overlapped in orthographic projection since the planes need to rotate to draw projection as the object is placed in the 2nd quadrant.

3. A point is in 2nd quadrant, 15 units away from the vertical plane, 10 units away from the horizontal plane and 8 units away from the profile plane. Orthographic projection is drawn. What is the distance from point of front view to point of top view?
a) 5
b) 2
c) 7
d) 8

Answer: a
Explanation: As the point is in 2nd quadrant while drawing the projections the planes should rotate along the hinges such that the plane with top view overlaps the front view. So the distance between them is difference of distances from respective planes that is 5 (15-10) here.

4. A point is in 2nd quadrant, 15 units away from the vertical plane, 10 units away from the horizontal plane and 8 units away from the profile plane. Orthographic projection is drawn. What is the distance from point of front view to point of side view?
a) 25
b) 23
c) 18
d) 5

Answer: b
Explanation: Side view is obtained by turning the profile plane along the hinge with vertical parallel to vertical plane. Side view and front view have same distance from reference line. Sum of distances from the point to vertical plane and profile plane gives the following that is 15+8 = 23 units.

5. A point in 2nd quadrant is 15 cm away from both the horizontal plane and vertical plane and orthographic projections are drawn. The distance between the points formed by front view and top view is _____
a) 0
b) 30
c) 15
d) 15+ distance from a profile

Answer: a

Explanation: Given the point is in 2nd quadrant. While drawing orthographic projections the front view and top view overlaps and also the distance of point is same from planes of projections so the distance between them is zero.

6. A point in 2nd quadrant is 10 units away from the horizontal plane and 13 units away from both the vertical plane and profile plane. Orthographic projections are drawn find the distance from side view and front view.
a) 10
b) 13
c) 20
d) 26

Answer: d

Explanation: Given the point is in 2nd quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 13 and distance from front view to profile plane is 13. Sum is 13+13= 26.

7. A point in 2nd quadrant is 25 units away from both the horizontal plane and profile plane and 15 units away from the vertical plane. Orthographic projections are drawn find the distance from side view and front view.
a) 25
b) 15
c) 30
d) 40

Answer: d

Explanation: Given the point is in 2nd quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 15 and distance from front view to profile plane is 25. Sum is 15+25 =40.

8. A point in 2nd quadrant is 12 units away from the horizontal plane and vertical plane and 13 units away from both the profile plane. Orthographic projections are drawn find the distance from side view and front view.
a) 13
b) 26
c) 25
d) 24

Answer: c

Explanation: Given the point is in 2nd quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 12 and distance from front view to profile plane is 13. Sum 12 + 13 =25.

9. A point in 2nd quadrant is 15 units away from the horizontal plane and 10 units away from both the vertical plane and profile plane. Orthographic projections are drawn find the distance from side view and top view.
a) 25
b) 20.6
c) 25.49
d) 15.8

Answer: b

Explanation: Given the point is in 2nd quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (10+10); front view and top view (10-15) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(20^2+5^2)} = 20.6$ units.

10. A point in 2nd quadrant is 25 units away from both the horizontal plane and profile plane 15 units away from the vertical plane. Orthographic projections are drawn find the distance from the side view and top view.
a) 40
b) 50.99

c) 33.54
d) 41.23

Answer: d

Explanation: Given the point is in 2nd quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (25+15); front view and top view (25-15) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(40^2+10^2)} = 41.23$units.

11. A point in 2nd quadrant is 12 units away from the horizontal plane and vertical plane 13 units away from both the profile plane. Orthographic projections are drawn find the distance from the side view and top view.
a) 25.6
b) 25
c) 17.69
d) 13

Answer: b

Explanation: Given the point is in 2nd quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (12+13); front view and top view (12-12) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(25^2+0^2)} = 25$units.

12. A point in 2nd quadrant is 10 cm away from the vertical plane and 15 cm away from the horizontal plane, orthographic projections are drawn. What is the distance from a side view of point to line of vertical reference?
a) 10
b) 15
c) 25
d) Can't found

Answer: a

Explanation: Given the point is in 2nd quadrant. The distance from the side view of point to line of vertical reference will be the distance from the point to the vertical plane in plane of projection that is as given 10 cm.

13. A point is in 2nd quadrant which is 5 meters away from horizontal and 3 meters away from profile plane. Orthographic projections are drawn. What is the distance from the top view to xy reference line?
a) 5
b) 3
c) 8
d) Can't found

Answer: d

Explanation: Given the point is in 2nd quadrant. The xy reference line is between the vertical plane and horizontal plane but distance from a vertical point is not given in question so we can't found some given information.

14. A point is in 2nd quadrant which is 7 meters away from horizontal and 2 meters away from profile plane. Orthographic projections are drawn. What is the distance from the front view to xy reference line?
a) 7
b) 2
c) 5
d) 9

Answer: a

Explanation: Given the point is in 2nd quadrant. The distance from front view is given by distance between point and horizontal plane here it is given 7 meters. And distance from vertical reference will be 2 meters.

15. A point is in 2nd quadrant which is 8 meters away from vertical and 6 meters away from profile plane. Orthographic projections are drawn. What is the distance from the side view to vertical reference line?
a) 8
b) 6

c) 2
d) Can't found

Answer: a
Explanation: Given the point is in 2nd quadrant. The distance from the side view is given by distance between point and vertical plane here it is given 8 meters. And the distance from front view will be 6 meters.

TOPIC 2.8 PROJECTION OF POINTS IN THIRD QUADRANT

1. Two points are placed in 3rd quadrant of projection planes such that the line joining the points is perpendicular to vertical plane the side view and top view will be _____
a) single point, two points
b) two points, single point
c) single point, single point
d) two points, two points

Answer: d
Explanation: Here given the two points such that the joining line is perpendicular to vertical plane in 3rd quadrant asked side view and top view. The views in any quadrant will remain same but the relative positions in projection will change accordingly the quadrant.

2. A point is 7 units away from the vertical plane and 3 units away from profile plane and 3 units away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the front view and top view of point is _____
a) 10 units
b) 8 units
c) 9 units
d) 5 units

Answer: a
Explanation: Since the point is 3 units away from the horizontal plane the distance from the point to xy reference line will be 3 units. And then the point is at distance of 7 units from the vertical plane the distance from reference line and point will be 7, sum is 10.

3. A point is 9 units away from the vertical plane and 5 units away from profile plane and 4 units away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and front view of point is _____
a) 12 units
b) 14 units
c) 10 units
d) 8 units

Answer: b
Explanation: Since the point is 5 units away from the profile plane the distance from the point to a reference line will be 5 units. And then the point is at distance of 9 units from the vertical plane the distance from reference line and point will be 9, sum is 14.

4. A point is 7 units away from the vertical plane and 5 units away from profile plane and 7 units away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the front view and side view of point is _____
a) 10
b) 5
c) 9
d) 12

Answer: d
Explanation: Since the point is 5 units away from the profile plane the distance from the point to a reference line will be 5 units. And then the point is at distance of 7 units from the profile plane the distance from reference line and point will be 7 units, sum is 12.

5. A point is 8 units away from the vertical plane and 12 units away from profile plane and 9 units away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and front view of point is _____

a) 29 units
b) 20 units
c) 21 units
d) 17 units

Answer: c
Explanation: Since the point is 12 units away from the profile plane the distance from the point to a reference line will be 12 units. And then the point is at distance of 8 units from profile plane the distance from reference line and point will be 8 units, sum is 20.

6. A point is 20 cm away from the vertical plane and 8 units away from profile plane and 17 cm away from horizontal plane in 3rd quadrant then the projections are drawn on paper the shortest distance from top view and side view of point is _____
a) 37
b) 44.65
c) 46.40
d) 37.53

Answer: c
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (8+20); front view and top view (17+20)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(28^2+37^2)}$ =46.40 units.

7. If a point P is placed in between the projection planes in third quadrant. The distance from side view to reference line towards front view and the distance between top view and reference line towards top view will be same.
a) True
b) False

Answer: a
Explanation: The projection will be drawn by turning the other planes parallel to vertical plane in clockwise direction along the lines of intersecting of planes. And so as we fold again the planes at respective reference lines and then drawing perpendiculars to the planes at those points the point of intersection gives the point P.

8. A point is 2 m away from the vertical plane and 1 m away from profile plane and 9 m away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and top view of point is _____
a) 21
b) 14.86
c) 11.4
d) 10.4

Answer: b
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (1+9); front view and top view (9+2)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(10^2+11^2)}$ =14.86 m.

9. A point is 6 units away from the vertical plane and profile plane and 10 units away from horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and top view of point is _____
a) 15
b) 16
c) 12
d) 20

Answer: d
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (6+6); front view and top view (10+6)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(12^2+16^2)}$ = 20 units.

10. A point is 15 cm away from the vertical plane and 10 cm away from profile plane and horizontal plane in 3rd quadrant then the projections are drawn on paper the distance between the front view and top view of point is _____
a) 27 cm
b) 15 cm
c) 12 cm
d) 25 cm

Answer: d
Explanation: Since the point is 10 cm away from the horizontal plane the distance from the point to xy reference line will be 10 cm. And then the point is at distance of 15 cm from the vertical plane the distance from reference line and point will be 15, sum is 25 cm.

11. A point is 6 m away from the vertical plane and profile plane 5 m away from horizontal plane in 3rd quadrant then the projections is drawn on paper the distance between the front view and side view of point is _____
a) 27
b) 15
c) 12
d) 24

Answer: c
Explanation: Since the point is 6 m away from the profile plane the distance from the point to xy reference line will be 6 m. And then the point is a distance of 6 from the profile plane the distance from reference line and point will be 6, sum is 12.

12. A point is 50 cm away from the vertical plane and horizontal plane 80 cm away from profile plane in 3rd quadrant then the projections is drawn on paper the distance between the front view and top view of point is _____
a) 130
b) 100
c) 160
d) 0

Answer: b
Explanation: Since the point is 50 cm away from the horizontal plane the distance from the point to xy reference line will be 50 cm. And then the point is at distance of 50 cm from the vertical plane the distance from reference line and point will be 50 cm, sum is 100 cm.

13. A point is 5 units away from the vertical plane and horizontal plane 4 units away from profile plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and top view of point is _____
a) 13.45
b) 12.72
c) 19
d) 12.04

Answer: a
Explanation: Since here distance from side view and top view is asked for that we need the distance between the front view and side view (4+5); front view and top view (5+5)and these lines which form perpendicular to each other gives needed distance, answer is square root of squares of both the distances $\sqrt{(10^2+9^2)}$ = 13.45 units.

14. A point is 3 m away from the vertical plane and horizontal planes in 3rd quadrant then the projections are drawn on paper the distance between the side view and vertical reference line?
a) 3
b) 0
c) Can't found
d) 6

Answer: a
Explanation: The side view's distance from reference line will be the perpendicular distance from the vertical plane and front view's distance from reference line will be

the perpendicular distance from the horizontal plane.

15. A point is 3 m away from the vertical plane and 7 m away from profile plane in 3rd quadrant then the projections are drawn on paper the distance between the side view and vertical reference line?
a) 6
b) 3
c) 14
d) 7

Answer: b
Explanation: The side view's distance from vertical reference line will be the perpendicular distance from vertical plane and top view's distance from a vertical reference line will be the perpendicular distance from profile plane.

TOPIC 2.9 PROJECTION OF POINTS IN FOURTH QUADRANT

1. A point is in 4th quadrant 10 units away from the horizontal plane and 20 units away from the vertical plane. Orthographic projection is drawn. What is the distance from point of front view to reference line, top view point to reference line?
a) 20, 10
b) 10, 20
c) 0, 20
d) 10, 0

Answer: b
Explanation: Given object is point placed in 4th quadrant the top view gives the distance from the vertical plane (20) and front view gives the distance from horizontal plane (10) both are placed overlapped in orthographic projection since the object is placed in 4th quadrant.

2. A point is in 4th quadrant 15 cm away from the vertical plane and 10 cm away from the horizontal plane. Orthographic projection is drawn. What is the distance from point of front view to reference line, top view point to reference line?
a) 15, 10
b) 10, 15
c) 0, 15
d) 10, 0

Answer: b
Explanation: Given object is point the top view gives the distance from vertical plane (15) and front view gives the distance from horizontal plane (10) both are placed overlapped in orthographic projection since the planes need to rotate to draw projection as the object is placed in 4th quadrant.

3. A point is in 4th quadrant, 5 m away from the vertical plane, 1 m away from the horizontal plane and 8 units away from the profile plane. Orthographic projection is drawn. What is the distance from point of front view to point of top view?
a) 6
b) 4
c) 10
d) 2

Answer: b
Explanation: As the point is in 4th quadrant while drawing the projections the planes should rotate along the hinges such that the plane with top view overlaps the front view. So the distance between them is difference of distances from respective planes that is 5 (5-1) here.

4. A point is in 4th quadrant, 15 dm away from the vertical plane, 10 dm away from the horizontal plane and 8 units away from the profile plane. Orthographic projection is drawn. What is the distance from point of front view to point of side view?
a) 25
b) 23
c) 18
d) 5

Answer: b
Explanation: Side view is obtained by turning the profile plane along the hinge with vertical parallel to vertical plane. Side view and front view have the same distance from a reference line. Sum of distances from the point to vertical plane and profile plane gives the following that is 15+8 = 23 dm.

5. A point in 4th quadrant is 30 mm away from both the horizontal plane and vertical plane and orthographic projections are drawn. The distance between the points formed by front view and top view is _____
a) 0
b) 30
c) 15
d) 15+ distance from profile

Answer: a
Explanation: Given the point is in the 4th quadrant. While drawing orthographic projections the front view and top view overlaps and also the distance of point is same from planes of projections so the distance between them is zero.

6. A point in 4th quadrant is 13 inches away from the horizontal plane and 10 inches away from both the vertical plane and profile plane. Orthographic projections are drawn find the distance from side view and front view.
a) 10
b) 13
c) 20
d) 26

Answer: c
Explanation: Given the point is in 4th quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 10 and distance from front view to profile plane is 10. Sum is 10+10= 20 inches.

7. A point in 4th quadrant is 10 units away from both the horizontal plane and profile plane and 15 units away from the vertical plane. Orthographic projections are drawn find the distance from side view and front view.
a) 25
b) 15
c) 30
d) 40

Answer: a
Explanation: Given the point is in the 4th quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 15 and distance from front view to profile plane is 10. Sum is 15+10 =25 units.

8. A point in 4th quadrant is 18 units away from the horizontal plane and vertical plane and 17 units away from both the profile plane. Orthographic projections are drawn find the distance from side view and front view.
a) 1
b) 24
c) 35
d) 36

Answer: c
Explanation: Given the point is in 4th quadrant. The front view and side view lie parallel to the horizontal plane when orthographic projections are drawn. The distance from side view to vertical reference is 12 and distance from front view to profile plane is 13. Sum is 18 + 17 =35 units.

9. A point in 4th quadrant is 8 inches away from the horizontal plane and 20 inches away from both the vertical plane and profile plane. Orthographic projections are drawn find the distance from side view and top view.
a) 41.76
b) 20
c) 43.08
d) 16

Answer: a
Explanation: Given the point is in the 4th quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (20+20); front view and top view (20-8) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(40^2+12^2)} = 41.76$ units.

10. A point in 4th quadrant is 5 m away from both the horizontal plane and profile plane 3 m away from the vertical plane. Orthographic projections are drawn find the distance from side view and top view.
a) 8
b) 8.2
c) 10.19
d) 12.8

Answer: b
Explanation: Given the point is in 4th quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (5+3); front view and top view (5-3) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(8\text{^}2+2\text{^}2)} = 8.2$ m.

11. A point in 4th quadrant is 13 inches away from the horizontal plane and vertical plane 10 inches away from both the profile plane. Orthographic projections are drawn find the distance from side view and top view.
a) 26
b) 25.6
c) 17.69
d) 13

Answer: a
Explanation: Given the point is in 4th quadrant. Since here distance from side view and top view is asked for that we need the distance between the front view and side view (13+10); front view and top view (13-13) and these lines which form perpendicular to each other gives needed distance, answer is $\sqrt{(26^2+0^2)} = 26$ inches.

12. A point in 4th quadrant is 15 cm away from the vertical plane and 10 cm away from the horizontal plane, orthographic projections are drawn. What is the distance from side view of point to line of vertical reference?
a) 10
b) 15
c) 25
d) Can't found

Answer: b
Explanation: Given the point is in 4th quadrant. The distance from the side view of point to line of vertical reference will be the distance from the point to the vertical plane in plane of projection that is as given 15 cm.

13. A point is in 4th quadrant which is 15 inches away from horizontal and 30 inches away from profile plane. Orthographic projections are drawn. What is the distance from the top view to xy reference line?
a) 5
b) 3
c) 8
d) Can't found

Answer: d
Explanation: Given the point is in 4th quadrant. The xy reference line is between the vertical plane and horizontal plane but distance from vertical point is not given in question so we can't found some given information.

14. A point is in 4th quadrant which is 17 dm away from horizontal and 12 dm away from profile plane. Orthographic projections are drawn. What is the distance from the front view to xy reference line?
a) 17
b) 12
c) 5
d) 29

Answer: a
Explanation: Given the point is in 4th quadrant. The distance from front view is given by distance between point and horizontal plane here it is given 17 dm. And distance from vertical reference will be 12 dm.

15. A point is in 4th quadrant which is 18 mm away from vertical and 20 mm away from profile plane. Orthographic projections are drawn. What is the distance from the side view to vertical reference line?
a) 18
b) 2
c) 20
d) Can't found

Answer: a
Explanation: Given the point is in 4th quadrant. The distance from side view is given by distance between point and vertical plane here it is given 18 mm. And distance from front view will be 20 mm.

TOPIC 2.10 PROJECTION OF STRAIGHT LINES PARALLEL TO PLANE

1. If a line AB parallel to both the horizontal plane and vertical plane then the line AB is _____
a) parallel to profile plane
b) lies on profile plane
c) perpendicular to profile plane
d) inclined to profile plane

Answer: c
Explanation: For any line if it is parallel to two perpendicular planes then the line will definitely perpendicular to other plane perpendicular to both the previous planes. And whether the line lies on the plane or not depends on conditions given but we can't just imagine.

2. A line AB of length 20 cm is placed in 1st quadrant and parallel to profile plane and the end A and B are 15, 10 cm away from the horizontal plane respectively. The length of the line in the top view is _____ cm.
a) 11.18
b) 13.2
c) 17.32
d) 19.36

Answer: d
Explanation: The distance between the projectors drawn from A and B to horizontal plane gives the length of line in top view given the line parallel to profile plane. The difference in distances from A and B to horizontal plane is 5 (15-10). Given length is 20 cm so required length is √(⟦20⟧ ^2-5^2)= 19.36 cm.

3. A line of length 15 cm is parallel to horizontal plane and makes an angle of 30 degrees with vertical plane. The length of line in top view is ____ cm.
a) 30
b) 15
c) 12.9
d) 7.5

Answer: b
Explanation: Given the line is parallel to horizontal plane and makes an angle of 30 degrees with vertical plane. The top view gives the actual length of the line because the top view is always the projection of objects on horizontal plane to which the line is parallel.

4. A line AB of length 10 cm is placed in 2nd quadrant parallel to vertical plane and 5 cm away from the vertical plane and ends are 7 cm and 4 cm from horizontal plane. The top view and front view lines apart from each other.
a) True
b) False

Answer: b
Explanation: Accordingly the given distances and length if the projections are drawn the front view and top view intersect with each other as for 2nd quadrant the projections of a front view and top view overlaps.

5. A line of length 16 cm is parallel to horizontal plane and makes an angle of 30 degrees with vertical plane placed in 3rd quadrant. The length of line in front view is ____ cm.
a) 32
b) 16
c) 13.8
d) 8

Answer: c
Explanation: The line given is parallel to horizontal plane and makes an angle of 30 degrees with vertical plane so the length of line front view will be cosine (30)x actual length of line =13.8 cm. There will be no difference the line is in any quadrant.

6. A line AB of length 15 cm is placed in 4th quadrant and parallel to profile plane and the end A and B are 8, 6 cm away from the horizontal plane respectively. The length of the line in front view is _____ cm.
a) 14.8
b) 9
c) 7
d) 2

Answer: d
Explanation: The difference in distances from A and B to horizontal plane is 2 (8-6) cm. And this front view of line in orthographic projection is perpendicular to the reference line as the line in projection planes is parallel to profile plane.

7. A line AB of length 2 m is placed in 2nd quadrant and parallel to vertical plane and the end A and B are 0.5 m and 0.3 m away from the horizontal plane respectively. The length of the line in top view is _____ m.
a) 1.98
b) 1.97
c) 1.936
d) 2

Answer: a
Explanation: The distance between the projectors drawn from A and B to horizontal plane gives the length of line in top view given the line parallel to vertical plane. The difference in distances from A and B to horizontal plane is 0.2 (0.5-0.3). Given length is 2 m so required length is $\sqrt{(2^2-0.2^2)}$= 1.98m.

8. A line of length 30 inches is parallel to profile plane and makes an angle of 60 degrees with vertical plane. The length of line in top view is ____ inches.
a) 30
b) 15
c) 25.9
d) 51.9

Answer: c
Explanation: Given the line is parallel to profile plane and makes 60 degrees with vertical plane. There will be no need for distance from profile plane. The length of line from top view will be sin(60) x length of the line= sin(60) x 30 inches =25.9 inches.

9. A line of length 25 cm is parallel to horizontal plane and makes an angle of 45 degrees with profile plane. The length of line in side view is ____ cm.
a) 25
b) 12.5
c) 88.3
d) 17.67

Answer: d
Explanation: Given the line is parallel to profile plane and makes 45 degrees with profile plane. There will be no need for distance from a profile plane. The length of

line from top view will be sin (45) x length of the line= sin (45) x 25 cm = 17.67 cm

10. The length of line parallel to one of the plane of projection planes will show same length if view of that line is drawn on to the plane.
a) True
b) False

Answer: a
Explanation: The length of line parallel to one of the plane of projection planes will show same length if view of that line is drawn on to the plane because the projections on the plane to that line are parallel to other planes.

11. A line parallel to horizontal plane and at a distance of 10 units to it and both the end of line are 6 units away from the vertical plane. Which of the following statement is false?
a) The line parallel to vertical plane
b) The side view of line gives a point
c) The length of line in front view is 10 units
d) The length of line in top view is 6 units

Answer: d
Explanation: The line which is equidistance from a plane is said to be parallel to it. The line which is parallel to two perpendicular planes will be perpendicular to other perpendicular plane to the earlier planes.

12. A line AB of length 12 inches is perpendicular to profile plane at distance of 6 inches from vertical plane and 3 inches from horizontal plane. The distance from line to xy reference line in top view is _____ inches.
a) 6
b) 3
c) 12
d) 0

Answer: a
Explanation: Given the line perpendicular to profile plane. Top view gives the length of line and distance from the xy reference line which is the perpendicular distance from the line to vertical plane. It is given in question as 6 inches.

13. A line AB of length 3 m is perpendicular to vertical plane at distance of 2 m from profile plane and 0.5 m from horizontal plane. The distance from line to xy reference line in front view is _____ m.
a) 1.5
b) 0.5
c) 2
d) 3

Answer: b
Explanation: Given the line perpendicular to vertical plane. Front view shows as point and distance from the xy reference line and vertical reference line. The distance from horizontal plane is given in question as 0.5 m.

14. A line AB of length 24 cm is parallel to vertical plane and perpendicular to profile plane held at a distance of 5 cm away from horizontal plane and 6 cm away from the vertical plane. The distance from xy reference line to line AB is _____ cm in top view.
a) 6
b) 12
c) 5
d) 7.8

Answer: a
Explanation: Asked for top view, which gives the distance from vertical plane and profile plane because the top view is parallel to horizontal plane. Also given the line is perpendicular to profile plane. the distance from xy reference line to line AB will be 6 cm.

15. A line AB of length 24 cm is parallel to vertical plane and perpendicular to profile plane held at a distance of 5 cm away from horizontal plane and 6 cm away from the vertical plane. The distance from xy reference line to line AB is _____ cm in front view.
a) 6
b) 12

c) 5
d) 7.8

Answer: c
Explanation: Asked for front view, which gives the distance from horizontal plane and profile plane because the front view is parallel to vertical plane. Also given the line is perpendicular to profile plane. the distance from xy reference line to line AB will be 5 cm.

TOPIC 2.11 PROJECTION OF LINE CONTAINED BY PLANE

1. A line AB is on the vertical plane of projection planes, which view from the following gives the actual length of the line AB?
a) Front view
b) Top view
c) Side view
d) Isometric view

Answer: a
Explanation: Any line that lie or parallel to any of plane in projection planes the true length will be found at view which drawn on to that plane that is here the line is in vertical plane so the view which fall on vertical plane gives the true length which is other than front view.

2. A line AB is on the horizontal plane inclined to a vertical plane at 45 degrees, which view from the following gives the actual length of the line AB?
a) Front view
b) Top view
c) Side view
d) Isometric view

Answer: b
Explanation: Any line that lie or parallel to any of plane in projection planes the true length will be found at view which drawn on to that plane that is here the line is in horizontal plane though it is inclined with other planes the true length will be given at view which fall on horizontal plane which is top view.

3. A line AB is on the profile plane inclined such that ends of line are 10, 12 cm away from horizontal plane, which view from the following gives the actual length of the line AB?
a) Front view
b) Top view
c) Side view
d) Isometric view

Answer: c
Explanation: Any line that lie or parallel to any of plane in projection planes the true length will be found at view which drawn on to that plane that is here the line is in profile plane though it's ends are at some distance the true length will be given at view which fall on profile plane which is side view.

4. A line PQ lie in both the vertical plane and profile plane the front and side views of that line coincides at vertical reference line.
a) True
b) False

Answer: a
Explanation: Given a line present in both the planes but it is known that two perpendicular planes meet at a line which is reference line so the given line might present on that line that coincides with that line so the views also get coincide at that line.

5. If a line RS lie on both vertical and horizontal plane then which of the following two views coincides to give a line again?
a) Front, Top
b) Top, Side
c) Side, Isometric
d) Isometric, Front

Answer: a
Explanation: Isometric view is that the three

dimensions of a solid are not only shown in one view. Here given the line is present in vertical and horizontal plane so the line will coincide in the front view and top view.

6. If a line LM lies on profile plane and horizontal plane then which of the following two views coincides to give a line again?
a) Front, Top
b) Top, Side
c) Side, Isometric
d) Isometric, Front

Answer: b
Explanation: Given the line LM is present in both the profile and horizontal planes which are perpendicular so the line will be at reference line formed between them also the line will coincide with the view of top and side.

7. If a line AB lies on horizontal plane and vertical plane then which of the following view gives a point?
a) Side view
b) Top view
c) Front view
d) Isometric view

Answer: a
Explanation: Given the line AB is present in both the vertical and horizontal planes which are perpendicular so the line will be at xy reference line formed between them which is perpendicular to profile plane so the side view gives the point.

8. A line of length 55 mm lies on profile plane whose ends are at a distance of 15 mm and 20 mm to horizontal plane. What is the length in top view?
a) 54.77 mm
b) 5 mm
c) 0 mm
d) 35 mm

Answer: a
Explanation: Given the line is of length 55 mm present on profile plane and ends are at 15 and 20 mm away from horizontal plane. As we imagine the projection planes we can get the top view and distance relation as given here $\sqrt{(55^2-(20-15)^2}$)=54.77 mm.

9. A line of length 35 mm lies on vertical plane whose ends are at a distance of 15 mm and 10 mm to profile plane. What is the length in top view?
a) 0 mm
b) 35 mm
c) 5 mm
d) 34.64 mm

Answer: c
Explanation: Given the line is of length 35 mm present on vertical plane and ends are at 15 and 10 mm away from a profile plane. As we imagine the projection planes we can get the top view and distance relation as given here. 15-10 =5 mm.

10. A line of length 12 cm lies on profile plane whose ends are at a distance of 4 cm and 5 cm to vertical plane. What is the length in top view?
a) 5 cm
b) 12 cm
c) 1 cm
d) 11.9 cm

Answer: c
Explanation: Given the line is of length 12 cm present on profile plane and ends are at 4 cm and 5 cm away from vertical plane. As we imagine the projection planes we can get the top view and distance relation as given here. 5-4 =1 cm.

11. A line of length 10 inches lies on profile plane whose ends are at a distance of 5 inches and 3 inches to vertical plane. What is the length in front view?
a) 9.79
b) 2
c) 10
d) 0

Answer: a
Explanation: Given the line is of length 10 inches present on profile plane and ends are at 5 and 3 inches away from vertical plane. As we imagine the projection planes we can get the front view and distance relation as given here. $\sqrt{(10^2-2^2)} = 9.79$ inches.

12. A line of length 20 cm lies on profile plane whose ends are at a distance of 5 cm and 7 cm to horizontal plane. What is the length in top view?
a) 7
b) 14.8
c) 15
d) 2

Answer: b
Explanation: Given the line is of length 20 cm present on profile plane and ends are at 5 and 7 cm away from horizontal plane at right angles. As we imagine the projection planes we can get the top view and distance relation as given here. $\sqrt{(20^2-(7-5)^2)} = 14.8$ cm.

13. A line of length 15 dm lies on vertical plane whose ends are at a distance of 5 dm and 7 dm to horizontal plane. What is the length in side view?
a) 7
b) 14.8
c) 15
d) 2

Answer: d
Explanation: Given the line is of length 15 dm present on vertical plane and ends are at 5 and 7 dm away from horizontal plane at right angles. As we imagine the projection planes we can get the side view and distance relation as given here. 7-5 =2 dm.

14. A line of length 15 cm is on vertical plane makes an angle of 50 degrees with horizontal plane. What is the length of line in side view?
a) 0 cm
b) 11.49 cm
c) 9.6 cm
d) 15 cm

Answer: b
Explanation: Given the line of 15 cm length is present on the vertical plane and making an angle of 50 degrees with horizontal plane so side view's length will be 15 x sin (50) = 11.49 cm and front view will be 15 x sin (90-50).

15. A line of length 5 m is on horizontal plane makes an angle of 75 degrees with profile plane. What is the length of line in side view?
a) 1.29 m
b) 4.82 m
c) 2.41 m
d) 5 m

Answer: a
Explanation: Given the line of 5 m length is present on the horizontal plane and making an angle of 50 degrees with profile plane so side view's length will be 5 m x cos (75)=1.29 m and in front view, it will be 5 x sin (75).

TOPIC 2.12 PROJECTION OF LINE PERPENDICULAR TO ONE OF THE PLANE

1. A line of length 15 cm touching the vertical plane and perpendicular to it held at a distance of 20 cm away from horizontal plane and 5 cm away from the profile plane. Which of the following is false?
a) Front view will be point
b) The line is parallel to horizontal and profile plane
c) The length of the line in side view is 15 cm
d) One end of line is on the horizontal plane

Answer: d
Explanation: As with knowledge of views we can say the views from different sides and next if a line is perpendicular to one plane of projection planes it will parallel to other planes. Given one end is on vertical plane so

the other end can't be on a perpendicular plane.

2. A line of length 15 cm touching the vertical plane and perpendicular to it at a distance of 20 cm away from horizontal plane and 5 cm away from the profile plane. Which view gives the distance from line to profile plane is 5 cm?
a) Front view
b) Left side view
c) Top view
d) Right side view

Answer: c
Explanation: Given a line of length 15 cm touching the vertical plane and perpendicular to it at a distance of 20 cm away from the horizontal plane and 5 cm away from the profile plane. So the view gives the distance from line to profile plane is 5 cm is top view.

3. A line of length 7 m touching the vertical plane and perpendicular to it at a distance of 2 m away from horizontal plane and 5 m away from the profile plane. Which view gives the distance from line to horizontal plane is 2 m?
a) Front view
b) Left side view
c) Top view
d) Right side view

Answer: b
Explanation: Given a line of length 7 m touching the vertical plane and perpendicular to it at a distance of 2 m away from horizontal plane and 5 m away from the profile plane. So the view gives the distance from line to horizontal plane is 2 m.

4. A line is perpendicular to profile plane, the perpendicular distance from 1st end of the line to vertical plane is 20 cm and perpendicular distance of 2nd end of line to horizontal plane is 10 cm. What is the distance from 1st end of line to vertical plane?
a) 15 cm
b) 20 cm
c) 10 cm
d) Can't say

Answer: b
Explanation: As the projection of planes are mutual perpendicular plane if a line is perpendicular to one of the planes then it would be parallel to rest of the planes that is both ends will be equidistant from plane.

5. A line is perpendicular to horizontal plane, the perpendicular distance from the line to vertical plane is 8 inches and perpendicular distance from the line to profile plane is 5 inches. What is the distance from the line to vertical reference line if it is viewed from front view?
a) 8 inches
b) 5 inches
c) 3 inches
d) 0 inches

Answer: b
Explanation: Given a line is perpendicular to horizontal plane, the perpendicular distance from the line to vertical plane is 8 inches and perpendicular distance from the line to profile plane is 5 inches. So the distance from the line to vertical reference line if it is viewed from front view is 5 inches.

6. A line is perpendicular to profile plane, the perpendicular distance from the line to vertical plane is 10 cm and perpendicular distance from the line to horizontal plane is 5 cm. What is the distance from the line to vertical reference line if it is viewed from a side view?
a) 10 cm
b) 5 cm
c) 7.5 cm
d) 0 cm

Answer: b
Explanation: Given the line is perpendicular to profile plane, the perpendicular distance from the line to vertical plane is 10 cm and

perpendicular distance from the line to horizontal plane is 5 cm. So the distance from the line to vertical reference line if it is viewed from side view will be 5cm.

7. A line of 12 cm length is perpendicular to profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from the vertical plane and 5 cm from the horizontal plane. What is distance from the point on line far away from the profile plane to profile plane?
a) 12 cm
b) 9 cm
c) 18 cm
d) 6 cm

Answer: c
Explanation: Given a line of 12 cm length is perpendicular to profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from vertical plane and 5 cm from the horizontal plane. So the distance from the point on line far away from the profile plane to profile plane is 18 cm.

8. A line can't be perpendicular to two perpendicular planes at the same time.
a) True
b) False

Answer: a
Explanation: Plane is collection of infinite lines the lines present in it will parallel to all the other lines in it. Perpendicular plane is such that the lines present in it will perpendicular to all the lines present in perpendicular plane. So a line perpendicular to one plane will can't be perpendicular to perpendicular plane.

9. A line of 12 cm length is perpendicular to profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from vertical plane and 5 cm from the horizontal plane. What is distance from the line to xy reference line in top view?
a) 6 cm
b) 4 cm
c) 5 cm
d) 0 cm

Answer: b
Explanation: Given a line of 12 cm length is perpendicular to profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from vertical plane and 5 cm from the horizontal plane. So the distance from the line to xy reference line in top view is 4 cm.

10. A line of 12 cm length is perpendicular to profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from vertical plane and 5 cm from the horizontal plane. What is the distance from the line to xy reference line in front view?
a) 0 cm
b) 6 cm
c) 4 cm
d) 5 cm

Answer: d
Explanation: Given a line of 12 cm length is perpendicular to a profile plane and the least distance from this line to profile plane is 6 cm. This is at a distance of 4 cm from vertical plane and 5 cm from the horizontal plane. So the distance from the line to xy reference line in front view is 5 cm.

11. A line is in vertical plane and perpendicular to horizontal plane at a distance of 10 cm from horizontal plane and 5 cm from profile plane. What is the distance from vertical reference line to line?
a) 10 cm
b) 0 cm
c) 5 cm
d) 7.5 cm

Answer: c
Explanation: Given the line is in vertical plane and perpendicular to a horizontal plane

at a distance of 10 cm from horizontal plane and 5 cm from profile plane. So the distance from vertical reference line to line is 5 cm.

12. A line is in vertical plane and perpendicular to horizontal plane at a distance of 10 cm from horizontal and 5 cm from profile plane. What is the distance from xy reference line to line in top view?
a) 10 cm
b) 5 cm
c) 6 cm
d) 0 cm

Answer: d
Explanation: Top view gives the distance from object to xy reference line and object to reference line between the profile plane and horizontal plane. But here the line is placed vertical to horizontal plane so the view will be point and also the line is in vertical plane to distance will be zero.

13. If a line is perpendicular to one of the projection planes and lies on other two planes then the line will lies on reference line accordingly.
a) True
b) False

Answer: a
Explanation: If a line is perpendicular to one of the projection planes and lies on other two planes then the line will lies on reference line accordingly. As any line lies on two planes it will definitely passes through the reference line and so which is perpendicular to other plane.

TOPIC 2.13 PROJECTION OF LINE INCLINED TO ONE PLANE AND PARALLEL TO OTHER

1. A line of length 10 cm parallel to horizontal plane and inclined to vertical plane with an angle of 25 degrees. What is the length in front view?
a) 10 cm
b) 0 cm
c) 9.06 cm
d) 4.22 cm

Answer: c
Explanation: Here accordingly the conditions given that line is parallel to horizontal plane and inclined to vertical plane at 25 degrees the front view's length is the cosine of actual length. 10 cm x cos (25) = 9.06 cm.

2. A line of length 5 inches parallel to horizontal plane and inclined to vertical plane with an angle of 35 degrees. What is the length in side view?
a) 7.28 inches
b) 2.86 inches
c) 4.09 inches
d) 5 inches

Answer: b
Explanation: Here accordingly the conditions given that line is parallel to horizontal plane and inclined to vertical plane at 35 degrees the side view's length is the sine of actual length. 5 inches x sin (35) = 2.86 inches.

3. A line of length 0.3 m parallel to profile plane and inclined to vertical plane with an angle of 25 degrees. What is the length in side view?
a) 0.3 m
b) 0.27 m
c) 0.12 m
d) 0.15 m

Answer: a
Explanation: Here accordingly the conditions given that line is parallel to horizontal plane and inclined to vertical plane the side view's length is the actual length of line but front view or top view give different lengths.

4. A line of length 5 dm is parallel to vertical plane and inclined to horizontal plane with an

angle of 55 degrees. What is the length in top view?
a) 2.86 dm
b) 4.09 dm
c) 5 dm
d) 2.5 dm

Answer: a
Explanation: Here accordingly the conditions given that line is parallel to vertical plane and inclined to horizontal plane at 55 degrees the top view's length is the cosine of actual length. 5 dm x cos (55) = 2.86 dm.

5. A line of length 5 dm is parallel to vertical plane and inclined to horizontal plane with an angle of 65 degrees. What is the length in side view?
a) 2.11 dm
b) 4.53 dm
c) 5 dm
d) 0 dm

Answer: b
Explanation: Here accordingly the conditions given that line is parallel to vertical plane and inclined to horizontal plane at 55 degrees the top view's length is the cosine of actual length. 5 dm x sin (65) = 4.53 dm.

6. A line of length 15 cm is parallel to horizontal plane and 10 cm away from it and making an angle of 45 degrees with profile plane. The distance from line to xy reference line in front view will be _____
a) 15 cm
b) 10 cm
c) 7.07 cm
d) 10.06 cm

Answer: b
Explanation: Given line is of any length but we are asked distance from line to xy reference line in front view which is the distance from the line to horizontal plane even if the line may inclined to other planes.

7. A line of length 15 cm is parallel to horizontal plane and vertical plane and 10 cm away from vertical plane. The distance from line to vertical reference line in side view will be _____
a) 10 cm
b) 15 cm
c) 0 cm
d) 10.06 cm

Answer: a
Explanation: Given line is of any length but given it is parallel to horizontal plane and vertical plane and 10 cm away from the vertical plane so as the side view gives the distance from horizontal plane and vertical plane here the distance is 10 cm.

8. A line of length 12 inches is parallel to vertical plane and 5 inches away from it and ends of it is 3, 4 inches away from the profile plane. The length of line in top view will be _____
a) 1 inch
b) 3 inches
c) 7 inches
d) 5 inches

Answer: a
Explanation: The line which is parallel to vertical has ends which are 3, 4 inches from profile plane and asked for top view so the difference between the distances of ends to profile plane gives the length in top view 4-3=1 inches.

9. A line of length 12 inches is parallel to vertical plane and 5 inches away from it and ends of it is 3, 4 inches away from the profile plane. The length of line in top view will be _____
a) 11.61 inches
b) 11.31 inches
c) 11.95 inches
d) 30.37 inches

Answer: c
Explanation: Given a line of length 12 inches

and parallel to vertical plane and it may be any inches away from it the top view is calculated as given here $\sqrt{(12^2-1^2)}$= 11.95 inches. 1 is because of 4-3 inches = 1 inch.

10. A line of length 12 inches is parallel to vertical plane and 5 inches away from it and making an angle of 5 degrees with profile plane. The distance from line to xy reference line in top view will be _____inches.
a) 5 inches
b) 12 inches
c) 4.9 inches
d) 0.43 inches

Answer: a
Explanation: Given line is of any length but we are asked to find the distance from line to xy reference line in top view which is the distance from the line to vertical plane even if the line may inclined to other planes.

11. A line of length 12 inches is parallel to vertical plane and 5 inches away from it and ends make 6 and 7 inches from profile plane. The length of line in top view will be _____inches.
a) 11.61 inches
b) 11.31 inches
c) 11.95 inches
d) 30.37 inches

Answer: c
Explanation: Given a line of length 12 inches and parallel to vertical plane and it may be any inches away from it the top view is calculated as given here $\sqrt{(12^2-1^2)}$= 11.95 inches. 1 is because of 7-6 inches = 1 inch.

12. A line of length 12 cm is parallel to profile plane and 5 cm away from it and ends make 6 and 7 cm from horizontal plane. The length of line in side view will be _____cm.
a) 5 cm
b) 12 cm
c) 11.95 cm
d) 11.31 cm

Answer: b
Explanation: The front view of line on or parallel to vertical plane gives the actual length. The top view of line on or parallel to horizontal plane gives the actual length. The side view of line on or parallel to the profile plane gives the actual length.

13. A line of length 25 cm is parallel to horizontal plane and 10 cm away from it and ends make 10 and 5 cm from profile plane. The length of line in front view will be _____inches.
a) 10 cm
b) 25 cm
c) 24.49 cm
d) 5 cm

Answer: c
Explanation: Given a line of length 25 cm and parallel to the horizontal plane and it may be any inches away from it the front view is calculated as given here $\sqrt{(25^2-5^2)}$= 24.49 inches. 5 is because of 10-5 inches = 5 cm.

TOPIC 2.14 PROJECTION OF LINE INCLINED TO BOTH THE PLANES

1. A line of length 10 cm at first lied on the horizontal plane parallel to vertical plane and then keeping one of its ends fixed turned 30 degrees with respect to vertical plane and then turned 45 degrees with respect to horizontal plane. What is the length of line in top view?
a) 5 cm
b) 7.07 cm
c) 3.53 cm
d) 10 cm

Answer: b
Explanation: First imagine the line in horizontal plane parallel to vertical plane as here we are asked to find the top view's length even if the line is rotated within the

horizontal plane the line length will not change and then rotated with respect to horizontal plane which is calculated as follows. 10 x cos (45)= 7.07 cm.

2. A line of length 10 cm at first lied on the horizontal plane parallel to vertical plane and then keeping one of its ends fixed turned 30 degrees with respect to vertical plane and then turned 45 degrees with respect to horizontal plane. What is the length of line in front view?
a) 8.66 cm
b) 7.07 cm
c) 3.53 cm
d) 6.12 cm

Answer: a
Explanation: First imagine the line in horizontal plane parallel to vertical plane as here we are asked to find the front view's length even if the line is rotated with respect to horizontal plane the line length will not change and then rotated with respect to the vertical plane which is calculated as follows 10 x cos (30) =8.66 cm.

3. A line of length 15 cm at first lied on the vertical plane parallel to horizontal plane and then keeping one of its ends fixed turned 30 degrees with respect to horizontal plane and then turned 50 degrees with respect to vertical plane. What is the length of the line in top view?
a) 9.6 cm
b) 7.5 cm
c) 12.99 cm
d) 11.49 cm

Answer: c
Explanation: First imagine the line in vertical plane parallel to horizontal plane as here we are asked to find the top view's length so even if the line is rotated with respect to the horizontal plane the line length will not change and then rotated with respect to the vertical plane which is calculated as follows 15 x cos (30) =12.99 cm.

4. A line of length 15 cm at first lied on the vertical plane parallel to horizontal plane and then keeping one of its ends fixed turned 30 degrees with respect to horizontal plane and then turned 50 degrees with respect to vertical plane. What is the length of the line in front view?
a) 9.6 cm
b) 12.99 cm
c) 7.5 cm
d) 11.49 cm

Answer: a
Explanation: First imagine the line in vertical plane parallel to horizontal plane as here we are asked to find the front view's length so even if the line is rotated with respect to the vertical plane the line length will not change and also rotated with respect to the horizontal plane which is calculated as follows 15 x cos (50) = 9.6 cm.

5. A line of length 15 cm at first lied on the profile plane parallel to horizontal plane and then keeping one of its ends fixed turned 30 degrees with respect to horizontal plane and then turned 50 degrees with respect to profile plane. What is the length of the line in top view?
a) 9.6 cm
b) 12.99 cm
c) 7.5 cm
d) 11.49 cm

Answer: b
Explanation: First imagine the line in profile plane parallel to horizontal plane as here we are asked to find the top view's length so even if the line is rotated within the horizontal plane the line length will not change and also rotated with respect to the horizontal plane which is calculated as follows 15 x cos (30) = 12.99 cm.

6. A line of length 15 cm at first lied on the profile plane parallel to horizontal plane and then keeping one of its ends fixed turned 30 degrees with respect to horizontal plane and

then turned 50 degrees with respect to profile plane. What is the length of the line in side view?
a) 9.6 cm
b) 12.99 cm
c) 7.5 cm
d) 11.49 cm

Answer: a
Explanation: First imagine the line in profile plane parallel to horizontal plane as here we are asked to find the side view's length so even if the line is rotated within the profile plane the line length will not change and then rotated with respect to the profile plane which is calculated as follows 15 x cos (50) = 9.6 cm.

7. A line of length 20 cm at first lied on the profile plane parallel to vertical plane and then keeping one of its ends fixed turned 40 degrees with respect to vertical plane and then turned 20 degrees with respect to profile plane. What is the length of the line in top view?
a) 18.79 cm
b) 6.8 cm
c) 12.85 cm
d) 15.32 cm

Answer: c
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the top view's length so even if the line is rotated within the horizontal plane the line length will not change and then rotated with respect to the horizontal plane which is calculated as follows 20 x sin (40) = 12.85 cm.

8. A line of length 20 cm at first lied on the profile plane parallel to the vertical plane and then keeping one of its ends fixed turned 40 degrees with respect to vertical plane and then turned 20 degrees with respect to profile plane. What is the length of the line in side view?
a) 18.79 cm
b) 6.8 cm
c) 12.85 cm
d) 15.32 cm

Answer: a
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the side view's length so even if the line is rotated within the profile plane the line length will not change and also rotated with respect to the profile plane which is calculated as follows 20 x cos (20) = 18.79 cm.

9. A line of length 15 cm at first lied on the vertical plane parallel to horizontal plane and then keeping one of its ends fixed turned 35 degrees with respect to horizontal plane and then turned 40 degrees with respect to vertical plane. What is the length of the line in front view?
a) 9.6 cm
b) 11.4 cm
c) 12.28 cm
d) 8.6 cm

Answer: d
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the side view's length so even if the line is rotated within the vertical plane the line length will not change and also rotated with respect to the vertical plane which is calculated as follows 15 x sin (35) = 8.6 cm.

10. A line of length 15 cm at first lied on the vertical plane parallel to horizontal plane and then keeping one of its ends fixed turned 35 degrees with respect to horizontal plane and then turned 40 degrees with respect to vertical plane. What is the length of the line in top view?
a) 9.6 cm
b) 11.4 cm
c) 12.28 cm
d) 8.6 cm

Answer: b
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the side view's length so even if the line is rotated within the horizontal plane the line length will not change and also rotated with respect to the horizontal plane which is calculated as follows 15 x cos (40) =11.4 cm.

11. A line of length X cm lied on horizontal plane turned 60 degrees with respect to horizontal plane by keeping one of its ends fixed and attained length of Y cm top view. Which of the following statement is true?
a) X =Y
b) X=2 * Y
c) X= ½ * Y
d) X >Y

Answer: c
Explanation: As cos (60) =0.5. The X would equal to ½ *Y. The relation would be like this. X=Y happens if we watch from front view. And X will not be greater than Y as X is made to turn either it would stay same or become less than it.

12. There will be no change in length if the line is viewed parallel to plane on which the line is present and also if the line is rotated with respect to perpendicular planes.
a) True
b) False

Answer: a
Explanation: There will be no change in length if the line is viewed parallel to plane on which the line is present and also if the line is rotated with respect to perpendicular planes. If the line is rotated with respect to the same plane on which it is located then a new measure is formed.

13. A line of length 25 cm at first lied on the profile plane parallel to horizontal plane and then keeping one of its ends fixed turned 55 degrees with respect to horizontal plane and then turned 65 degrees with respect to profile plane. What is the length of the line in top view?
a) 22.65 cm
b) 10.56 cm
c) 14.33 cm
d) 20.47 cm

Answer: c
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the side view's length so even if the line is rotated within the horizontal plane the line length will not change and also rotated with respect to the horizontal plane which is calculated as follows 25 x cos (55)= 14.33 cm.

14. A line of length 25 cm at first lied on the profile plane parallel to horizontal plane and then keeping one of its ends fixed turned 55 degrees with respect to horizontal plane and then turned 65 degrees with respect to profile plane. What is the length of the line in side view?
a) 22.65 cm
b) 10.56 cm
c) 14.33 cm
d) 20.47 cm

Answer: b
Explanation: First imagine the line in profile plane parallel to vertical plane as here we are asked to find the side view's length so even if the line is rotated within the profile plane the line length will not change and also rotated with respect to the profile plane which is calculated as follows 25 x cos(65)= 10.56 cm.

TOPIC 2.15 LINE CONTAINED BY A PLANE PERPENDICULAR TO BOTH THE REFERENCE PLANES

1. Line contained by a plane perpendicular to both the reference planes will lie on the

_____ plane.
a) horizontal plane
b) vertical plane
c) straight plane
d) profile plane

Answer: d
Explanation: In general the horizontal plane and the vertical plane are referred as reference planes. So the plane which is perpendicular to the reference planes is profile plane which is also called as a picture plane.

2. If a line is in profile plane making an angle of 30 degrees with vertical plane. In which angle the line makes with the horizontal plane?
a) Can't say
b) 90 degrees
c) 0 degrees
d) 60 degrees

Answer: d
Explanation: If a line placed within the plane the angles made by the line with other perpendicular planes will be complimentary that means their sum will be equal to 90 degrees.90 degrees- 30 degrees = 60 degrees.

3. The view which gives the actual length of line in profile plane is _____
a) front view
b) top view
c) side view
d) bottom view

Answer: c
Explanation: The view which is watched parallel to the plane gives the actual length of line here as is it profile plane the view will be side view if it comes to vertical plane the view is a front view and if it comes to the horizontal plane the view is top view.

4. The length of line placed in profile plane from front view is product of actual length and ____(angle with horizontal plane).
a) cosine
b) sine
c) tangent
d) secant

Answer: b
Explanation: As the angle is between the line and horizontal plane the height is the length of the line in front view. If angle with vertical is given the length will be product of actual length and cosine of angle between the line and vertical plane.

5. The length of line placed in profile plane and making an angle of 30 degrees with the vertical is 5 cm from front view. What is the actual length?
a) 5 cm
b) 8.66 cm
c) 10 cm
d) 5.77 cm

Answer: d
Explanation: The length of line making an angle with vertical if viewed from front view the length will be the product of length of line cosine of angle given. L * cosine (30) =5 cm, X= 5/ cosine (30)= 5.77 cm.

6. The length of line placed in profile plane and making an angle of 40 degrees with the horizontal is 10cm from top view. What is the actual length?
a) 7.66 cm
b) 6.4 cm
c) 13.05 cm
d) 15.55 cm

Answer: c
Explanation: The length of line making an angle with horizontal if viewed from front view the length will be the product of length of line cosine of angle given. X * cosine (40) =10 cm, L= 10/ cosine (40)= 13.05 cm.

7. The length of line placed in profile plane and making an angle of 55 degrees with the vertical is 2 m from side view. What is the

actual length?
a) 2 m
b) 3.4 m
c) 2.4 m
d) 1.6 m

Answer: a
Explanation: The view given is side view in this view whatever the angle made by line with any of the other planes except the profile plane it gives the actual length. So here the actual length and side view length become equal.

8. The length of line placed in profile plane and making an angle of 155 degrees with the horizontal is 3 cm from top view. What is the actual length?
a) 3.31 cm
b) 7.09 cm
c) 1.26 cm
d) 2.7 cm

Answer: a
Explanation: The line is making 155 degrees is equal to the line making 25 degrees as 180-155 =25. The length of line from top view will be cosine of actual length. L * cosine (25) =3 cm, L= 3/ cosine (25)= 3.31 cm.

9. A line of length 20 cm is placed in profile plane making an angle of 65 degrees with the horizontal. What is the length of line front view?
a) 18.12 cm
b) 8.45 cm
c) 20 cm
d) 22.06 cm

Answer: a
Explanation: The length of line making an angle with horizontal if viewed from front view the length will be the product of length of line sine of angle given. L= length given x sin (65), L=20 cm x sin (65) = 18.12 cm.

10. A line of length 20 cm is placed in profile plane making an angle of 65 degrees with the horizontal. What is the length of line top view?
a) 18.12 cm
b) 8.45 cm
c) 20 cm
d) 22.06 cm

Answer: b
Explanation: The length of line making an angle with horizontal if viewed from top view the length will be the product of length of line cosine of angle given. L= length given x cosine (65), L=20 cm x cosine (65) = 8.45 cm.

11. A line of length 20 cm is placed in profile plane making an angle of 65 degrees with the horizontal. What is the length of line side view?
a) 18.12 cm
b) 8.45 cm
c) 20 cm
d) 22.06 cm

Answer: c
Explanation: The view given is side view in this view whatever the angle made by line with any of the other planes except the profile plane it gives the actual length. So here the actual length and side view length become equal.

12. A line of length 1 m is placed in profile plane making an angle of 180 degrees with the horizontal. What is the length of line top view?
a) 1m
b) 0 m
c) 0.5 m
d) 1.5 m

Answer: a
Explanation: Given the line is making 180 degrees with the horizontal which is half revolution so the length will be constant from top view as in the side view but in front view the length will be zero meter.

TOPIC 2.16 TRUE LENGTH OF A STRAIGHT LINE AND ITS INCLINATIONS WITH THE REFERENCE PLANES

1. A line which is parallel to vertical plane and making an angle of 50 degrees with horizontal has a length of 5 cm from side view. What is its true length?
a) 6.52 cm
b) 7.77 cm
c) 3.2 cm
d) 3.8 cm

Answer: a
Explanation: True length of line parallel to vertical plane and making angle with horizontal plane can be of two values either from top view or side view but from front view the length will be given length. As here it is given side view L= 5/sin (50).

2. A line which is parallel to profile plane and making an angle of 40 degrees with horizontal has a length of 4 cm from top view. What is its true length?
a) 3.06 cm
b) 5.22 cm
c) 6.22 cm
d) 2.57 cm

Answer: b
Explanation: True length of line parallel to profile plane and making angle with horizontal plane can be of two values either from top view or front view but from side view the length will be given length. As here it is given top view L= 4/cos (40).

3. A line which is parallel to vertical plane and making an angle of 20 degrees with profile has a length of 5 cm from top view. What is its true length?
a) 1.71 cm
b) 14.61 cm
c) 5.32 cm
d) 4.69 cm

Answer: b
Explanation: True length of line parallel to vertical plane and making angle with profile plane can be of two values either from top view or side view but from front view the length will be given length. As here it is given top view L= 5/sin (20).

4. A line which is parallel to vertical plane and making an angle of 50 degrees with horizontal plane has a length of 5 cm from side view. What is its true length?
a) 3.2 cm
b) 3.8 cm
c) 7.77 cm
d) 6.52 cm

Answer: c
Explanation: True length of line parallel to vertical plane and making angle with horizontal plane can be of two values either from top view or side view but from front view the length will be given length. As here it is given side view L= 5/cos (50).

5. A line which is parallel to horizontal plane and making an angle of 75 degrees with vertical has a length of 5 cm from top view. What is its true length?
a) 4.82 cm
b) 1.29 cm
c) 19.31 cm
d) 5 cm

Answer: d
Explanation: True length of line parallel to vertical plane and making angle with horizontal can be of two values either from top view or side view but from front view the length will be given length. As here it is given top view the length given is true length.

6. A line which is parallel to vertical plane is made to turn to an angle of 50 degrees with horizontal and then turned to an angle of 40

degrees with vertical plane and now the line has a length of 5 cm from top view. What is its true length?
a) 7.77 cm
b) 6.52 cm
c) 3.8 cm
d) 3.2 cm

Answer: a
Explanation: True length of line parallel to vertical plane and making angle with horizontal can be of two values either from top view or side view but from front view the length will be given length. As here it is given top view L=5/cosine (50).

7. A line which is parallel to horizontal plane is made to turn to an angle of 35 degrees with vertical and then turned to an angle of 45 degrees with horizontal plane and now the line has a length of 8.5cm from top view. What is its true length?
a) 7.37 cm
b) 12.02 cm
c) 10.9 cm
d) 6.01 cm

Answer: b
Explanation: True length of a line parallel to horizontal plane and making angle with respect to horizontal can be of two values either from top view or side view but from front view the length will be given length. As here it is given top view L= 8.5/cos(45).

8. A line which is parallel to horizontal plane is made to turn to an angle of 35 degrees with vertical and then turned to an angle of 45 degrees with horizontal plane and now the line has a length of 9 cm from front view. What is its true length?
a) 7.37 cm
b) 5.16 cm
c) 10.9 cm
d) 15.69 cm

Answer: c
Explanation: True length of a line parallel to horizontal plane and making angle with vertical can be of two values either from front view or side view but from top view the length will be given length. As here it is given front view L = 9/cos(35).

9. A line parallel to profile plane is held at 30 degrees with horizontal plane and front view gives 2 cm of length. What is the true length of line?
a) 1 cm
b) 1.73 cm
c) 2.3 cm
d) 4 cm

Answer: d
Explanation: True length of line parallel to profile plane and making angle with horizontal can be of two values either from top view or front view but from side view the length will be given length. As here it is given front view L= 2/sin (30).

10. A line parallel to vertical plane is held at 35 degrees with horizontal plane and side view gives 3 cm of length. What is the true length of line?
a) 5.2 cm
b) 3.66 cm
c) 2.45 cm
d) 1.72 cm

Answer: a
Explanation: True length of line parallel to vertical plane and making angle with horizontal can be of two values either from top view or side view but from front view the length will be given length. As here it is given side view L= 3/sin (35).

11. A line parallel to profile plane is held at 25 degrees with vertical plane and side view gives 2 cm of length. What is the true length of line?
a) 4.7 cm
b) 2 cm
c) 2.2 cm
d) 0.84 cm

Answer: b
Explanation: True length of line parallel to profile plane and making angle with vertical can be of two values either from top view or front view but from side view the length will be given length. As here it is given side view the length will be true length.

12. A line parallel to profile plane is held at 85 degrees with vertical plane and top view gives 20 cm of length. What is the true length of line?
a) 1.7 cm
b) 229 cm
c) 20.07 cm
d) 19.9 cm

Answer: c
Explanation: True length of line parallel to profile plane and making angle with vertical plane can be of two values either from top view or front view but from side view the length will be given length. As here it is given top view L= 20/cos(5).

13. A line parallel to horizontal plane is held at 65 degrees with profile plane and front view gives 6 cm of length. What is the true length of line?
a) 5.43 cm
b) 14.19 cm
c) 2.5 cm
d) 6.62 cm

Answer: d
Explanation: True length of line parallel to horizontal plane and making angle with profile plane can be of two values either from front view or side view but from top view the length will be given length. As here it is given front view L= 6/sin (65).

TOPIC 2.17 TRACES OF A LINE

1. When a line is inclined to a plane, produced if necessary. The point in which the line meets the plane is called its _____
a) meeting point
b) locus
c) complete end
d) trace

Answer: d
Explanation: When a line is inclined to a plane, it will meet that plane, produced if necessary. The point in which the line or line produced meets the plane is called its trace. Even for planes if extended meet the reference planes at its traces.

2. If a line is parallel to both the horizontal plane and vertical plane. It will have two traces.
a) True
b) False

Answer: b
Explanation: The given statement is false if a line is parallel to both horizontal plane and vertical plane the line will not meet those planes so the line will not have traces on those planes but it will have a trace on profile plane.

3. If a line meets horizontal plane the point of intersection is called _____
a) horizontal trace
b) regular trace
c) parallel trace
d) general trace

Answer: a
Explanation: The point of intersection of a line with horizontal plane is called horizontal trace, usually denoted by H.T. as this the point of intersection of a line with vertical plane is called vertical trace and denoted by V.T.

4. If a line meets vertical plane the point of intersection is called _____
a) vertical trace
b) straight trace
c) perpendicular trace
d) general trace

Answer: a
Explanation: The point of intersection of a line with vertical plane is called vertical trace and denoted by V.T. like this the point of intersection of a line with horizontal plane is called horizontal trace, usually denoted by H.T.

5. A line is perpendicular to horizontal plane. Its horizontal trace coincides with its _____ view.
a) front
b) top
c) side
d) isometric

Answer: b
Explanation: If a line is perpendicular to the horizontal plane then its horizontal trace coincides with its top view which is a point. It has no vertical trace because the line is parallel to vertical plane the line will not touch the vertical plane.

6. A line is perpendicular to vertical plane. Its vertical trace coincides with its _____ view.
a) front
b) top
c) side
d) isometric

Answer: a
Explanation: If a line is perpendicular to the vertical plane then its vertical trace coincides with its front view which is a point. It has no horizontal trace because the line is parallel to horizontal plane the line will not touch the horizontal plane.

7. If a line has one of its ends in the horizontal plane. Its horizontal trace coincides with the _____
a) front
b) top
c) side
d) isometric

Answer: b
Explanation: As the line cuts the horizontal plane the projection of that line on horizontal plane coincides from top view and so the horizontal trace which is the point formed by cutting the line with horizontal plane also coincides with the corresponding projection end.

8. If a line has one of its ends in the vertical plane. Its vertical trace coincides with the _____
a) front
b) top
c) side
d) isometric

Answer: a
Explanation: As the line cuts the vertical plane the projection of that line on vertical plane coincides from front view and so the vertical trace which is the point formed by cutting the line with vertical plane also coincides with the corresponding projection end.

9. If a line parallel to one plane then the line will not have trace on that plane.
a) True
b) False

Answer: a
Explanation: Trace is that the point of intersection of line with any plane then the point of intersection is called the trace of the line with respect to given plane. So a line which is going to intersect will not be parallel to it.

10. A line AB has its one say B end in horizontal plane and vertical plane then horizontal trace and vertical trace will coincide in _____line.
a) xy reference
b) vertical reference
c) above xy reference
d) below xy reference

Answer: a
Explanation: Vertical reference will be line formed by profile plane and vertical plane. And if trace is above or below the xy reference line it would meet vertical or horizontal plane at only once. So if single end is going to meet both planes it would definitely be on xy reference line.

11. A line AB is parallel to vertical plane and inclined to horizontal plane and held 5 cm apart from vertical plane. The expected trace will be placed at _____
a) above 5 cm from xy reference, on vertical plane
b) below 5 cm from xy reference, on horizontal plane
c) on the xy reference
d) above 5 cm from vertical reference, on vertical plane

Answer: b
Explanation: As the given line is parallel to vertical plane the trace will not be on the vertical plane. And also given the line is 5 cm apart from the vertical plane and also the line is parallel to vertical so the trace would lie below 5 cm from xy reference, on horizontal plane.

12. A line AB is placed in such a way that the distance from A and B to vertical plane are 5 and 10 cm and distances from A and B to horizontal plane are 5 and 10 cm each. The traces would present _____
a) one on above and other below reference line
b) below the reference line
c) on xy reference line
d) above the reference line

Answer: c
Explanation: As the corresponding distances from vertical plane and horizontal plane are same we can say the line may act as symmetry for both the vertical and horizontal plane so the traces would fall on xy reference line.

13. A line AB is placed in such a way that the distance from A and B to vertical plane are 5 and 10 cm and distances from A and B to horizontal plane are 4 and 8 cm each. The traces would present _____
a) one on above and other below reference line
b) below the reference line
c) on xy reference line
d) above the reference line

Answer: c
Explanation: As the corresponding distances from vertical plane and horizontal plane are in same ratio we can say the line may act as symmetry for both the vertical and horizontal plane so the traces would fall on xy reference line.

TOPIC 2.18 BASICS OF PLANES

1. Oblique planes come under _____
a) planes perpendicular to both reference planes
b) planes perpendicular to one reference plane and inclined to other reference plane
c) planes inclined to both the reference planes
d) planes parallel to one reference plane and perpendicular to other reference plane

Answer: c
Explanation: Planes may be divided into two main types. i. Perpendicular planes and ii. Oblique planes, planes which are held inclined to both the reference planes are called oblique planes, the rest come under perpendicular planes.

2. The planes which are perpendicular to both the reference plane (horizontal and vertical) are visible clearly only if we watched from _____
a) front view
b) top view
c) side view
d) isometric view

Answer: c
Explanation: As the required plane is perpendicular to both horizontal plane and vertical plane the top view and front view gives a line in projections so only from side which is perpendicular to both the plane as the required plane the object will appear clearly isometric view also will not give vivid picture.

3. A plane is held parallel to horizontal plane in which view we can watch drawing on that plane?
a) Top view
b) Front view
c) Back view
d) Side view

Answer: a
Explanation: If a plane is parallel to one of the reference plane the projection parallel to plane gives the true shape and size as here plane is parallel to horizontal plane the actual shape is watched from a top view.

4. A circle is placed at 20 degrees with vertical the view from top view will be

_____
a) line
b) circle
c) ellipse
d) oval

Answer: c
Explanation: If a circle is parallel to one of the reference plane the projection parallel to plane gives the true shape and size but here plane is inclined so circle transformed to ellipse. If observer also inclined along with plane the circle will remain circle only.

5. A square is held 30 degrees with horizontal plane and turned 30 degrees with respect to vertical plane keeping earlier condition constant. The top view will be

_____
a) line
b) square
c) rectangle
d) parallelogram

Answer: c
Explanation: If a square is parallel to one of the reference plane the projection parallel to plane gives the true shape and size as here plane is inclined so square transformed to rectangle and further it turned parallel to observer so no change in shape and size.

6. A square is held 30 degrees with horizontal plane and turned 30 degrees with respect to vertical plane keeping earlier condition constant. The front view will be

_____
a) line
b) square
c) rectangle
d) parallelogram

Answer: d
Explanation: If a square is parallel to one of the reference plane the projection parallel to plane gives the true shape and size as here plane is inclined so square transformed to rectangle and further it turned inclined in other way which gives parallelogram shape for square.

7. A triangle is placed perpendicular to both the reference planes (horizontal and vertical plane) which of the following statement is true.
a) Front view-line, top view- triangle
b) Front view-triangle, top view- line
c) Front view –line, top view-line
d) Front view-triangle, side view- line

Answer: c
Explanation: The plane which is perpendicular to both the reference planes (horizontal and vertical plane) is called profile plane or picture plane. The planes parallel to these have a top view and front view as straight line.

8. When a plane is perpendicular to both the reference planes, its traces are perpendicular to _____
a) xy reference line
b) lines on horizontal plane
c) lines on vertical plane
d) lines on given plane

Answer: a
Explanation: When a plane is perpendicular to both the reference planes, its traces are perpendicular to xy reference line and intersect at xy reference line even when the planes are inclined with both reference planes the traces intersect at xy line.

9. A plane perpendicular to vertical plane and inclined to horizontal plane then the vertical trace of that plane will be _____
a) parallel to horizontal plane
b) perpendicular to horizontal plane
c) parallel to xy reference line
d) inclined to horizontal plane

Answer: d
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by the angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined, is smaller than the plane itself.

10. A plane parallel to vertical plane then which of the following is false statement.
a) vertical trace will not present
b) horizontal trace is parallel to xy
c) front view give true shape and size
d) top view give true shape and size

Answer: d
Explanation: When a plane is parallel to a reference plane, it has no trace on that plane. Its trace on the other reference plane, to which the earlier reference plane is perpendicular, is parallel to xy reference line.

11. When a plane is perpendicular to a reference plane, its projection on that plane shows its true shape and size.
a) True
b) False

Answer: b
Explanation: When a plane is perpendicular to a reference plane, its projection on that plane is a straight line. When a plane is parallel to a reference plane, its projection on that plane shows its true shape and size.

12. The traces of plane are not intersecting at xy reference line then the plane is _____
a) inclined to H.P and perpendicular to V.P
b) parallel to H.P and perpendicular to V.P
c) perpendicular to both reference planes
d) inclined to V.P and perpendicular to H.P

Answer: b
Explanation: When a plane has two traces, they, produced if necessary, intersect in xy except when both are parallel to xy reference line as in case of some oblique planes. And in those some specific are plane parallel to one reference and perpendicular to other.

TOPIC 2.19 PROJECTION OF PLANES PARALLEL TO ONE OF THE REFERENCE PLANE

1. An equilateral triangle of side 10 cm is held parallel to horizontal plane and base is parallel to xy reference line. The length of line from front view will be _____
a) 8.66 cm
b) 10 cm
c) 0 cm
d) 12.47 cm

Answer: b
Explanation: Just by visualizing we can get picture and then as the base is parallel to xy reference plane the side view and front view will be a line and front view gives line of

length equal to side of triangle given and side view gives the height of triangle.

2. A square of side 10 cm is held parallel to vertical plane and one diagonal is perpendicular to xy reference plane. The length of line in top view will be _____
a) 10 cm
b) 14.14 cm
c) 7.07 cm
d) 0 cm

Answer: b
Explanation: Given the square is parallel to vertical plane ad diagonal is perpendicular to xy reference plane the top view and side gives a line and both of same length which is equal to diagonal length L= 2 x $\sqrt{(5^2+5^2)}$ = 14.14 cm.

3. A hexagon is placed parallel to vertical plane which of the following projection is true?
a) Front view-line, top view- hexagon
b) Front view- hexagon, top view- line
c) Front view –line, top view-line
d) Top view- hexagon, side view- line

Answer: b
Explanation: Given a hexagon parallel to vertical plane so the plane containing hexagon in perpendicular to horizontal plane and profile plane. The top view and side view gives a line and front view gives the true shape and size of hexagon.

4. A pentagon is placed parallel to horizontal plane which of the following projection is true?
a) Front view-line, top view- pentagon
b) Front view- pentagon, top view- line
c) Front view –line, top view-line
d) Top view- line, side view- line

Answer: a
Explanation: Given a pentagon parallel to horizontal plane so the plane containing pentagon in perpendicular to vertical plane and profile plane. The front view and side view gives a line and top view gives the true shape and size of pentagon.

5. A rectangle is placed parallel to profile plane which of the following projection is true?
a) Front view-line, top view- rectangle
b) Front view- rectangle, top view- line
c) Front view –line, top view-line
d) Top view- rectangle, side view- line

Answer: c
Explanation: Given a rectangle parallel to profile plane so the plane containing rectangle in perpendicular to horizontal plane and vertical plane. The top view and front view gives a line and side view gives the true shape and size of hexagon.

6. A circle is placed parallel to vertical plane which of the following projection is false?
a) Front view-circle, top view- line
b) Length in top view and side view will be same
c) Circle is perpendicular to horizontal plane
d) The traces of plane containing this circle intersect at xy reference line

Answer: d
Explanation: Given a circle parallel to vertical plane so the plane containing circle is perpendicular to horizontal plane and profile plane. The top view and side view gives a line and front view gives the true shape and size of circle. The traces will intersect at line formed by intersection of profile plane and horizontal plane.

7. An ellipse is placed parallel to vertical plane which of the following projection is false?
a) Front view-ellipse, top view- line
b) Length in top view and side view will be same
c) Ellipse is perpendicular to horizontal plane
d) The traces of plane containing this circle will not intersect at xy reference line

Answer: b
Explanation: Given an ellipse parallel to vertical plane so the plane containing ellipse is perpendicular to horizontal plane and profile plane. The top view and side view gives a line and front view gives the true shape and size of hexagon. As the object is ellipse which has major and minor axis the views show different lengths.

8. While drawing projections if a triangle is parallel to horizontal plane, top should be drawn first and projections are drawn to it to get front view.
a) True
b) False

Answer: a
Explanation: Given a triangle parallel to horizontal plane so the front view and side view gives a line and top view gives the true shape and size of triangle so top view should be drawn first with specifications given and then projections to further gives the front view.

9. If a plane is parallel to one of the reference plane then the projection onto the other reference planes would be a line.
a) True
b) False

Answer: a
Explanation: If a plane is only parallel to vertical plane then it is perpendicular to horizontal plane and profile plane. The top view and side view gives a line and front view gives the true shape and size of plane.

10. An equilateral triangle of side 10 cm is held parallel to horizontal plane and base is parallel to xy reference line. The length of line from side view will be _____
a) 8.66 cm
b) 10 cm
c) 0 cm
d) 12.47 cm

Answer: a
Explanation: Just by visualizing we can get picture and then as the base is parallel to xy reference plane the side view and front view will be a line and front view gives line of length equal to side of triangle given and side view gives the height of triangle.

11. A square of side 10 cm is held parallel to vertical plane and one diagonal is making 45 degrees with xy reference plane. The length of line in top view will be _____
a) 10 cm
b) 14.14 cm
c) 7.07 cm
d) 0 cm

Answer: a
Explanation: Given the square is parallel to vertical plane ad diagonal is making 45 degrees with xy reference plane the top view and side gives a line and both of same length which is equal to length of side of square because in square angle between the diagonal and side is 45 degrees.

12. The top view, front view and side view of a triangle parallel to vertical plane, circle parallel to profile plane and rectangle parallel to horizontal plane respectively are

_____
a) line, circle, line
b) triangle, line, rectangle
c) triangle, line, line
d) line, line, line

Answer: d
Explanation: If a plane is parallel to vertical plane then the top view and side view gives a line and front view gives the true shape. If a plane is parallel to horizontal plane then the front view and side view gives a line and top view gives the true shape. If a plane is parallel to profile plane then the top view and front view gives a line and side view gives the true shape.

TOPIC 2.20 PROJECTION OF PLANES INCLINED TO ONE OF THE REFERENCE PLANE & PERPENDICULAR TO OTHER

1. When a plane is perpendicular to one plane and inclined to other reference planes then the projections are obtained in 2 stages.
a) True
b) False

Answer: a
Explanation: When a plane is inclined to a reference plane, its projections may be obtained in 2 stages. In the initial stage, the plane is assumed to be parallel to that reference plane to which it has to be made inclined. It is then titled to the required inclination in the second stage.

2. A Square is placed perpendicular to vertical plane and inclined to horizontal which of the following is true?
a) Front view-line, top view- square
b) Front view- line, top view- rectangle
c) Front view –line, top view-line
d) Top view-line, side view- rectangle

Answer: b
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined, is smaller than the plane itself.

3. A circle is placed perpendicular to vertical plane and inclined to horizontal which of the following is true?
a) Front view-line, top view- circle
b) Front view- circle, top view- circle
c) Front view –line, top view-line
d) Top view- ellipse, side view- ellipse

Answer: d
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined, is smaller than the plane itself.

4. A triangle is placed perpendicular to horizontal plane and inclined to vertical which of the following is true?
a) Front view-line, top view- triangle
b) Front view- triangle, top view- line
c) Front view –line, top view-line
d) Top view-line, side view- line

Answer: b
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined, is smaller than the plane itself.

5. A triangle is placed perpendicular to horizontal plane and inclined to vertical which of the following is true. H.T is horizontal trace and V.T is vertical trace?
a) H.T- inclined to xy, V.T- inclined to xy
b) H.T- inclined to xy, V.T- perpendicular to xy
c) H.T-inclined to xy, V.T- parallel to xy
d) H.T-parallel to xy, V.T- perpendicular to xy

Answer: b
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy.

6. A square is placed perpendicular to vertical plane and inclined to horizontal plane which of the following is true. H.T is horizontal trace and V.T is vertical trace?
a) H.T- inclined to xy, V.T- perpendicular to xy
b) H.T- inclined to xy, V.T- perpendicular to

xy
c) H.T- perpendicular to xy, V.T- inclined to xy
d) H.T- parallel to xy, V.T- perpendicular to xy

Answer: b
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy.

7. If a square is placed on its base parallel to horizontal plane, and plane containing square is perpendicular to horizontal plane and inclined to vertical plane then the top view gives a line of length equal to side of square.
a) True
b) False

Answer: a
Explanation: As given conditions are simple there exist no complication and base is parallel to horizontal plane so the views may give line and rectangle but not parallelograms. And line of length equal to side of square.

8. If a plane is perpendicular to vertical and inclined to horizontal plane with 30 degrees then the vertical trace makes _____ degrees with xy reference.
a) 30 degrees
b) 60 degrees
c) 150 degrees
d) 90 degrees

Answer: a
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. And converse for traces.

9. If a plane is perpendicular to vertical and inclined to horizontal plane with 30 degrees then the horizontal trace makes _____ degrees with xy reference.
a) 30 degrees
b) 60 degrees
c) 150 degrees
d) 90 degrees

Answer: d
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. And converse for traces.

10. A plane is perpendicular to vertical plane and vertical trace of a plane is making 55 degrees with the xy plane. Which of the following is false?
a) The plane is inclined 55 degrees with the horizontal plane
b) Front view gives a line
c) Top view gives true shape of plane
d) Horizontal trace is perpendicular to xy plane

Answer: c
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. And converse for traces.

11. A rectangle is placed perpendicular to horizontal plane and inclined to profile plane. The traces would meet at _____
a) xy reference line
b) vertical reference line
c) the line formed by intersection of profile plane and horizontal plane
d) above the line formed by intersection of profile plane and horizontal plane

Answer: c
Explanation: Given a rectangle is perpendicular to horizontal plane and inclined to profile plane so the traces would meet on

the line formed by an intersection of profile plane and horizontal plane or the point of intersection of all planes.

12. A pentagon is placed perpendicular to horizontal plane and inclined to profile plane which of the following is true.
a) Front view-line, top view- pentagon
b) Front view- pentagon, top view- line
c) Front view –line, top view-line
d) Top view-line, side view- line

Answer: b
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined is smaller than the plane itself.

13. A hexagon is placed perpendicular to profile plane and inclined to horizontal plane which of the following is true.
a) Front view-line, top view- hexagon
b) Front view- hexagon, top view- line
c) Front view –line, top view-line
d) Top view-hexagon, side view- line

Answer: d
Explanation: When a plane is perpendicular to one of the reference planes and inclined to the other, its inclination is shown by an angle which its projection on the plane to which it is perpendicular, makes with xy. Its projection on the plane to which it is inclined is smaller than the plane itself.

UNIT III PROJECTION OF SOLIDS

TOPIC 3.1 BASICS OF SOLIDS

1. The minimum number of orthographic view required to represent a solid on flat surface is _____
a) 1
b) 2
c) 3
d) 4

Answer: b
Explanation: A solid has 3 dimensions length, breadth and thickness. A single view represents any of the two dimensions of a solid and other represents, other set of two dimensions, so that we can understand whole geometry.

2. Match the following

Polyhedron	Number of faces
1. Triangular Prism	i. 6
2. Tetrahedron	ii. 5
3. Octahedron	iii. 4
4. Cube	iv. 8

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, iv; 4, i
c) 1, ii; 2, iv; 3, i; 4, iii
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: b
Explanation: A polyhedron is defined as a solid bounded by planes called faces. Prism is a polyhedron having two equal and similar faces (bases or ends), parallel to each other and joined by other faces which are rectangles.

3. Match the following

Prisms	Number of edges
1. Triangular	i. 18
2. Square	ii. 15
3. Pentagon	iii. 9
4. Hexagonal	iv. 12

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iii; 2, ii; 3, iv; 4, i
c) 1, iii; 2, iv; 3, ii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: c
Explanation: Prism is a polyhedron having two equal and similar faces (bases or ends), parallel to each other and joined by other faces which are rectangles. So there exist 3 x number of sides of base of edges in prism.

4. The number of corners that exist in pyramids is 1+ number of sides of base.
a) True
b) False

Answer: a
Explanation: A pyramid is a polyhedron having a plane figure as a base and a number of triangular faces meeting at a point called vertex or apex. The imaginary line joining the apex with the center of the base is its axis.

5. Match the following

Prisms		Number of vertices
1. Triangular	i.	12
2. Square	ii.	10
3. Pentagon	iii.	6
4. Hexagonal	iv.	8

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iii; 2, ii; 3, iv; 4, i
c) 1, iii; 2, iv; 3, ii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: c
Explanation: Prism is a polyhedron which has two equal faces (bases or ends), parallel to each other and joined by other faces which are rectangles. So there exist 2 x number of sides of base of vertices in prism.

6. Solid of revolution gets same shapes in at least two in three orthographic views.
a) True
b) False

Answer: a
Explanation: Solids of revolutions are formed by revolving particular shaped plane surface about particular axis or about one of sides of plane surface so generally because of this any two orthographic views look similar.

7. If a right angled triangle is made to revolute about one of its perpendicular sides the solid formed is _____
a) cube
b) triangular prism
c) cone
d) cylinder

Answer: c
Explanation: A right circular cone is a solid generated by the revolution of a right angled triangle about one of its perpendicular sides which is fixed. It has one circular base and one vertex. Its axis joins the vertex to center of circle (base) to which it is perpendicular.

8. Match the following

Polyhedron		Number of faces
1. Triangular Prism	i.	8
2. Tetrahedron	ii.	9
3. Octahedron	iii.	6
4. Cube	iv.	12

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, iv; 4, i
c) 1, ii; 2, iv; 3, i; 4, iii
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: b
Explanation: A polyhedron is defined as a solid bounded by planes called faces. Prism is a polyhedron having two equal and similar faces (bases or ends), parallel to each other and joined by other faces which are rectangles.

9. Match the following

Prisms	Number of vertices
1. Triangular	i. 7
2. Square	ii. 6
3. Pentagon	iii. 5
4. Hexagonal	iv. 4

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iii; 2, ii; 3, iv; 4, i
c) 1, iii; 2, iv; 3, ii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: d
Explanation: A pyramid is a polyhedron having a plane figure as a base and a number of triangular faces meeting at a point called vertex or apex. So there exists 1+ number of sides of base of vertices in pyramid. In pyramid the number of vertices is equal to number of faces.

10. Match the following

Prisms	Number of vertices
1. Triangular	i. 12
2. Square	ii. 8
3. Pentagon	iii. 6
4. Hexagonal	iv. 10

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iii; 2, ii; 3, iv; 4, i
c) 1, iii; 2, iv; 3, ii; 4, i
d) 1, iv; 2, iii; 3, ii; 4, i

Answer: b
Explanation: A pyramid is a polyhedron having a plane figure as a base and a number of triangular faces meeting at a point called vertex or apex. The imaginary lie joining the apex with the center of the base is its axis. So there exists 2 x number of sides of base of edges in a pyramid.

11. When a pyramid or a cone is cut by a plane parallel to its base, thus removing the top portion, the remaining portion is called _____
a) cylinder
b) frustum
c) prism
d) polyhedron

Answer: b
Explanation: When a pyramid or a cone is cut by a plane parallel to its base, thus removing the top portion, the remaining portion is called its frustum. When a solid is cut by a plane inclined to the base it is said to be truncated.

12. Straight lines drawn from the apex to the circumference of the base-circle are all equal and are called _____
a) edges
b) connecting lines
c) projectors
d) generators

Answer: d
Explanation: In a cone, the straight lines drawn from the apex to the circumference of the base-circle are all equal and are called generators of the cone. The length of the generator is the slant height of the cone.

13. The solid formed by 12 equal and regular pentagons as faces is called _____
a) plantonic solid
b) dodacahedron
c) Icosahedron
d) pyritohedron

Answer: b
Explanation: Plantonic solid is a regular convex polyhedron. Dodecahedron is one of the plantonic solid. Icosahedron is a solid which has twenty equal sized equilateral triangles as faces. Pyritohedron is the irregular dodecahedron.

TOPIC 3.2 PROJECTION OF SOLIDS IN SIMPLE POSITION

1. If a solid is positioned that its axis is perpendicular to one of the reference plane. Which of the following is false?
a) Axis is parallel to other reference plane
b) Base is parallel to reference plane
c) Projection on that plane gives true shape of its base
d) Base is perpendicular to horizontal plane

Answer: d
Explanation: If solid's axis is perpendicular to H.P the base is parallel to H.P and projection on to the H.P gives the true shape of base and similar to V.P and P.P. But here in question it is not specified that given solid's axis is perpendicular to V.P.

2. If a solid's axis is perpendicular to one of the reference planes then the projection of solid on to the same plane gives the true shape and size of its _____
a) lateral geometry
b) base
c) cross-section
d) surface

Answer: b
Explanation: As in the planes, if the plane is parallel to one of the reference plane then projection of plane on to the same plane gives the true shape and size of the plane likewise the solid's base is parallel to reference plane the projection gives the true shape of the base.

3. When the axis of solid is perpendicular to H.P, the _____view should be drawn first and ____ view then projected from it.
a) front , top
b) top, side
c) side, front
d) top, front

Answer: d
Explanation: When the axis of solid is perpendicular to H.P it is indirectly saying that the base is parallel to the horizontal plane so the projection on to it gives true shape of the base and then we can project and find the other dimensions.

4. When the axis of solid is perpendicular to V.P, the _____view should be drawn first and ____ view then projected from it.
a) front , top
b) top, side
c) side, front
d) top, front

Answer: a
Explanation: When the axis of solid is perpendicular to V.P it is indirectly saying that the base is parallel to the vertical plane so the projection on to it gives true shape of base and then we can project and find the other dimensions.

5. When the axis of solid is parallel to H.P &V.P, then _____view should be drawn first and ____ and _____view then projected from it.
a) front , top, side
b) top, side, front
c) side, front, top
d) top, front, side

Answer: c
Explanation: When the axis of solid is parallel to H.P, V.P then it is indirectly saying that it is perpendicular to picture plane so base is parallel to the profile plane so the projection on to it gives true shape of base and then we can projections of front and top can be drawn.

6. The front view, side view and top view of a regular square pyramid standing on horizontal plane base on horizontal plane.
a) triangle, triangle and square
b) square, triangle and triangle
c) square, triangle and square
d) triangle, square and triangle

Answer: a
Explanation: Given a square pyramid made to stand on horizontal plane on its base, in

which position the pyramid may place like this the front view and side gives triangle in particular isosceles triangle as pyramid given is regular one and top view gives square.

7. The front view, side view and top view of a cylinder standing on horizontal plane base on horizontal plane.
a) circle, rectangle and rectangle
b) rectangle, rectangle and circle
c) rectangle, circle and rectangle
d) circle, triangle and triangle

Answer: b
Explanation: Given a cylinder made to stand on horizontal plane on its base, in which position the pyramid may place like this the front view and side gives rectangle and top view gives circle as the projection of top view is projection of base.

8. The side view, top view and front view of a regular hexagonal pyramid placed base parallel to profile plane.
a) Triangle, triangle and hexagon
b) hexagon, triangle and triangle
c) hexagon, triangle and hexagon
d) triangle, hexagon and triangle

Answer: b
Explanation: Given a regular hexagonal pyramid made to place on profile plane on its base, in which position the pyramid may place like this the top view and front gives triangle in particular isosceles triangle as pyramid given is regular one and side view gives hexagon.

9. The side view, top view and front view of a regular cone placed base parallel to profile plane.
a) Triangle, triangle and circle
b) circle, triangle and triangle
c) rectangle, triangle and circle
d) triangle, circle and triangle

Answer: b
Explanation: Given a regular cone made to place parallel to profile plane on its base, in which position the cone may place like this the front view and top gives triangle in particular isosceles triangle as cone given is regular one and side view gives square.

10. The side view, top view and front view of a regular pentagonal prism placed axis perpendicular to vertical plane.
a) rectangle, rectangle and pentagon
b) pentagon, rectangle and rectangle
c) pentagon, rectangle and pentagon
d) rectangle, pentagon and rectangle

Answer: a
Explanation: Given a regular pentagonal prism made to place its axis perpendicular to vertical plane so its base is parallel to vertical plane, in which position the pyramid may place like this the top view and side gives rectangle and front view gives square.

11. Square pyramid, cylinder, triangular prism, cone are placed one next to other in between the reference planes in different positions given below match the following.

Position of solids	Front View
1. Square pyramid- axis perpendicular to V.P	i. Rectangle
2. Cylinder- base parallel to profile plane	ii. Circle
3. Triangular prism – axis perpendicular to H.P	iii. Square
4. Cone- base parallel to V.P	iv. Triangle

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iv; 2, iii; 3, ii; 4, i
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iii; 2, i; 3, iv; 4, ii

Answer: d
Explanation: If base of solid is parallel to one of the reference planes then its axis perpendicular to that plane and vice versa. Cone is formed by revolving triangle about

one of its perpendicular side of a triangle. Cylinder is formed by revolving rectangle about one of its sides.

12. Pentagonal pyramid, tetrahedron, cuboid and cone are placed one next to other in between the reference planes in different positions given below match the following.

	Position of solids		Front View
1.	Pentagonal pyramid- axis perpendicular to H.P	i.	Smallest base
2.	Tetrahedron- base parallel to vertical plane	ii.	Pentagon
3.	Cuboid – smallest side parallel to H.P	iii.	Triangle
4.	Cone- base parallel to P.P (profile plane)	iv.	Pentagon

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, iv; 2, iii; 3, i; 4, ii
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iii; 2, i; 3, iv; 4, ii

Answer: b
Explanation: If base of solid is parallel to one of the reference planes then its axis perpendicular to that plane and vise versa. Profile plane is perpendicular to both horizontal and vertical plane. Tetrahedron is solid formed by 4 equal triangular planes.

13. Square prism, hexagonal pyramid, cube, sphere are placed one next to other in between the reference planes in different positions given below match the following.

	Position of solids		Front View
1.	Square prism- axis perpendicular to V.P	i.	Circle
2.	Hexagonal pyramid- base parallel to H.P	ii.	Rectangle
3.	Triangular prism – axis perpendicular to P.P	iii.	Triangle
4.	Sphere	iv.	Triangle

a) 1, i; 2, ii; 3, iii; 4, iv
b) 1, ii; 2, iii; 3, ii; 4, i
c) 1, ii; 2, iv; 3, iii; 4, i
d) 1, iii; 2, i; 3, iv; 4, ii

Answer: c
Explanation: If base of solid is parallel to one of the reference planes then its axis perpendicular to that plane and vise versa. Sphere gives all view as circle. Square prism is similar to cuboid. Prism is a polyhedron having two equal and similar faces called its bases.

TOPIC 3.3 PROJECTIONS OF SOLIDS WITH AXIS INCLINED TO VERTICAL PLANE AND PARALLEL TO HORIZONTAL PLANE

1. When a solid is placed such that axis is inclined with the V.P and parallel to the H.P. Its projections are drawn in _____ stages.
a) 1
b) 4
c) 2
d) 3

Answer: c
Explanation: In the initial stage, the axis is kept perpendicular to the V.P and parallel to H.P and projections are drawn and then turning the axis to given angle of rotation with V.P and then again projections are based on previous vertices and edges.

2. A hexagonal pyramid first placed in such a way its axis is perpendicular to H.P and one edge AB parallel to V.P and then next this is turned about its axis so the base AB is now making some angle with V.P. The top view for previous and later one will be having the same shape.

a) True
b) False

Answer: a
Explanation: For given positions of solid the solid is just rotated around itself and given the axis is perpendicular to H.P so the top view gives the true shape and size of its base but the base is just rotated to its given angle shape will not change.

3. A regular cone first placed in such a way its axis is perpendicular to V.P and next this is tilted such that its base is making some acute angle with V.P. The top view for previous and later one will be.
a) Triangle, triangle
b) irregular shape of circle and triangle, triangle
c) triangle, irregular shape of circle and triangle
d) circle, triangle

Answer: a
Explanation: For given positions of solid the solid is just tilted to some angle with V.P and previously given the axis is perpendicular to V.P so the top view gives the triangle and next with some given angle shape will not change.

4. A regular cone first placed in such a way its axis is perpendicular to V.P and next this is tilted such that its base is making some acute angle with V.P. The front view for previous and later one will be having same shape.
a) True
b) False

Answer: b
Explanation: For given positions of solid the solid is just tilted to some angle with V.P and previously given the axis is perpendicular to V.P so the front view gives the circle and next with some given angle shape will change to some irregular shape of circle and triangle.

5. A regular pentagon prism first placed in such a way its axis is perpendicular to V.P and one edge is parallel to H.P and next this is tilted such that its axis is making some acute angle with V.P. The front view for previous and later one will be

_____
a) pentagon, pentagon
b) rectangle, pentagon
c) pentagon, irregular hexagon
d) irregular hexagon, pentagon

Answer: c
Explanation: For given positions of solid the solid is made acute angle with V.P and previously given the axis is perpendicular to V.P so the front view gives the pentagon and next with some given angle shape will change to irregular hexagon.

6. A cylinder first placed in such a way its axis is perpendicular to V.P and next this is tilted such that its axis is making some acute angle with V.P. The front view for previous and later one will be _____
a) circle, rectangle with circular ends
b) rectangle, rectangle
c) rectangle with circular ends, rectangle
d) circle, rectangle

Answer: a
Explanation: For given positions of solid the solid is made acute angle with V.P and previously given the axis is perpendicular to V.P so the front view gives the circle and next with some given angle shape will change to rectangle with circular ends.

7. A cylinder first placed in such a way its axis is perpendicular to V.P and next this is tilted such that its axis is making some acute angle with V.P. The top view for previous and later one will be _____
a) circle, rectangle with circular ends
b) rectangle, rectangle
c) rectangle with circular ends, rectangle
d) circle, rectangle

Answer: b
Explanation: For given positions of solid the solid is made acute angle with V.P and previously given the axis is perpendicular to V.P so the top view gives the rectangle and next with some given angle shape will not change but just tilt to given angle.

8. A triangular pyramid is placed such that its axis is perpendicular to V.P and one of its base's edges is parallel to H.P the front view and top view will be _____
a) Triangle of base, triangle due to slanting side
b) Triangle due to slanting side, triangle of base
c) Triangle of base, rhombus
d) Rhombus, triangle of base

Answer: a
Explanation: Given a triangular pyramid which means the projection to its base gives triangle shape and other orthographic views give triangle. Here given is pyramid whose axis is perpendicular to V.P so its front view will be triangle of its base and top view will be another different triangle.

9. A square pyramid is placed such that its axis is inclined to V.P and one of its base's edges is parallel to H.P the front view and top view will be _____
a) Square, Isosceles triangle
b) Irregular pentagon, square
c) Irregular pentagon, isosceles triangle
d) Pentagon, equilateral triangle

Answer: c
Explanation: Given a square pyramid which means the projection to its base gives square shape and other orthographic views give triangle. Here given is pyramid whose axis is inclined to V.P so its front view will be irregular pentagon and top view will be isosceles triangle.

10. A square prism is placed such that its axis is inclined to V.P and one of its base's edges is parallel to H.P the front view and top view will be _____
a) Square, irregular polygon
b) Irregular polygon, rectangle
c) Rectangle, irregular polygon
d) Pentagon, square

Answer: b
Explanation: Given a square prism which means the projection to its base gives square shape and other orthographic views give rectangle. Here given is prism whose axis is inclined to V.P so its top view will be rectangle and front view will be irregular polygon.

11. A regular cone having its axis parallel to H.P and perpendicular to V.P at first but then the cone's axis keeping parallel to H.P and rotated such that its new axis is perpendicular to the previous axis. The front view of the previous and later one is _____
a) Circle, triangle
b) Circle, triangle with circular base
c) Triangle, triangle
d) Circle, circle

Answer: a
Explanation: Given a regular cone which means the projection to its base gives circle shape and other orthographic views give triangle. But here given is inclination it may give irregular shape in its front view if the angle is acute angle but here given is 90 degrees so we get triangle.

12. A regular cone having its axis parallel to H.P and perpendicular to V.P at first but then the cone's axis keeping parallel to H.P and rotated such that its new axis is perpendicular to previous axis. The top view of the previous and later one is _____
a) Circle, triangle
b) Circle, triangle with circular base
c) Triangle, triangle
d) Circle, circle

Answer: c
Explanation: Given a regular cone which means the projection to its base gives circle shape and other orthographic views give triangle. But here given is inclination it may change shape in its front view but in top view it just totally rotated as per given angle.

13. A tetrahedron is made to place on V.P that is with its axis perpendicular to it and one of the edges of base parallel to H.P and then the tetrahedron is made to rotate w.r.t to V.P up to an acute angle. The top view of previous and later one is _____
a) isosceles triangle, isosceles triangle
b) equilateral triangle, isosceles triangle
c) equilateral triangle, square
d) square, irregular polygon of 4 sides

Answer: a
Explanation: As normal a tetrahedron gives equilateral triangle for a project to its base and isosceles triangle for other view when placed without inclination but here inclination is given but given view is top view so the shape will not change but rotate to given angle.

TOPIC 3.4 PROJECTION OF SOLIDS WITH AXIS INCLINED TO HORIZONTAL PLANE AND PARALLEL TO VERTICAL PLANE

1. When a solid is placed such that axis is inclined with the H.P and parallel to the V.P. Its projections are drawn in _____ stages.
a) 1
b) 4
c) 2
d) 3

Answer: c
Explanation: In the initial stage, the axis is kept perpendicular to the H.P and parallel to V.P and projections are drawn and then turning the axis to given angle of rotation with H.P and then again projections are based on previous vertices and edges.

2. A hexagonal pyramid first placed in such a way its axis is perpendicular to V.P and one edge AB parallel to H.P and then next this is turned about its axis so the base AB is now making some angle with H.P. The top view for previous and later one will be having different shapes.
a) True
b) False

Answer: b
Explanation: For given positions of solid the solid is just rotated around itself and given the axis is perpendicular to V.P so the top view gives the true shape and size of its base but the base is just rotated to its given angle shape will not change.

3. A regular cone first placed in such a way its axis is perpendicular to H.P and next to this is tilted such that its base is making some acute angle with H.P. The top view for previous and later one will be _____
a) triangle, triangle
b) irregular shape of circle and triangle, triangle
c) circle, irregular shape of circle and triangle
d) circle, triangle

Answer: c
Explanation: For given positions of solid the solid is just tilted to some angle with H.P and previously given the axis is perpendicular to H.P so the top view gives the triangle and next with some given angle shape will change to irregular shape of circle and triangle.

4. A regular cone first placed in such a way its axis is perpendicular to H.P and next this is tilted such that its base is making some acute angle with H.P. The front view for previous and later one will be having same shape.

a) True
b) False

Answer: a
Explanation: For given positions of solid the solid is just tilted to some angle with H.P and previously given the axis is perpendicular to H.P so the front view gives the triangle and next with some given angle shape will not change but just rotate.

5. A regular pentagon prism first placed in such a way its axis is perpendicular to H.P and one edge is parallel to V.P and next this is tilted such that its axis is making some acute angle with H.P. The front view for previous and later one will be _____
a) pentagon, rectangle
b) rectangle, pentagon
c) rectangle, rectangle
d) irregular hexagon, pentagon

Answer: c
Explanation: For given positions of solid the solid is made acute angle with H.P and previously given the axis is perpendicular to H.P so the front view gives the rectangle and next with some given angle shape will rotate totally.

6. A cylinder first placed in such a way its axis is perpendicular to H.P and next this is tilted such that its axis is making some acute angle with H.P. The top view for previous and later one will be _____
a) circle, rectangle with circular ends
b) rectangle, rectangle
c) rectangle with circular ends, rectangle
d) circle, rectangle

Answer: a
Explanation: For given positions of solid the solid is made acute angle with H.P and previously given the axis is perpendicular to H.P so the front view gives the circle and next with some given angle shape will change to rectangle with circular ends.

7. A cylinder first placed in such a way its axis is perpendicular to H.P and next this is tilted such that its axis is making some acute angle with H.P. The front view for previous and later one will be _____
a) circle, rectangle with circular ends
b) rectangle, rectangle
c) rectangle with circular ends, rectangle
d) circle, rectangle

Answer: b
Explanation: For given positions of solid the solid is made acute angle with V.P and previously given the axis is perpendicular to V.P so the top view gives the rectangle and next with some given angle shape will not change but just tilt to given angle.

8. A triangular pyramid is placed such that its axis is perpendicular to H.P and one of its base's edges is parallel to H.P the front view and top view will be _____
a) Triangle of base, triangle due to slanting side
b) Triangle due to slanting side, triangle of base
c) Triangle of base, rhombus
d) Rhombus, triangle of base

Answer: b
Explanation: Given a triangular pyramid which means the projection to its base gives triangle of base and other orthographic views give triangle due to slanting sides. Here given is pyramid whose axis is perpendicular to H.P so its front view will be triangle due to sides and top view will be triangle of base.

9. A square pyramid is placed such that its axis is inclined to H.P and one of its base's edges is parallel to V.P the front view and top view will be _____
a) Square, Isosceles triangle
b) Irregular pentagon, square
c) Isosceles triangle, irregular pentagon
d) Pentagon, equilateral triangle

Answer: c
Explanation: Given a square pyramid which means the projection to its base gives square shape and other orthographic views give triangle. Here given is pyramid whose axis is inclined to H.P so its front view will be isosceles triangle and top view will be square.

10. A square prism is placed such that its axis is inclined to H.P and one of its base's edges is parallel to V.P the front view and top view will be _____
a) square, irregular polygon
b) irregular polygon, square
c) square, rectangle
d) rectangle, irregular polygon

Answer: d
Explanation: Given a square prism which means the projection to its base gives square shape and other orthographic views give rectangle. Here given is prism whose axis is inclined to H.P so its front view will be rectangle and top view will be irregular polygon.

11. A regular cone having its axis parallel to V.P and perpendicular to H.P at first but then the cone's axis keeping parallel to V.P and rotated such that its new axis is perpendicular to previous axis. The front view of the previous and later one is _____
a) circle, triangle
b) circle, triangle with circular base
c) triangle, triangle
d) circle, circle

Answer: c
Explanation: Given a regular cone which means the projection to its base gives circle shape and other orthographic views give triangle. But here given is inclination it may give irregular shape in its top view if the angle give is acute but given angle is 90 degrees so it gives perfect shapes.

12. A regular cone having its axis parallel to V.P and perpendicular to H.P at first but then the cone's axis keeping parallel to V.P and rotated such that its new axis is perpendicular to previous axis. The top view of the previous and later one is _____
a) circle, triangle
b) circle, triangle with circular base
c) triangle, triangle
d) circle, circle

Answer: a
Explanation: Given a regular cone which means the projection to its base gives circle shape and other orthographic views give triangle. But here given is inclination of 90 degrees so previous ones will be circle and later one will be triangle.

13. A tetrahedron is made to place on H.P that is with its axis perpendicular to it and one of the edges of base parallel to V.P and then the tetrahedron is made to rotate w.r.t to H.P up to an acute angle. The top view of previous and later one is _____
a) isosceles triangle, Isosceles triangle
b) equilateral triangle, isosceles triangle
c) equilateral triangle, square
d) square, irregular polygon of 4 sides

Answer: b
Explanation: As normal a tetrahedron gives equilateral triangle for a project to its base and isosceles triangle for other view when placed without inclination but here inclination is given but given view is top view so the shape will change to isosceles triangle.

TOPIC 3.5 PROJECTION OF SOLIDS WITH AXES INCLINED TO BOTH HORIZONTAL AND VERTICAL PLANE

1. When a solid is placed such that axis is inclined with both the H.P and V.P. Its projections are drawn in _____ stages.
a) 1
b) 4

c) 2
d) 3

Answer: d
Explanation: The stages are i) keeping in simple position, ii) Axis inclined to one plane and parallel to the other, iii) Final position. The 2nd and 3rd positions may be obtained either by the alteration of the positions of the solid i.e. view or reference lines.

2. The front views of 1st, 2nd and final stages of square prism, has its axis inclined at 45 degrees with H.P and has an edge of its base on H.P and inclined 30 degrees with V.P while drawing orthographic projections are

_____
a) Rectangle, rectangle, hexagon
b) Square, rectangle, rectangle
c) Rectangle, rectangle, octagon
d) Square, rectangle, hexagon

Answer: a
Explanation: As the 1st stage is to keep the solid in simple position and given is front view it is rectangle and then rotated to an angle of 45 degrees with H.P which again gives rectangle and then rotating 30 degrees with V.P which gives an irregular hexagon.

3. The top views of 1st, 2nd and final stages of square prism, has its axis inclined at 45 degrees with H.P and has an edge of its base on H.P and inclined 30 degrees with V.P while drawing orthographic projections are

_____
a) Rectangle, rectangle, hexagon
b) Square, rectangle, rectangle
c) Rectangle, rectangle, octagon
d) Square, rectangle, hexagon

Answer: b
Explanation: As the 1st stage is to keep the solid in simple position and given is top view it is square and then rotated to an angle of 45 degrees with H.P which gives rectangle and then rotating 30 degrees with V.P which gives again rectangle.

4. The top views of 1st, 2nd and final stages of regular cone, has its axis inclined at 30 degrees with H.P and 45 degrees with V.P while drawing orthographic projections are

_____
a) Circle, triangle, triangle
b) Circle, triangle with base as ellipse, triangle with base as ellipse
c) Triangle, triangle, triangle with base as ellipse
d) Triangle, triangle, triangle

Answer: b
Explanation: As the 1st stage is to keep the solid in simple position and given is top view it is circle and then rotated to an angle of 30 degrees with H.P which gives triangle with base as ellipse and then rotating 45 degrees with V.P which gives again triangle with base as ellipse.

5. The front views of 1st, 2nd and final stages of regular cone, has its axis inclined at 30 degrees with H.P and 45 degrees with V.P while drawing orthographic projections are

_____
a) Circle, triangle, triangle
b) Circle, triangle with base as ellipse, triangle with base as ellipse
c) Triangle, triangle, triangle with base as ellipse
d) Triangle, triangle, triangle

Answer: c
Explanation: As the 1st stage is to keep the solid in simple position and given is front view it is triangle and then rotated to an angle of 30 degrees with H.P which again gives triangle and then rotating 45 degrees with V.P which gives triangle with base as ellipse.

6. The front views of 1st, 2nd and final stages of a pentagonal pyramid, has one of its triangular faces in the V.P and edge of the

base contained by that face makes an angle of 30 degrees with the H.P while drawing orthographic projections are _____
a) Pentagon, irregular pentagon, irregular pentagon
b) Triangle, irregular pentagon, irregular pentagon
c) Triangle, triangle, irregular pentagon
d) Pentagon, triangle, irregular pentagon

Answer: a

Explanation: As the 1st stage is to keep the solid in simple position for given conditions the solid's base should be placed on V.P so front view gives pentagon and then rotated so as to one of the face touch the V.P now the view will become irregular pentagon and then adjust so that edge of base on V.P makes 30 degrees with H.P so it show irregular pentagon from front view.

7. The top views of 1st, 2nd and final stages of a pentagonal pyramid, has one of its triangular faces in the V.P and edge of the base contained by that face makes an angle of 30 degrees with the H.P while drawing orthographic projections are _____
a) Pentagon, irregular pentagon, irregular pentagon
b) Triangle, irregular pentagon, irregular pentagon
c) Triangle, triangle, irregular pentagon
d) Pentagon, triangle, irregular pentagon

Answer: c

Explanation: As the 1st stage is to keep the solid in simple position for given conditions the solid's base should be placed on V.P so top view gives triangle and then rotated so as to one of the face touch the V.P now the view will remain triangle and then adjust so that edge of base on V.P makes 30 degrees with H.P so it show irregular pentagon from top.

8. A cube is resting on H.P on one of its corners with a solid diagonal perpendicular to the V.P. What are the front views of 1st, 2nd, 3rd stages while drawing orthographic projections?
a) Rectangle, rectangle, regular hexagon
b) Square, irregular hexagon, irregular hexagon
c) Rectangle, rectangle, irregular hexagon
d) Square, regular hexagon, regular hexagon

Answer: a

Explanation: As in the 1st stage the cube is to placed in the position occurred when the diagonal of base perpendicular to V.P so front view gives rectangle and then rotated so as to keep one of the corners only on H.P so the front view will be rectangle then if we make diagonal perpendicular to V.P the front view will be regular hexagon.

9. A cube is resting on H.P on one of its corners with a solid diagonal perpendicular to the V.P. What are the top views of 1st, 2nd, 3rd stages while drawing orthographic projections?
a) Rectangle, rectangle, regular hexagon
b) Square, irregular hexagon, irregular hexagon
c) Rectangle, rectangle, irregular hexagon
d) Square, regular hexagon, regular hexagon

Answer: b

Explanation: As in the 1st stage the cube is to be placed in the position occurred when the diagonal of base perpendicular to V.P so top view gives square and then rotated so as to keep one of the corners only on H.P so the top view will be irregular hexagon then if we make diagonal perpendicular to V.P the top view will be irregular hexagon.

10. A pentagonal prism is resting on H.P on one of its corners and from top view the solid's axis is making 30 degrees with the xy reference line. What are the top views of the 1st, 2nd, 3rd stages of orthographic drawing?
a) Rectangle, rectangle, heptagon
b) Pentagon, heptagon, heptagon
c) Rectangle, heptagon, rectangle
d) Pentagon, rectangle, heptagon

Answer: b

Explanation: As in the 1st stage the pentagonal prism is to be placed in simple position the axis perpendicular to V.P so top view gives pentagon and then rotated so as to keep one of the corners only on H.P so the top view will be irregular heptagon then adjusting the axis so as to make 30 degrees with xy reference line so top view remain same.

11. A pentagonal prism is resting on H.P on one of its corners and from top view the solid's axis is making 30 degrees with the xy reference line. What are the front views of the 1st, 2nd, 3rd stages of orthographic drawing?
a) Rectangle, rectangle, heptagon
b) Pentagon, heptagon, heptagon
c) Rectangle, heptagon, rectangle
d) Pentagon, rectangle, heptagon

Answer: a

Explanation: As in the 1st stage the pentagonal prism is to be placed in simple position the axis perpendicular to V.P so front view gives rectangle and then rotated so as to keep one of the corners only on H.P so the front view will remain same then from projections of top view the front is drawn so an irregular heptagon will form.

12. A pentagonal pyramid is placed on H.P on one of its base's edge and the triangular surface containing the edge on which it is resting is making 45 degrees with H.P. Draw orthographic views and what are the top views of 1st, 2nd, 3rd stages?
a) Triangle, triangle, irregular pentagon
b) Pentagon, irregular polygon of 4 sides, irregular polygon of 4 sides
c) Triangle, triangle, irregular polygon of 4 sides
d) Pentagon, irregular pentagon, irregular pentagon

Answer: b

Explanation: In the 1st stage the solid's axis is perpendicular to H.P and one base's edge is perpendicular to V.P. so the top view will be pentagon and then made to rest on only one edge so top view will be irregular polygon of 4 sides and then adjusted to a given angle so top view will be same.

13. A pentagonal pyramid is placed on H.P on one of its base's edge and the triangular surface containing the edge on which it is resting is making 45 degrees with H.P. Draw orthographic views and what are the front views of 1st, 2ndrd stages?
a) Triangle, triangle, irregular pentagon
b) Pentagon, irregular polygon of 4 sides, irregular polygon of 4 sides
c) Triangle, triangle, irregular polygon of 4 sides
d) Pentagon, irregular pentagon, irregular pentagon

Answer: a

Explanation: In the 1st stage the solid's axis is perpendicular to H.P and one base's edge is perpendicular to V.P. so the front view will be triangle and then made to rest on only one edge so front view will remain same and then adjusted to a given angle so front view will be pentagon.

TOPIC 3.6 PROJECTION OF SPHERES

1. _____ surface is formed when a sphere is cut by a plane.
a) Ellipse
b) Parabola
c) Circle
d) Hyperbola

Answer: c

Explanation: Sphere is a closed solid object which is formed by rotating semicircle about its flat side. Sphere gives top view, front view, side views as a circle whose radius is equal to the radius of a sphere.

2. When a hemisphere is placed on the ground on its flat face, its front view is a _____
a) semi circle
b) circle
c) ellipse
d) irregular one

Answer: a
Explanation: Hemisphere is solid formed by cutting the sphere at its middle. The flat surface of hemisphere will have section of circle with radius equal to radius of sphere. Here the hemisphere is placed on H.P on its flat surface so it gives semi circle from front view.

3. When a hemisphere is placed on the ground on its flat face, its top view is a _____
a) semi circle
b) circle
c) ellipse
d) irregular one

Answer: b
Explanation: Hemisphere is solid formed by cutting the sphere at its middle. The flat surface of hemisphere will have section of circle with radius equal to radius of sphere. Here the hemisphere is placed on H.P on its flat surface so it gives circle from top view.

4. When the flat face of hemisphere is inclined to the H.P or the ground and is perpendicular to the V.P, it is seen as _____(partly hidden) in the top view.
a) semi circle
b) circle
c) ellipse
d) irregular one

Answer: c
Explanation: The flat surface of hemisphere will have section of circle with radius equal to radius of sphere. Here the hemisphere is placed on H.P so that its flat surface is inclined to H.P so it gives semi circle from front view and ellipse from top view.

5. When a hemisphere is placed on H.P such that the flat surface is perpendicular to V.P and inclined with horizontal then the front view will be _____
a) semi circle
b) circle
c) ellipse
d) irregular one

Answer: a
Explanation: The flat surface of hemisphere will have section of circle with radius equal to radius of sphere. Here the hemisphere is placed on H.P so that its flat surface is inclined to H.P so it gives semi circle from front view and ellipse from top view.

6. When two spheres of same radius are placed on H.P both are touching each other and the line joining the centers is perpendicular to V.P. The front view will be.
a) Single circle
b) Two circles
c) Concentric circles
d) Intersecting circles

Answer: a
Explanation: Given two spheres of same radius are placed on H.P touching each other so as the spheres are placed on H.P the line joining the centers is parallel to H.P and given it is perpendicular to V.P so they both align in one line which gives single circle from front view.

7. When two spheres of same radius are placed on H.P both are touching each other and the line joining the centers is perpendicular to V.P. The top view will be _____
a) single circle
b) two circles
c) concentric circles
d) intersecting circles

Answer: b
Explanation: Given two spheres of same radius are placed on H.P touching each other so as the spheres are placed on H.P the line joining the centers is parallel to H.P and given it is perpendicular to V.P so they both align in one line which gives two circles from top view.

8. When two spheres of same radius are placed on H.P both are touching each other and the line joining the centers is making 45 degrees to V.P. The front view will be

_____
a) single circle
b) two circles
c) concentric circles
d) intersecting circles

Answer: d
Explanation: Given two spheres of same radius are placed on H.P touching each other so as the spheres are placed on H.P the line joining the centers is parallel to H.P and given it is making 45 degrees with V.P so they both align in one line which gives intersecting circles from front view.

9. When two spheres of same radius are placed on H.P both are touching each other and the line joining the centers is making 45 degrees to V.P. The top view will be

_____
a) single circle
b) two circles
c) concentric circles
d) intersecting circles

Answer: d
Explanation: Given two spheres of same radius are placed on H.P touching each other so as the spheres are placed on H.P the line joining the centers is parallel to H.P and given it is making 45 degrees with V.P so they both align in one line which gives two circles in top view.

10. When two spheres of different radius are placed on H.P both are touching each other and the line joining the centers is perpendicular to V.P. The front view will be

_____
a) single circle
b) two circles
c) concentric circles
d) intersecting circles

Answer: c
Explanation: Given two spheres of different radius are placed on H.P touching each other, the line joining the centers is perpendicular to V.P so they both align in one line but due to a difference in radius it gives concentric circles from front view.

11. When two spheres of different radius are placed on H.P both are touching each other and the line joining the centers is perpendicular to V.P. The top view will be

_____
a) single circle
b) two circles
c) concentric circles
d) intersecting circles

Answer: b
Explanation: Given two spheres of different radius are placed on H.P touching each other, the line joining the centers is perpendicular to V.P so they both align in one line which gives two circles with different radius from top view.

12. Three spheres of same radius are placed on H.P such that the line joining centers is parallel to H.P and each one touching other two. The front view will be _____
a) three circles
b) two circles
c) concentric circles
d) intersecting circles

Answer: d
Explanation: Given three spheres of same radius are placed on H.P each touching other

two, the line joining centers of spheres gives equilateral triangle. From front view the spheres seem to be intersecting circles.

13. Three spheres of same radius are placed on H.P such that the line joining centers is parallel to H.P and each one touching other two. The top view will be _____
a) three circles
b) two circles
c) concentric circles
d) intersecting circles

Answer: a
Explanation: Given three spheres of same radius are placed on H.P each touching other two, the line joining centers of spheres gives equilateral triangle. From front view the spheres seem to be intersecting circles but from top three circles will be seen.

UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES

TOPIC 4.1 BASICS OF SECTION OF SOLIDS

1. To understand some of the hidden geometry of components an imaginary plane is used to cut the object which is called _____
a) auxiliary plane
b) picture plane
c) section plane
d) additional plane

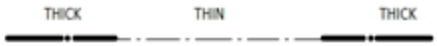
Answer: c
Explanation: To understand some of the hidden geometry of components an imaginary plane is used to cut the object which is called section plane or cutting plane. The new imaginary face generated on the object is called the section.

2. Which of the following is not the purpose of using cutting (section) plane?
a) Interpretation of object
b) Visualizing of object
c) Cutting the objects
d) Invisible features

Answer: c
Explanation: Section plane or cutting plane is an imaginary plane which is used to cut the object to visualize the geometry which is hidden inside the object and interpret it which plays an important role in designing many machine parts.

3. To find the true shape of the section, it must be projected on a plane parallel to the _____
a) Profile plane
b) Vertical plane
c) Auxiliary plane
d) Section plane

Answer: d
Explanation: As we know true shape and size is obtained only when an object is projected on to the plane parallel to it. Likewise, as section always be plane surface to know its true shape it should be projected on to plane parallel to section plane only.

4. The type of line used to represent the cutting plane in drawing is.
a)
b)
c) 

d)

Answer: c
Explanation: Continuous thick line is used for visible out-lines, dashed lines are used for

line showing permissible surface treatment, long-dashed dotted lines are used for indication of surfaces for which a special requirement applies.

5. A section plane is parallel to V.P the top view gives _____ which is _____ to xy line.
a) true shape, parallel
b) straight line, parallel
c) straight line, perpendicular
d) true shape, perpendicular

Answer: b
Explanation: The projection of section plane on the plane to which it is perpendicular gives a straight line which is parallel, perpendicular, inclined as due to section if it is parallel, perpendicular, inclined to reference planes.

6. The projection of a section plane, on the plane to which it is perpendicular is a straight line.
a) True
b) False

Answer: a
Explanation: The projection of a section plane, on the plane to which it is perpendicular is a straight line. The projection of a section on the reference plane to which the section plane is perpendicular will be a straight line coinciding with the trace of the section plane of it.

7. The projection of section surface on the other plane to which it is inclined is called auxiliary section.
a) True
b) False

Answer: b
Explanation: No it is not auxiliary plane but apparent section. This is obtained by projecting on the other plane, the points at which the trace of the section plane intersects the edges of the solid and drawing lines joining these points in proper sequence.

8. The section plane is perpendicular to H.P and inclined to V.P the front view of section if section is a line. It _____ xy line.
a) is perpendicular to
b) is parallel to
c) is inclined to V.P
d) crosses

Answer: b
Explanation: The projection of section plane on the plane to which it is perpendicular gives a straight line. It is given the section is line and also from front view the section lies parallel to xy reference line.

9. The section plane is perpendicular to H.P and inclined to V.P the top view of section if section is a line. It _____ xy line.
a) is perpendicular to
b) is parallel to
c) is inclined to V.P
d) crosses

Answer: c
Explanation: The projection of section plane on the plane to which it is perpendicular gives a straight line. Here it is given section plane is inclined with V.P so top view gives a line inclined to xy reference line.

10. A section is perpendicular to both the reference planes the true shape and size is obtained by taking projection of section on to _____ plane.
a) horizontal
b) vertical
c) profile
d) auxiliary

Answer: c
Explanation: Given the section is perpendicular to both horizontal and vertical plane that is it is parallel to profile plane

which is otherwise called as picture plane. Always remember the true shape and size will be trace if projections are drawn on to the plane parallel to section plane.

11. A section is parallel to horizontal plane the true shape and size is obtained by taking projection of section on to _____ plane.
a) horizontal
b) vertical
c) profile
d) auxiliary

Answer: a
Explanation: Always remember the true shape and size will be trace if projections are drawn on to the plane parallel to section plane. So here as the section is parallel to horizontal plane the projection is to be taken on horizontal plane.

12. A section is parallel to vertical plane the true shape and size is obtained by taking projection of section on to _____ plane.
a) horizontal
b) vertical
c) profile
d) auxiliary

Answer: b
Explanation: Always remember the true shape and size will be trace if projections are drawn on to the plane parallel to section plane. So here as the section is parallel to a vertical plane the projection is to be taken on vertical plane.

TOPIC 4.2 SECTIONS OF PRISMS

1. A regular triangular prism is resting on H.P and section plane is parallel to H.P and cutting the prism the section would be a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: b
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get rectangle.

2. A cube is rested on H.P on one of its base such that base's diagonal is perpendicular to V.P and section plane is parallel to V.P the section will be a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: b
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get rectangle.

3. A cube is rested on H.P on one of its base such that base's diagonal is perpendicular to V.P and section plane is making 45 degrees with both H.P and V.P and section plane is not intersecting more than 3 edges the section will be a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there will be same cross-section along the length perpendicular to axis. If the cutting plane is parallel to axis we get rectangle if inclined to axis the section depends on the position where it is cutting.

4. A cube is rested on H.P on one of its base such that base's diagonal is perpendicular to V.P and section plane is making 45 degrees with V.P and perpendicular to H.P the section will be a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: b
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get rectangle.

5. A cube is placed on H.P on its base and vertical face is making 30 degrees with V.P, section plane is perpendicular to V.P the section will give a shape of a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: c
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there will be same cross-section along the length perpendicular to axis. If the cutting plane is parallel to axis we get rectangle if inclined to axis the section depends on the position where it is cutting.

6. A square prism has its base on H.P and its faces equally inclined to V.P is cut at most critical place by a plane which is perpendicular to V.P and inclined 60 degrees with H.P the section will have shape like a _____
a) irregular pentagon
b) rectangle
c) trapezium
d) parallelogram

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there will be same cross-section along the length perpendicular to axis. If the cutting plane is parallel to axis we get rectangle if inclined to axis the section depends on the position where it is cutting.

7. A triangular prism resting on one of its longest faces on H.P and axis of prism is parallel to V.P, the section plane is perpendicular to both V.P and H.P the section will be a _____
a) triangle
b) rectangle
c) trapezium
d) parallelogram

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get a rectangle.

8. A pentagonal prism resting on one of its longest faces on H.P and axis of prism is parallel to V.P, the section plane is perpendicular to both V.P and H.P the section will be a ____
a) pentagon
b) irregular pentagon
c) rectangle
d) trapezium

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get a rectangle.

9. A pentagonal prism resting on one of its longest faces on H.P and axis of prism is parallel to V.P, the section plane is parallel to

both V.P/ H.P the section will be a _____

a) pentagon
b) irregular pentagon
c) rectangle
d) trapezium

Answer: c
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get a rectangle.

10. A pentagonal prism resting on one of its longest faces on H.P and axis of prism is parallel to V.P, the section plane is perpendicular to V.P and inclined H.P the section will be a _____
a) pentagon
b) irregular pentagon
c) rectangle
d) trapezium

Answer: b
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there will be same cross-section along the length perpendicular to axis. If the cutting plane is parallel to axis we get rectangle if inclined to axis the section depends on the position where it is cutting.

11. A hexagonal prism is resting on H.P on one of its longest faces, axis is perpendicular to V.P the section plane is perpendicular to H.P and inclined to V.P and cutting solid at approximately middle. The section will be like a _____
a) hexagon
b) irregular hexagon
c) rectangle
d) trapezium

Answer: b
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there will be same cross-section along the length perpendicular to axis. If the cutting plane is parallel to axis we get rectangle if inclined to axis the section depends on the position where it is cutting.

12. A hexagonal prism is resting on H.P on one of its longest faces, axis is perpendicular to V.P the section plane is parallel to V.P and perpendicular to H.P. The section will be like a _____
a) hexagon
b) irregular hexagon
c) rectangle
d) trapezium

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis. If the cutting plane parallel to axis we get a rectangle.

13. Given below are the sections of different prisms. Match the following.

	Position of section plane		Section
1.	Plane perpendicular to axis of triangular prism	i.	Rectangle
2.	Plane perpendicular to axis of pentagonal prism	ii.	Rectangle
3.	Plane inclined to axis of square prism	iii.	Pentagon
4.	Plane parallel to axis of cuboid	iv.	Triangle

a) 1, iv; 2, iii; 3, i; 4, ii
b) 1, iv; 2, ii; 3, iii; 4, i
c) 1, ii; 2, iv; 3, i; 4, iii
d) 1, ii; 2, iii; 3, i; 4, iv

Answer: a
Explanation: Prisms are obtained by extruding required shape up to some appreciable length so there exist same cross-section along the length perpendicular to axis.

If the cutting plane parallel to axis we get a rectangle.

TOPIC 4.3 SECTIONS OF PYRAMIDS

1. A square pyramid is placed on V.P with square as base on V.P the cutting plane is parallel to H.P and also parallel to one edge of base, the section will be _____
a) triangle
b) rectangle
c) square
d) trapezium

Answer: d
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

2. A square pyramid is placed on V.P with square as base on V.P the cutting plane is parallel to V.P, the section will be _____
a) triangle
b) rectangle
c) square
d) pentagon

Answer: c
Explanation: If a pyramid is cut by a plane perpendicular to its axis section gives the base shape or parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

3. A pentagon pyramid is placed on V.P with square as base on V.P the cutting plane is parallel to H.P and parallel to edge of base, the section will be _____
a) triangle
b) rectangle
c) trapezium
d) pentagon

Answer: c
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

4. A pentagon pyramid is placed on V.P with square as base on V.P the cutting plane is perpendicular to H.P and inclined to V.P and the section is cutting the whole cross-section, the section will be _____
a) triangle
b) trapezium
c) irregular square
d) irregular pentagon

Answer: d
Explanation: Given a regular pentagonal pyramid it may of any size having any distances in between them if a section plane cutting the solid inclined to its base and completely cutting the solid the section formed will be irregular base shape.

5. A pentagon pyramid is placed on V.P with square as base on V.P the cutting plane is perpendicular to H.P and inclined to V.P and the section is cutting not more than 3 edges, the section will be _____
a) triangle
b) trapezium
c) irregular square
d) irregular pentagon

Answer: a
Explanation: : If a pyramid is cut by a plane perpendicular to its axis section gives the base shape or parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be a triangle.

6. A square pyramid is placed on H.P on its square base and section plane is perpendicular to V.P and inclined to H.P cutting given solid in such a way that the perpendicular distance from the ends of section to axis is same. The section will be _____
a) square
b) triangle
c) irregular pentagon
d) rhombus

Answer: d
Explanation: Given a square pyramid it may of any size having any distances in between them if a section plane cutting the solid coincides with base edge and cutting pyramid gives a irregular square and similar to other based pyramids also.

7. A square pyramid is placed on H.P on its square base and section plane is perpendicular to V.P and parallel to H.P and cutting the solid. The section will be _____
a) square
b) triangle
c) irregular pentagon
d) rhombus

Answer: a
Explanation: If a pyramid is cut by a plane perpendicular to its axis section gives the base shape or parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be a triangle.

8. A square pyramid is placed on H.P on its square base and section plane is parallel to V.P and not parallel to edge of base is cutting the solid. The section will be _____
a) square
b) triangle
c) irregular pentagon
d) trapezium

Answer: b
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

9. A regular pentagonal pyramid of base side equal to 5 cm is resting on H.P on its pentagon face and section plane is parallel to axis and parallel to edge of base and plane is 2 cm away from axis. The section will be _____
a) triangle
b) trapezium
c) rectangle
d) pentagon

Answer: b
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

10. A regular pentagonal pyramid of base side equal to 5 cm is resting on H.P on its pentagon face and section plane is perpendicular to axis. The section will be _____
a) triangle
b) trapezium
c) rectangle
d) pentagon

Answer: d
Explanation: If a pyramid is cut by a plane perpendicular to its axis section gives the base shape or parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be triangle.

11. A regular octagonal pyramid of base side equal to 6 cm is resting on its octagon face on ground and section plane is parallel to axis and parallel to one of edges of base is held at a distance of 2 cm away from axis the section will be _____

a) triangle
b) trapezium
c) rectangle
d) octagon

Answer: b
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be a triangle.

12. A regular octagonal pyramid of base side equal to 6 cm is resting on its octagon face on ground and section plane is parallel to axis and not parallel to any of the edges of base is held at a distance of 4 cm away from axis the section will be _____
a) triangle
b) trapezium
c) rectangle
d) octagon

Answer: a
Explanation: If a pyramid is cut by a plane parallel to axis and also parallel to any edge of base then the section formed will be trapezium if the section plane not parallel to edge of base then the section will be a triangle.

13. A regular octagonal pyramid of base side equal to 6 cm is resting on its octagon face on ground and the section is coinciding with the edge of base and cutting solid with an angle with base equal to 45 degrees the section will be _____
a) Triangle
b) Trapezium
c) Irregular Octagon
d) Octagon

Answer: c
Explanation: Given a regular octagonal pyramid it may of any size having any distances in between them if a section plane cutting the solid coincides with base edge and cutting pyramid gives an irregular octagon and similar to other based pyramids also.

TOPIC 4.4 SECTIONS OF CYLINDERS

1. A cylinder is placed on H.P on its base and section plane is parallel to V.P cutting the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: c
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

2. A cylinder is placed on H.P on its base and section plane is parallel to H.P cutting the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: b
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

3. A cylinder is placed on H.P on its base and section plane is inclined to V.P and perpendicular to H.P cutting the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: c
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

4. A cylinder is placed on H.P on its base and section plane is inclined to H.P and perpendicular to V.P cutting only less than half of the generators of the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: a
Explanation: If a cylinder is been cut by plane which is inclined to base or axis if it cuts all the generator the section formed will be ellipse and if the plane cuts less than half of generators the section formed will be parabola.

5. A cylinder is placed on V.P on its base and section plane is inclined to V.P and perpendicular to H.P cutting all the generators of the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: d
Explanation: If a cylinder is been cut by plane which is inclined to base or axis if it cuts all the generator the section formed will be ellipse and if the plane cuts less than half of generators the section formed will be parabola.

6. A cylinder is placed on V.P on its base and section plane is inclined to H.P and perpendicular to V.P cutting the solid the section gives _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: c
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

7. A cylinder is been cut by a plane parallel to its base the section will be _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: b
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

8. A cylinder is been cut by a plane parallel to axis the section will be _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: c
Explanation: Cylinder is formed by rotating the rectangle about one of its sides which is said to axis further. So if the cutting plane is parallel to axis the section formed is rectangle and if plane is perpendicular to axis it gives circle.

9. A cylinder is been cut completely by a plane inclined to base then the section will be_____
a) parabola
b) circle

c) rectangle
d) ellipse

Answer: d
Explanation: If a cylinder is been cut by plane which is inclined to base or axis if it cuts all the generator the section formed will be ellipse and if the plane cuts less than half of generators the section formed will be a parabola.

10. A cylinder is kept in such a way its axis is parallel to both the reference planes and cut completely by a section plane is perpendicular to V.P and inclined to H.P then the section will be _____
a) parabola
b) circle
c) rectangle
d) ellipse

Answer: d
Explanation: Given a cylinder is placed on profile plane or picture plane and is been cut by a cutting plane inclined to axis as per conditions that is cutting all generators which definitely give ellipse as a section.

11. A cutting plane cut the cylinder into half diagonally touching both the bases at corners the section and side view of 1 part of cylinder is _____
a) ellipse, circle
b) ellipse, rectangle
c) ellipse, triangle
d) closed figure formed by 2 parallel line bounded by 2 similar arcs, triangle

Answer: c
Explanation: Given a cylinder is been cut diagonally from one corner of 1st base to other corner of 2nd base as we can imagine it is just cutting a plane inclined to axis that is cutting all generators which definitely give ellipse as section and side view will be triangle, top view will be a circle.

12. A cylinder is placed on V.P and the section plane is parallel to H.P cutting the solid into two equal parts the front view of the 1st part of cylinder will be _____
a) circle
b) ellipse
c) rectangle
d) semi-circle

Answer: d
Explanation: Given the cylinder is placed on V.P on its base and the section plane is parallel to H.P cutting the solid into two equal parts. In this case the side view, front view shows the section plane as line cutting the cylinder into 2 halves and show rectangle and semicircle.

13. A cylinder is placed on V.P on its base and the section plane is parallel to H.P cutting the solid into two equal parts the top view of the 1st part of cylinder will be _____
a) rectangle of width equal to half of diameter of cylinder
b) rectangle of width equal to diameter of cylinder
c) circle of diameter equal to that of cylinder
d) semicircle with diameter equal to that of cylinder

Answer: b
Explanation: Given the cylinder is placed on V.P on its base and the section plane is parallel to H.P cutting the solid into two equal parts. In this case the side view, front view shows the section plane as line cutting the cylinder into 2 halves and show rectangle and semicircle but top view shows the rectangle of width equal to diameter of the cylinder.

TOPIC 4.5 SECTIONS OF CONES

1. A regular cone is placed on V.P on its base a section plane is parallel to H.P and section plane is 2cm away from the axis the section

will be _____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: b
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

2. A regular cone is placed such that axis is perpendicular to H.P and the section plane is inclined to axis and parallel to one of the generator then the section will be

_____
a) ellipse
b) hyperbola
c) parabola
d) triangle

Answer: c
Explanation: If a regular cone is been cut by plane which is inclined to axis of cone and cutting all generators then the section formed will be ellipse and if section plane is inclined with axis with angle less than half of the angle between the slanting ends then section formed is a parabola.

3. A regular cone is placed such that axis is parallel to both reference planes the section plane perpendicular to both reference planes and cuts the cone the section will be like

_____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: c
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

4. A regular cone is placed on H.P and section plane is parallel to axis cutting the cone at the middle then the section will be

_____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: d
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

5. A regular cone is been cut by a cutting plane which passes through the apex of cone and making some angle with axis less than half of angle between the slanting ends the section will be like _____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: d
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

6. A regular cone is resting on V.P with axis perpendicular to it a plane is cutting the cone such that it is perpendicular to H.P and inclined to V.P cutting cone at all generators the section formed is _____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: a
Explanation: If a regular cone is been cut by plane which is inclined to axis of cone and cutting all generators then the section formed will be ellipse. If section plane is inclined with axis with angle less than half of the angle between the slanting ends then section formed is a parabola.

7. A regular cone is resting on H.P on its base. A section plane is perpendicular to H.P and V.P cutting the cone such that the plane is not having axis of cone in it. The section would be _____
a) Ellipse
b) Hyperbola
c) Parabola
d) Triangle

Answer: c
Explanation: Given the section plane is perpendicular to H.P and V.P and axis of cone perpendicular to H.P. So if a regular cone is been cut by plane which is parallel to its axis and plane is not coinciding with the axis then section formed will be parabola.

8. A regular cone is been cut by a plane which is perpendicular to axis of cone the section will be like _____
a) ellipse
b) hyperbola
c) circle
d) triangle

Answer: c
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is triangle.

9. A regular cone is been cut by a plane which is parallel to the axis of cone the section formed will be like _____
a) ellipse
b) hyperbola
c) circle
d) parabola

Answer: b
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

10. A regular cone is been cut by a plane which is parallel to the axis of cone, the section formed will be like _____
a) ellipse
b) triangle
c) circle
d) parabola

Answer: b
Explanation: If a cone made to cut by a plane parallel to its axis and some distance away from it the section formed is hyperbola. If the section plane is perpendicular to axis the section is circle. If section plane passes through apex the section formed is a triangle.

11. A regular cone is been cut by a plane which is inclined to axis of cone and cuts all the generators the section formed be like _____
a) ellipse
b) hyperbola
c) circle
d) parabola

Answer: a
Explanation: If a regular cone is been cut by plane which is inclined to axis of cone and cutting all generators then the section formed will be an ellipse and if section plane is inclined with axis with angle less than half of the angle between the slanting ends then section formed is a parabola.

12. Given are some shapes of sections of a regular cone. Match the following.

	Positions of the cutting plane		True shape of section
1.	Inclined to axis cutting all generators	i.	Circle
2.	Parallel to axis	ii.	Ellipse
3.	Perpendicular to axis	iii.	Triangle
4.	Passing through the axis or the apex	iv.	Rectangular hyperbola

a) 1, iv; 2, iii; 3, i; 4, ii
b) 1, ii; 2, iv; 3, iii; 4, i
c) 1, ii; 2, iv; 3, i; 4, iii
d) 1, ii; 2, iii; 3, i; 4, iv

Answer: c
Explanation: Generators are the imaginary line drawn from base to apex of the curves. If the plane is inclined to and on one side of the axis the section is Hyperbola and if the plane is parallel to the generator the section formed is a parabola.

TOPIC 4.6 SECTIONS OF SPHERES

1. A sphere is placed on H.P and section plane is parallel to H.P the section is circle and if the section plane is parallel to V.P the section is again circle.
a) True
b) False

Answer: a
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane however the section plane will lay section will be circle.

2. If a sphere is made to cut by a plane which is inclined to V.P when circle is on H.P the section formed will be an ellipse.
a) True
b) False

Answer: b
Explanation: No, when a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane however the section plane will lay section will be circle.

3. A sphere is on H.P and a section plane is perpendicular to both the reference planes is cutting the sphere such that the section divides the sphere to $^1/_4$ th and $^3/_4$ th part the front view and side view will be

_____
a) circle, line
b) ellipse, circle
c) line, ellipse
d) line, circle

Answer: d
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane however the section plane will lay section will be circle.

4. A sphere is placed on V.P the section plane perpendicular to H.P and inclined to V.P cutting the sphere section formed and front view will be _____
a) circle, line
b) circle, circle
c) ellipse, circle
d) circle, ellipse

Answer: d
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane however the section plane will lay section will be circle.

5. A sphere is cut by a plane at some distance from the longest diameter of it the section formed will be

_____

a) ellipse
b) circle
c) line
d) oval

Answer: b
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane here the views of minor parts give segment.

6. A hemi sphere is placed on H.P on its base a section plane which is perpendicular to H.P and inclined to V.P and cutting the hemisphere the section will be _____
a) circle
b) ellipse
c) sector
d) segment

Answer: d
Explanation: Hemisphere is the half sphere. When a hemisphere is made to cut by a plane parallel to base the section formed will be circle. If the plane is inclined to base the section formed will be segment.

7. A hemi sphere is placed on H.P on its base a section plane which is parallel H.P and cutting the hemisphere section will be _____
a) circle
b) ellipse
c) sector
d) segment

Answer: a
Explanation: Hemisphere is the half sphere. When a hemisphere is made to cut by a plane parallel to base the section formed will be circle. If the plane is inclined to base the section formed will be segment.

8. A sphere is cut be section placed which is parallel to H.P the top view and front view of section will be _____
a) circle, line
b) line, circle
c) ellipse, line
d) line, ellipse

Answer: a
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane as here the plane is parallel to H.P the top view will be circle and front view will be line.

9. A sphere is cut by plane which is perpendicular to V.P and inclined to H.P the top view and section will be _____
a) line, circle
b) line, ellipse
c) ellipse, circle
d) circle, ellipse

Answer: c
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane however the section plane will lay section will be circle.

10. A sphere is cut by plane which is perpendicular to V.P and inclined to H.P the top view and front view of minor part will be _____
a) circle, sector
b) line, circle
c) ellipse, segment
d) ellipse, sector

Answer: c
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here asked are views so it will be lines or ellipse according to section plane and also here asked views for minor part so segment will be front view in this condition.

11. A sphere is cut by a plane at the middle the plane is perpendicular to both reference planes the top view and front view will be

a) line, circle
b) circle, line
c) line, line
d) circle, circle

Answer: c
Explanation: Given the plane is perpendicular to both the reference planes so the plane is parallel to picture plane so the section would also be parallel to picture plane as the section is a 2D figure the other view will give line obviously.

12. A sphere is cut by a plane which is inclined to both reference planes the top view and front view of section will be

a) line, line
b) circle, circle
c) ellipse, circle
d) ellipse, ellipse

Answer: d
Explanation: When a sphere is cut by a plane, the true shape of the section is always a circle. But here it is asked view so they will be definitely ellipse since the section plane is inclined to both the reference planes.

TOPIC 4.7 DEVELOPMENT OF SURFACES

1. Which method of development is employed in case of prisms?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: a
Explanation: Parallel-line method is employed in case of prisms and cylinders in which stretch out-line principle is used. Radial-line development is used for pyramids and cones in which the true length of the slant edge or the generator is used as a radius.

2. Which method of development is employed in case of cones?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: d
Explanation: Parallel-line method is employed in case of prisms and cylinders in which stretch out-line principle is used. Radial-line development is used for pyramids and cones in which the true length of the slant edge or the generator is used as a radius.

3. Which method of development is employed in case of double curved objects?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: b
Explanation: Approximation method is used to develop objects of double curved or warped surfaces as sphere, paraboloid, ellipsoid, hyperboloid and helicoid. Triangulation method is used for transition pieces. This is simply a method of dividing a surface into number of triangles and transferring them into the development.

4. Which method is used to develop transition pieces?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: c
Explanation: Approximation method is used to develop objects of double curved or warped surfaces as sphere, paraboloid, ellipsoid, hyperboloid and helicoid. Triangulation method is used for transition pieces. This is simply a method of dividing a surface into number of triangles and transferring them into the development.

5. Which method of development is employed in case of sphere, ellipsoid?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: b
Explanation: Approximation method is used to develop objects of double curved or warped surfaces as sphere, paraboloid, ellipsoid, hyperboloid and helicoid. Triangulation method is used for transition pieces. This is simply a method of dividing a surface into number of triangles and transferring them into the development.

6. Developments of the lateral surface of a prism consist of the same number of _____ in contact as the number of the sides of base of the prism.
a) squares
b) rectangles
c) triangles
d) parallelograms

Answer: b
Explanation: Developments of the lateral surface of a prism consist of the same number of rectangles in contact as the number of the sides of base of the prism. One side of the rectangle is equal to the length of the axis and the other side equal to the length of the side of the base.

7. The development of the lateral surface of a cylinder is a rectangle having one side equal to the _____ of its base-circle and the other equal to its length.
a) circumference
b) area
c) diameter
d) radius

Answer: a
Explanation: The development of the lateral surface of a cylinder is a rectangle having one side equal to the circumference of its base-circle and the other equal to its length. Length is the distance between the two bases.

8. The development of lateral surface of a pyramid consists of a number of equal _____triangle in contact.
a) equilateral
b) isosceles
c) scalene
d) right angled

Answer: b
Explanation: The development of lateral surface of a pyramid consists of a number of equal isosceles triangles in contact. The base and sides of each triangle are respectively equal to the edge of the base and slant edge of the pyramid.

9. The development of the curved surface of a cone is a _____ of a _____
a) sector, circle
b) segment, circle
c) segment, ellipse
d) arc, parabola

Answer: a
Explanation: The development of the curved surface of a cone is a sector of a circle, the radius and the length of the arc of which are respectively equal to the slant height and the circumference of the base-circle of the cone.

10. The development of the surface of a cube consists of ____ equal squares, the length of the side of the squares being equal to the length of the edge of the cube.
a) 4
b) 6
c) 12
d) 8

Answer: b
Explanation: The development of the surface of a cube consists of 6 equal squares, the length of the side of the squares being equal to the length of the edge of the cube. It is 6

squares because the cube is bounded by equal squares and only 6 faces are there.

11. A zone is portion of the sphere enclosed between two planes parallel to the axis.
a) True
b) False

Answer: b
Explanation: A zone is portion of the sphere enclosed between two planes perpendicular to the axis. A lune is the portion between the two planes which contain the axis of the sphere. A sphere is approximately developed by these two methods.

12. Which method of development is employed in case of pyramids?
a) Parallel-line development
b) Approximation method
c) Triangulation development
d) Radial-line development

Answer: d
Explanation: Parallel-line is employed in case of prisms and cylinders in which stretch out-line principle is used. Radial-line development is used for pyramids in which the actual length of the slant edge or the generator is used as a radius.

TOPIC 4.8 INTERSECTION OF SURFACES

1. The surfaces of which intersect one another in lines which are called line of intersection.
a) True
b) False

Answer: a
Explanation: In engineering practice, objects constructed may have constituent parts, the surfaces of which intersect one another in line which are called line of intersection. A dome fitted on a boiler is one such example. The surface of the dome extends up to the line of intersection only.

2. The plane surfaces intersect in a _____ the line of intersection between two curved surfaces is _____ and between a plane surface and curved surfaces is a _____
a) straight line, curve, curve
b) straight line, straight line, curve
c) straight line, curve, straight line
d) curve, curve, curve

Answer: a
Explanation: The plane surfaces (faces of prisms and pyramids) intersect in a straight line. The line of intersection between two curved surfaces (of cylinders and cones) or between a plane surface and curved surfaces is a curve.

3. Drawing straight lines on both the surfaces of solids and then pointing the points where they intersect and drawing lines which forms the line of intersection this process of finding the line of intersection is termed as _____ method.
a) assumption
b) line
c) removing material
d) cutting- plane

Answer: b
Explanation: A number of lines are drawn on the lateral surface of one of the solids and in the region of the line of intersection. Points of intersection of these lines with the surface of the other solid are then located. These points will obviously lie on the required line of intersection.

4. Selecting of a particular plane in a series of planes drawn cutting the solid either parallel, perpendicular or oblique which cut the surface of one of the solids in straight lines and that of the other in straight lines or circles. This is called _____method.
a) assumption
b) line
c) removing material
d) cutting- plane

Answer: d
Explanation: The two solids are assumed to be cut by a series of cutting planes. The cutting planes may be vertical, edgewise or oblique. The cutting planes are so selected as to cut the surface of one of the solids in straight lines and that of the other in straight lines or circle.

5. When a solid completely penetrates another solid, there will be two lines of intersection. These lines are called_____
a) line of interpenetration
b) concyclic curves of lines
c) hidden lines
d) inside line

Answer: a
Explanation: When a solid completely penetrates another solid, there will be two lines of intersection. These lines are called lines of interpenetration. The portion of the penetrating solid which lies hidden within the other solid is shown by dotted lines.

6. The line of intersection formed is straight line while two solids are intersecting the solids may be _____
a) prism, cylinder
b) prism, cone
c) pyramid, cone
d) prism, pyramid

Answer: d
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

7. The line of intersection formed is straight line while two solids intersect the solids may be _____
a) cube, cylinder
b) pentagonal prism, cone
c) triangular pyramid, cone
d) triangular prism, square pyramid

Answer: d
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

8. The line of intersection formed is curve while two solids intersect the solids may be _____
a) cube, triangular prism
b) pentagonal prism, cone
c) triangular pyramid, cube
d) triangular prism, square pyramid

Answer: b
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

9. The line of intersection formed is curve while two solids intersect the solids may be _____
a) cone, cylinder
b) cube, prism
c) pyramid, cube
d) pyramid, cuboid

Answer: a
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

10. A prism and cylinder got intersected at 90 degrees the line of intersection will be

_____ and parallel to axis of _____

a) straight line, prism
b) curve, prism
c) straight line, cylinder
d) curve, cylinder

Answer: b
Explanation: As here a prism and cylinder are intersected in which the prism has plane surface and cylinder has curved surface and we know the curved surface is perpendicular to axis of cylinder and also given the solids intersect at 90 degrees so the curve formed will be parallel to axis of a prism.

11. A prism and cone got intersected at 90 degrees the line of intersection will be _____ and parallel to axis of _____

a) straight line, prism
b) curve, prism
c) straight line, cone
d) curve, cone

Answer: b
Explanation: As here a prism and cone are intersected in which the prism has plane surface and cone has curved surface and we know the curved surface is perpendicular to axis of cone and also given the solids intersect at 90 degrees so the curve formed will be parallel to axis of a prism.

12. The line of intersection formed is straight line while two solids are intersecting the solids may be _____

a) cube, cylinder
b) prism, cone
c) pyramid, cuboid
d) cube, cone

Answer: c
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

13. The line of intersection formed is curve while two solids are intersecting the solids may be _____

a) cylinder, sphere
b) prism, prism
c) cuboid, cube
d) prism, pyramid

Answer: a
Explanation: If any of the solid in two of intersecting solids is having curves surface that is cylinder, cone, sphere etc the line of intersection will give curve only but not straight line for getting line of intersection straight line both the solids should not have curved surfaces.

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS

TOPIC 5.1 ISOMETRIC AXES, LINES AND PLANES

1. The angle between the isometric axes is _____

a) 180 degrees
b) 60 degrees
c) 90 degrees
d) 120 degrees

Answer: d
Explanation: Isometric projection is a type of projection in which the three dimensions of a solid are not only shown in one view but also their actual sizes can be measured directly from it. So it is needed that there exist equal angle between the axes for easy measurement so 360/3=120 degrees is chosen.

2. The value of the ratio of isometric length to true length is _____
a) 0.141
b) 0.372
c) 0.815
d) 0.642

Answer: c
Explanation: If we represent a cube in isometric view the diagonal of upper face of cube is equal to the true length of the diagonal. From it by drawing an actual square around it and then calculating it gives (1/cos 30)/ (1/cos 45) =isometric /true =0.815.

3. The length in isometric drawing of line is 20 cm. What is the true length of it?
a) 24.53 cm
b) 15.46 cm
c) 19.31 cm
d) 23.09 cm

Answer: a
Explanation: The ratio of isometric length to true length is 0.815 so here it is given isometric length of 20 cm. 0.815 = 20 cm / true length => true length = 20 cm /0.815 = 24.53 cm. Every time the true length is more than isometric length.

4. The true length of edge of cube is 15 cm what will be the isometric length?
a) 17.78 cm
b) 14.48 cm
c) 12.99 cm
d) 12.22 cm

Answer: d
Explanation: The ratio of isometric length to true length is 0.815 so here it is given true length of 15 cm. 0.815 = isometric length / 15 cm => isometric length = 15 cm x 0.815 = 12.22 cm. Every time the true length is more than isometric length.

5. The lines parallel to isometric axes are called _____ lines.
a) parallel
b) auxiliary
c) isometric
d) oblique

Answer: c
Explanation: The angle between the isometric axes is 120 degrees if any line is parallel to it then those are called isometric lines. Auxiliary lines may make any angle with horizontal and oblique is not related here.

6. The planes parallel to any of the two isometric lines are called _____ planes.
a) parallel
b) auxiliary
c) isometric
d) oblique

Answer: c
Explanation: The planes on which the faces of cube lie if it is placed in isometric view can be consider as the isometric planes which are parallel to two axes of isometric view which are x, y, z axes of isometric view.

7. Isometric view of cube is drawn the angle between the edge of cube and horizontal will be_____
a) 15 degrees
b) 120 degrees
c) 45 degrees
d) 30 degrees

Answer: d
Explanation: Isometric view of cube is drawn the angle between the edge of cube and horizontal will be 30 degrees because as the angle between the base and axis lower to will be 90 degrees the angle between the axes is 120 degrees. 120-90 = 60 degrees.

8. Isometric view of cube is drawn the angle between the edge of cube and vertical will be_____
a) 15 degrees
b) 120 degrees

c) 60 degrees
d) 30 degrees

Answer: c
Explanation: Isometric view of cube is drawn the angle between the edge of cube and vertical will be 60 degrees because the angle between the edge and horizontal is 30 and so angle between vertical and horizontal is 90. 90 – 30 = 60 degrees.

9. The true length of line is 40 cm and isometric view of it is drawn the length would decrease to _____
a) 28.28 cm
b) 32.6 cm
c) 34.6 c
d) 38.63 cm

Answer: b
Explanation: The ratio of isometric length to true length is 0.815 so here it is given true length of 40 cm. 0.815 = isometric length / 40 cm => isometric length = 40 cm x 0.815 = 32.6 cm. Every time the true length is more than isometric length.

10. The true length of the line is 30 cm and isometric view is drawn. How much length is reduced?
a) 24.45 cm
b) 25.98 cm
c) 4.01 cm
d) 5.55 cm

Answer: d
Explanation: The ratio of isometric length to true length is 0.815 so here it is given true length of 30 cm. 0.815 = isometric length / 30 cm => isometric length = 30 cm x 0.815 = 24.45 cm. 30 cm – 24.45 cm =5.55 cm.

11. The objects we see in nature will be in Isometric view.
a) True
b) False

Answer: b
Explanation: The objects we watch in our surrounds are not isometric view they are perspective view. Isometric view is imaginary view in which lines of sight are perpendicular to picture plane and are parallel to each other.

12. Isometric view of cube is drawn the angle between the adjacent edges is _____
a) 90 degrees, 120 degrees
b) 60 degrees, 120 degrees
c) 120 degrees, 120 degrees
d) 90 degrees, 30 degrees

Answer: b
Explanation: Given is a cube in which the adjacent angle are all equal and equal to 90 degrees and if isometric view is drawn then it show front faces with angles bet between them as 120 degrees and if take angles between the back and front faces we get the 60 degrees.

13. Isometric view of cube is drawn and faces of cube are seen as _____
a) square
b) rectangle
c) rhombus
d) parallelogram

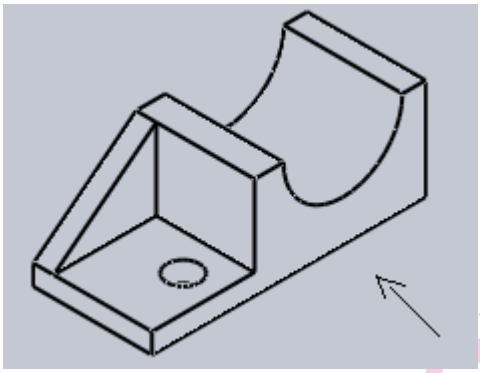
Answer: c
Explanation: It is given isometric view of cube is drawn and it shows regular hexagon in which any of the faces represent rhombus which have diagonals cutting each other at 90 degrees any other adjacent edges have angles between them as 60 and 120 degrees.

TOPIC 5.2 ISOMETRIC DRAWINGS

1. If isometric projection of an object is drawn with true lengths the shape would be same and size is how much larger than actual isometric projection?
a) 25%
b) 29.5%

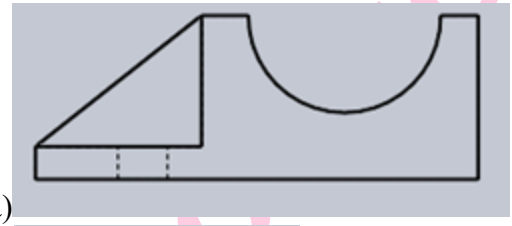
c) 22.5%
d) 33.3%

Answer: c
Explanation: If the foreshortening of the isometric lines in an isometric projection is disregarded and instead, the true lengths are marked, the view obtained will be exactly of the same shape but larger in proportion than that obtained by the use of the isometric scale.

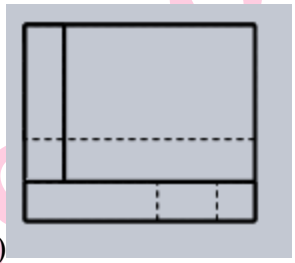


2. If an isometric projection is drawn with true measurements but not with isometric scale then the drawings are called

_____
a) Isometric projection
b) Isometric view
c) Isometric perception
d) Orthographic view



a)



b)

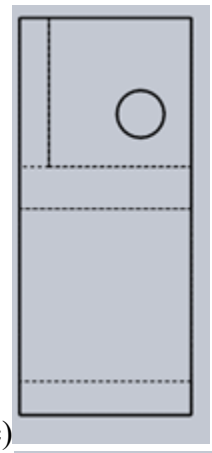
Answer: b
Explanation: Due to the ease of construction and the advantage of measuring the dimensions directly from the drawing, it has become a general practice to use the true scale instead of the isometric scale.

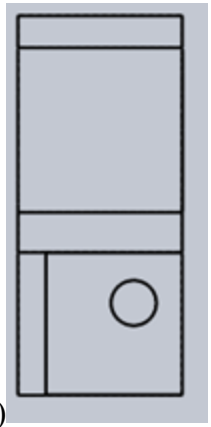
3. If an isometric drawing is made use of isometric scale then the drawings are called

_____
a) Isometric projection
b) Isometric view
c) Isometric perception
d) Orthographic view

Answer: a
Explanation: To avoid confusion, the view drawn with the true scale is called isometric drawing or isometric view, while that drawn with the use of isometric scale is called isometric projection.

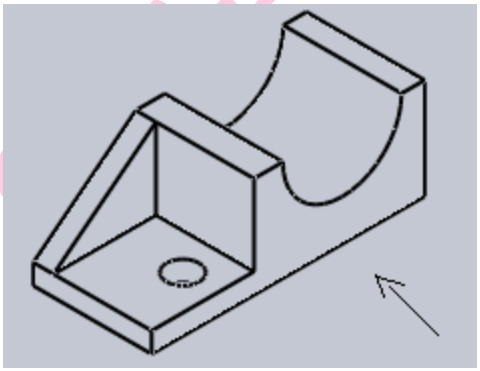
4. Identify the front view of the below isometric view.

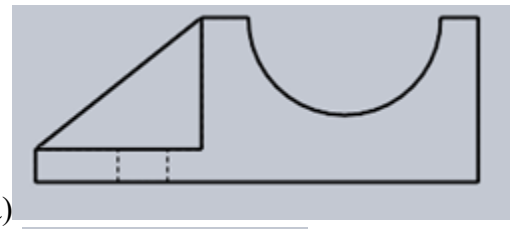
c)


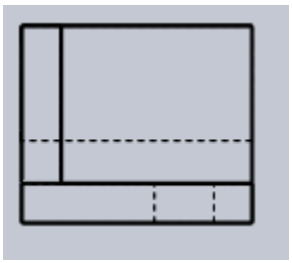
d)


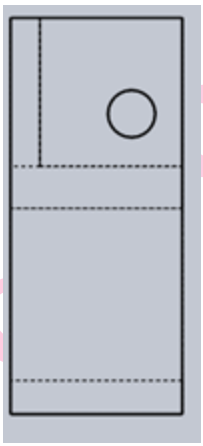
Answer: a
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Front view is asked which can be watched along the arrow.

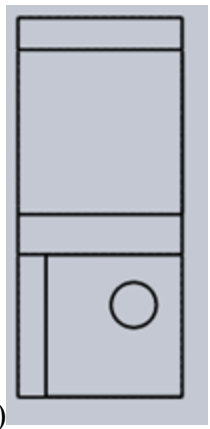
5. Identify the top view of below isometric view.



a)


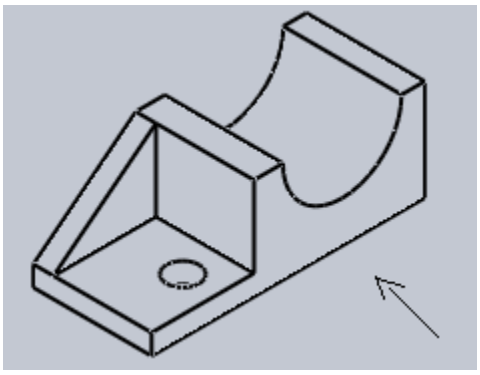
b)


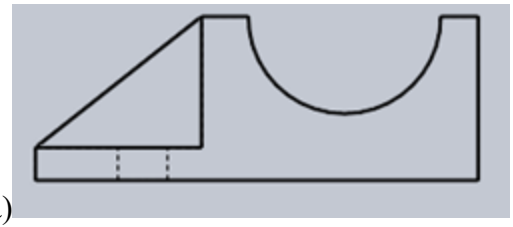
c)


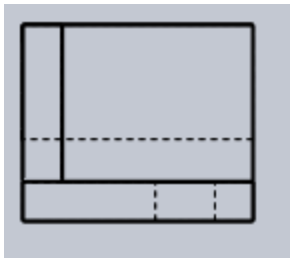
d)


Answer: d
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Top view is asked so considering the arrow we can find top view.

6. Identify the side view of the below isometric view.



a)


b)


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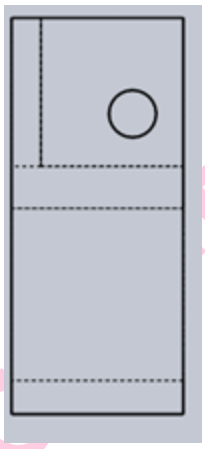
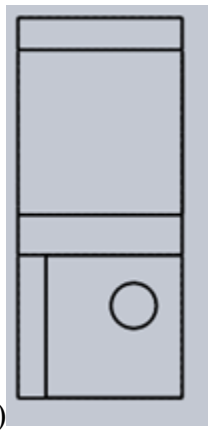
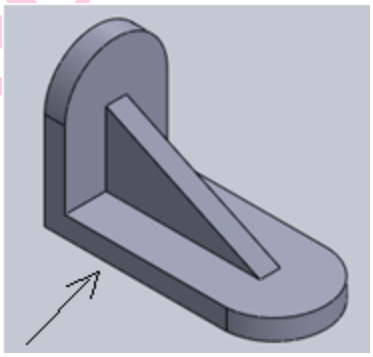
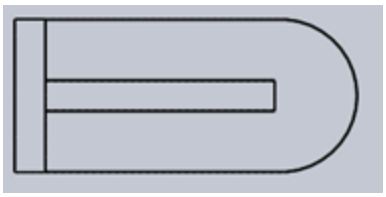


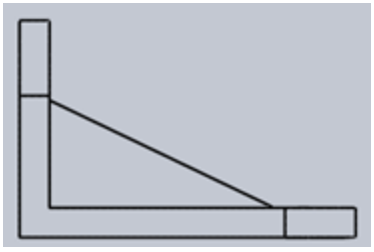
d)


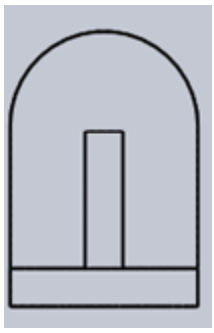
Answer: b
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Side is watched from left side or right side of arrow placed.

7. Identify the side view of the below isometric view.



a)


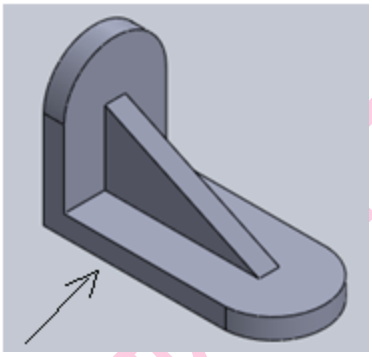
b)


c) 

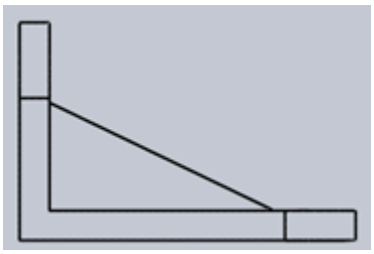
d) 

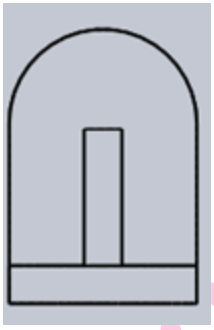
Answer: c
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other view. Side is watched from left side or right side of arrow placed.

8. Identify the top view of the below isometric view.



a) 

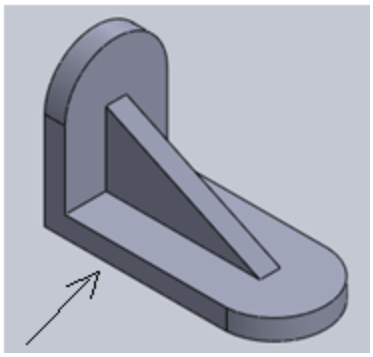
b) 

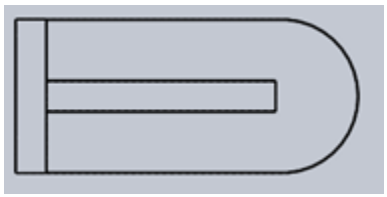
c) 

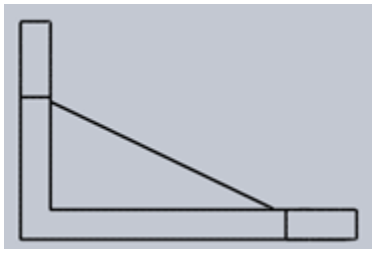
d) 

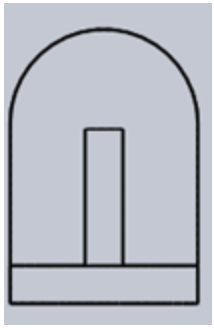
Answer: a
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Top view is asked so considering the arrow we can find top view.

9. Identify the front view of the below isometric view.



a) 

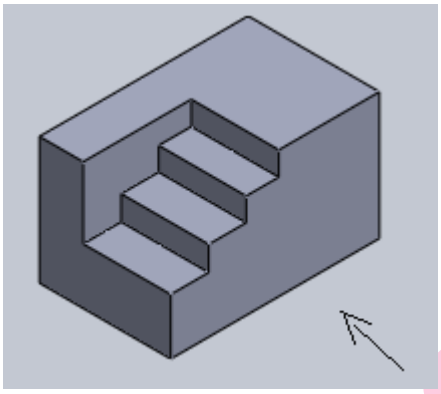
b) 

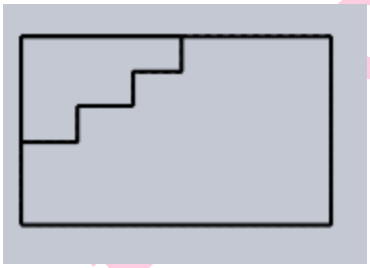
c) 

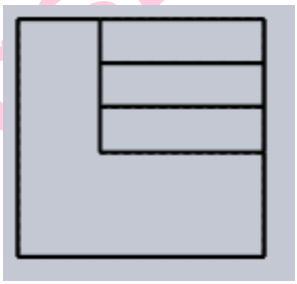
d) 

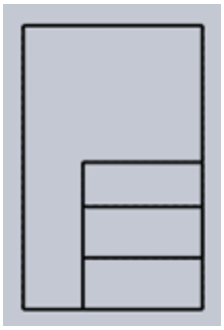
Answer: b
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other view. Front view is asked which can be watched along the arrow.

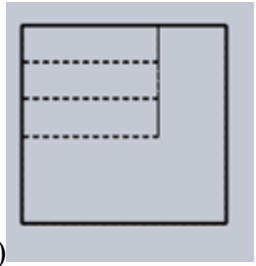
10. Identify the front view of the below isometric view.



a) 

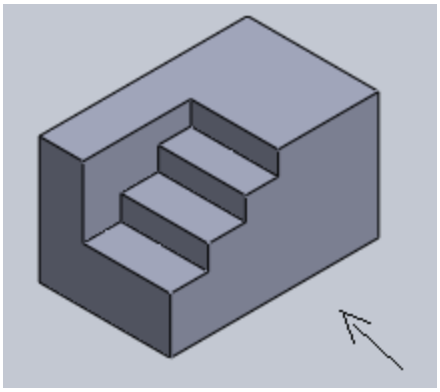
b) 

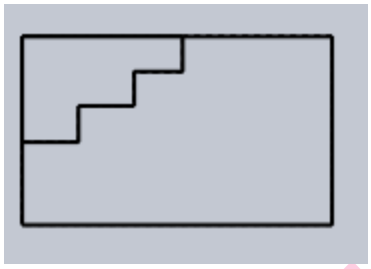
c) 

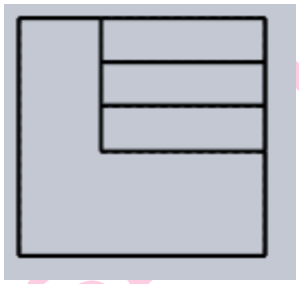
d) 

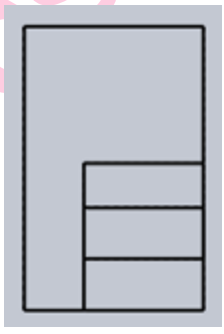
Answer: a
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Front view is asked which can be watched along the arrow.

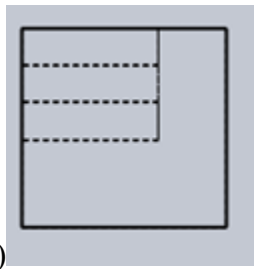
11. Identify the top view of the below isometric view.



a)


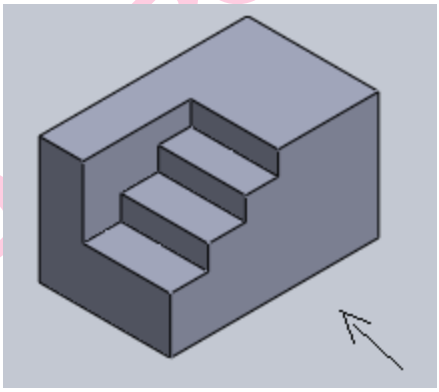
b)


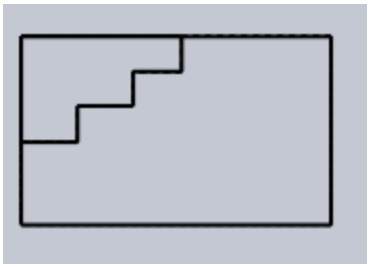
c)


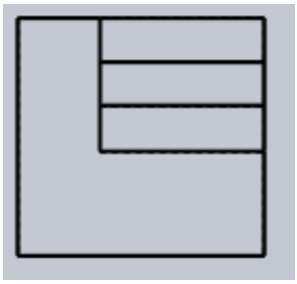
d)


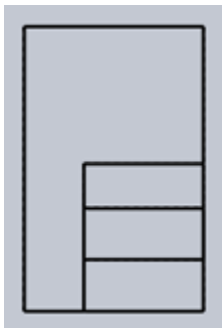
Answer: c
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Top view is asked so considering the arrow we can find top view.

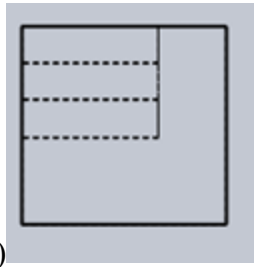
12. Identify the side view of the below isometric view.



a)


b)


c) 

d) 

Answer: b
Explanation: Here the isometric view of some example picture is given. Arrow in question represents the line of sight in case of front view from that we can get other views. Side is watched from left side or right side of arrow placed.

Sanfoundry Global Education & Learning Series – Engineering Drawing.

TOPIC 5.3 ISOMETRIC DRAWING OF PLANES OR PLANE FIGURES

1. Front view of the square is given and has to draw its isometric view which angle the base has to make with horizontal?
a) 90 degrees
b) 15 degrees
c) 30 degrees
d) 60 degrees

Answer: c
Explanation: While drawing the isometric view of any figure made of lines the base always makes 30 degrees with horizontal and so in square and another parallel line also makes 30 degrees with horizontal and other sides will be perpendicular to horizontal.

2. Front view of the square is given and has to draw its isometric view which angle the vertical edge has to make with horizontal?
a) 90 degrees
b) 15 degrees
c) 30 degrees
d) 60 degrees

Answer: a
Explanation: In isometric view vertical lines exist and make 90 degrees with the horizontal so if the front view of a square is given and drawn to isometric view the angle between the vertical edge and horizontal is 90 degrees.

3. Top view of a square is given and has to draw its isometric view which angle the base has to make with horizontal?
a) 90 degrees
b) 15 degrees
c) 30 degrees
d) 60 degrees

Answer: c
Explanation: While drawing the isometric view of any figure made of lines the base always makes 30 degrees with horizontal and so in square and another parallel line also makes 30 degrees with horizontal and other sides will be perpendicular to horizontal.

4. Top view of a square is given and has to draw its isometric view which angle the vertical edge has to make with horizontal?
a) 90 degrees
b) 15 degrees
c) 30 degrees
d) 60 degrees

Answer: c
Explanation: In isometric view vertical lines exist and make 90 degrees with the horizontal so if the top view of a square is given and drawn to isometric view the angle between the vertical edge and horizontal is 90 degrees.

5. Front view of triangle is given and isometric view is to be drawn which of the following is correct procedure in drawing isometric view.
a) turning the triangle such that base is making 30 degrees with horizontal
b) by increasing or decreasing angles at required proportions
c) drawing parallel to isometric axes
d) drawing rectangle with base and height of triangle and the drawing rectangle parallel to isometric axes and pointing triangle in it

Answer: d
Explanation: The surface of the triangle is vertical and the base is horizontal so base will be drawn parallel to a slopping axis. The two sides of the triangle are inclined. Hence they will not be drawn parallel to any isometric axis.

6. When a square is drawn to an isometric view it will give rectangle.
a) True
b) False

Answer: b
Explanation: Whatever the polygon when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

7. When a rectangle is drawn to an isometric view it will give parallelogram.
a) True
b) False

Answer: a
Explanation: Whatever the polygon when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

8. Isometric view of equilateral triangle will be _____
a) equilateral triangle
b) scalene triangle
c) isosceles triangle
d) right angled triangle

Answer: b
Explanation: Whatever the polygon when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

9. Isometric view of isosceles triangle will be ____
a) equilateral triangle
b) scalene triangle
c) isosceles triangle
d) right angled triangle

Answer: b
Explanation: Whatever the polygon when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

10. Isometric view of right angled triangle will be _____
a) equilateral triangle
b) scalene triangle
c) isosceles triangle
d) right angled triangle

Answer: b
Explanation: Whatever the quadrilateral when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

11. Isometric view of rhombus will become _____
a) parallelogram

b) rhombus
c) rectangle
d) square

Answer: a
Explanation: Whatever the quadrilateral when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

12. Isometric view of rectangle will become

_____

a) parallelogram
b) rhombus
c) rectangle
d) square

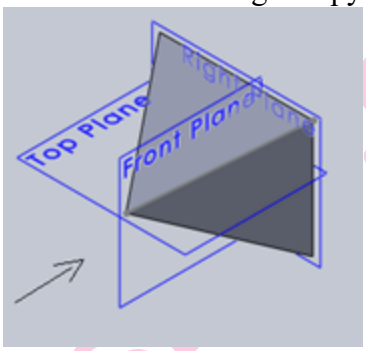
Answer: a
Explanation: Whatever the quadrilateral when we are drawing it in isometric views the base will make 30 degrees and other sides will tend to show up like we are watching from some particular point as in perspective view in 1 dimension.

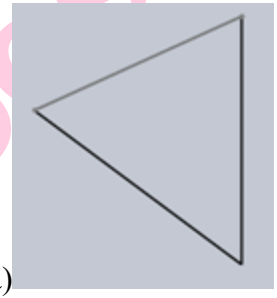
13. Front view of circle is given and isometric view is to be drawn which of the following is correct procedure in drawing isometric view?
a) turning the circle such that line on diameter is making 30 degrees with horizontal
b) by increasing or decreasing angles between two perpendicular line on diameter at required proportions
c) drawing line in diameter parallel to isometric axes
d) enclosing circle in a square and aligning square to isometric axes and pointing four points on circle touching the square and joining by smooth curve.

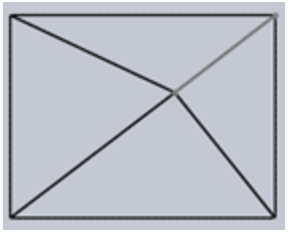
Answer: d
Explanation: Circle will be circle even if we rotate it in angle with that plane. So to represent circle in isometric view it should be enclosed in a square and then aligning square to isometric axes and pointing points touching the square and drawing smooth curve.

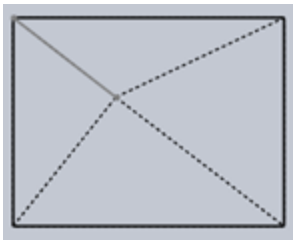
TOPIC 5.4 ISOMETRIC DRAWING OF PRISMS AND PYRAMIDS

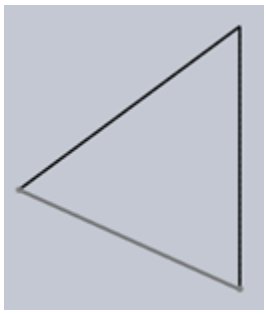
1. Identify the front view from the isometric view for the below given pyramid.



a) 

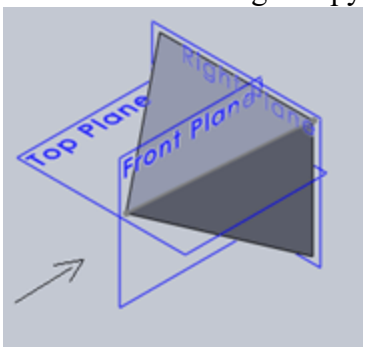
b) 

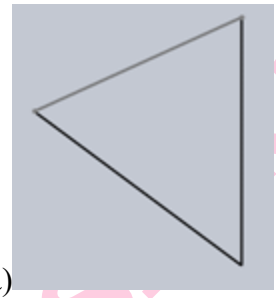
c) 

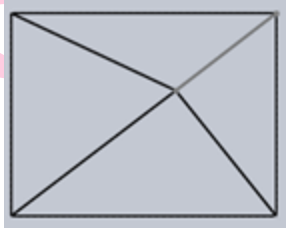
d) 

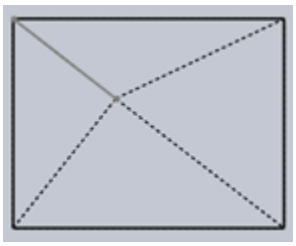
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

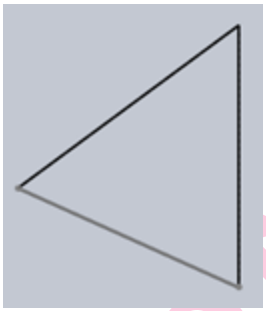
2. Identify the top view from the isometric view for the below given pyramid.



a) 

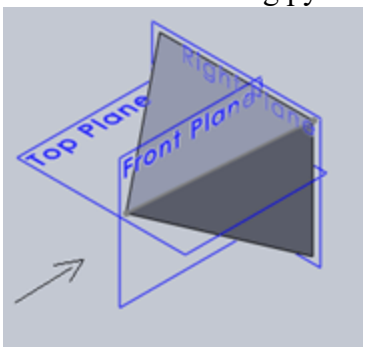
b) 

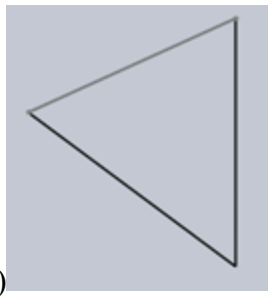
c) 

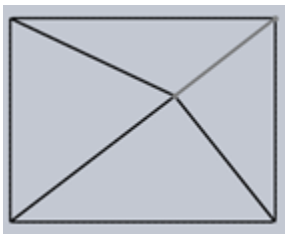
d) 

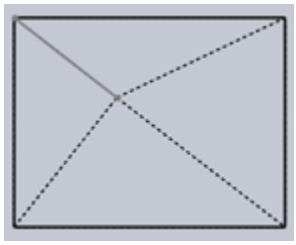
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

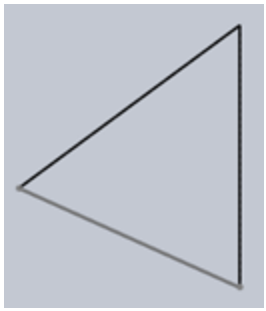
3. Identify the back view from the isometric view of the following pyramid.



a) 

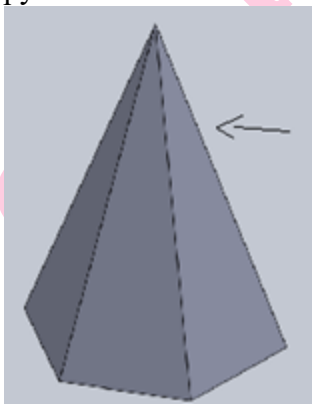
b) 

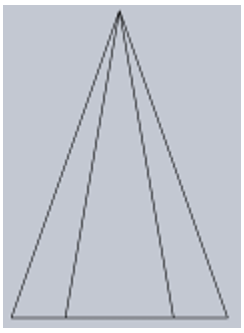
c) 

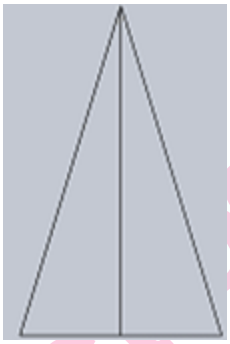
d) 

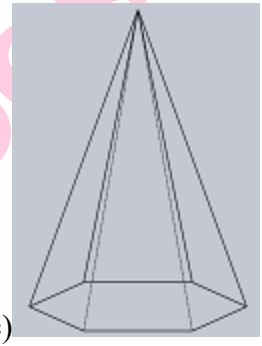
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

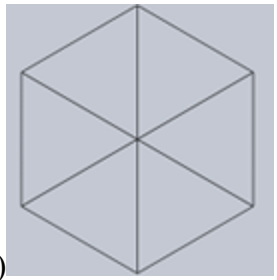
4. Identify the front view of the below given pyramid.



a) 

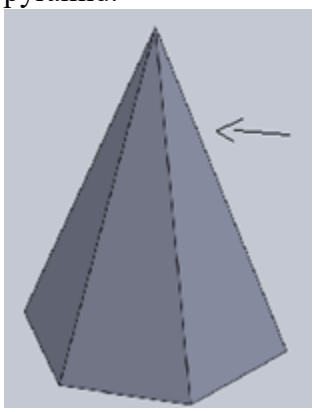
b) 

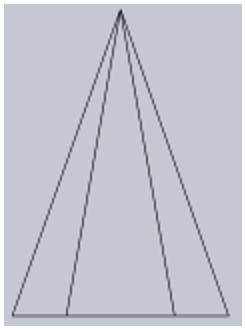
c) 

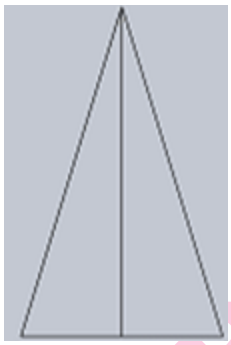
d) 

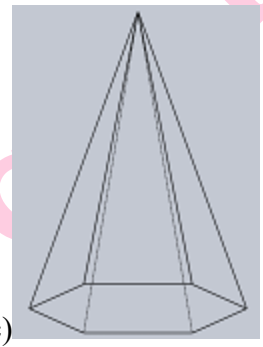
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

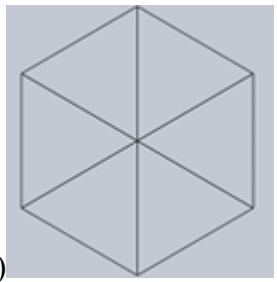
5. Identify the top view of the below given pyramid.



a) 

b) 

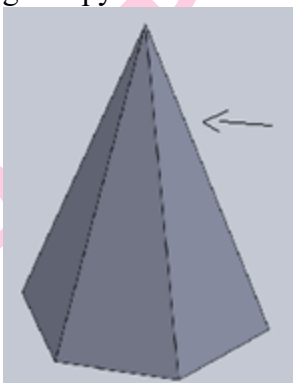
c) 

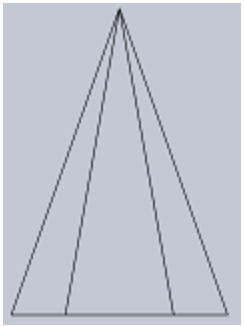
d) 

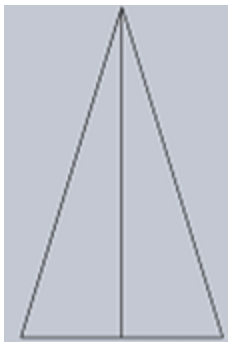
Answer: d

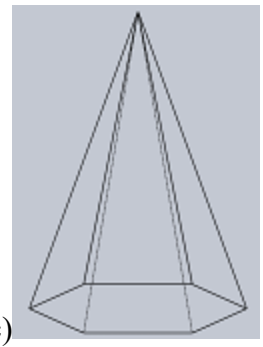
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

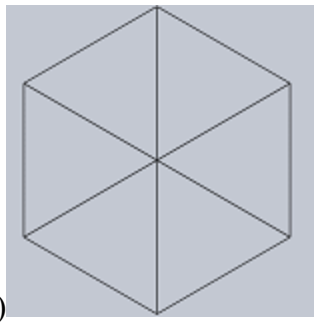
6. Identify the side view of for the below given pyramid.



a) 

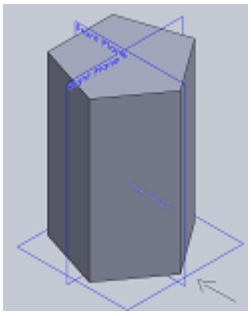
b) 

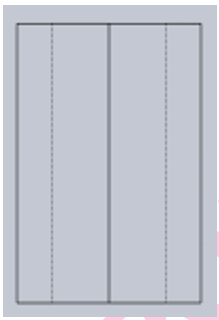
c) 

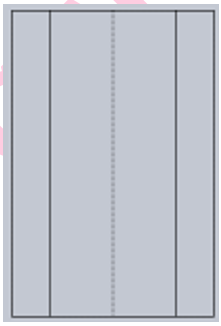
d) 

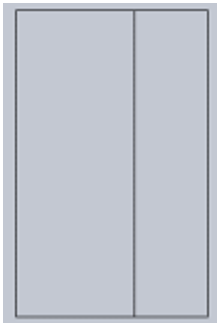
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

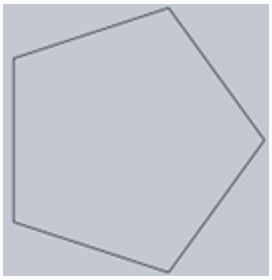
7. Identify the front view of this solid which is in isometric view.



a) 

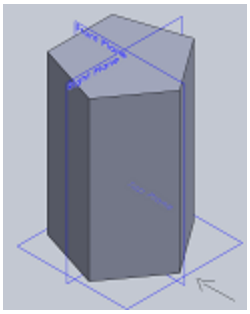
b) 

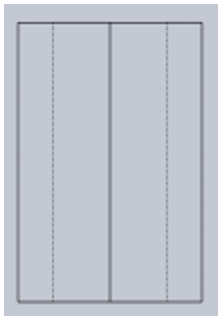
c) 

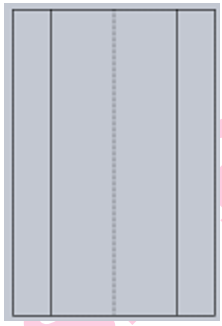
d) 

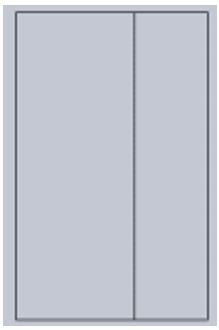
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

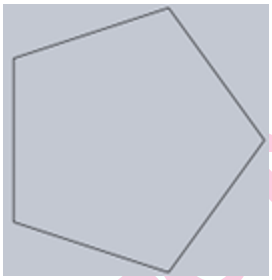
8. Identify the top view of below given solid which is in isometric view.



a) 

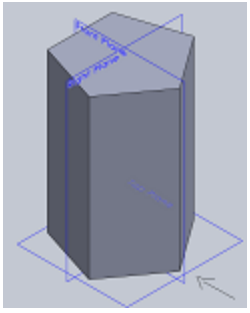
b) 

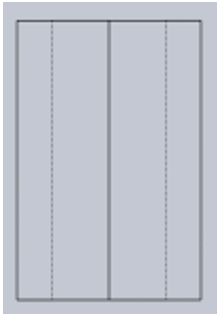
c) 

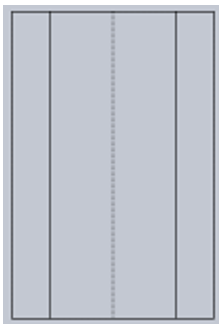
d) 

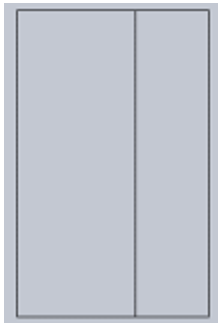
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

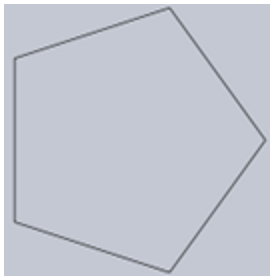
9. Identify the side view of the below given solid which is in isometric view.



a) 

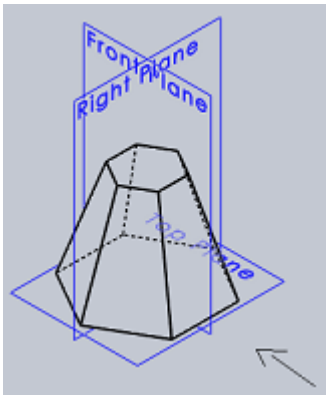
b) 

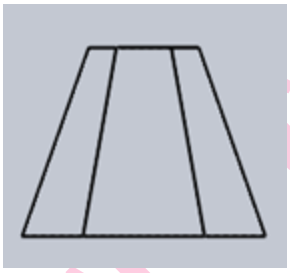
c) 

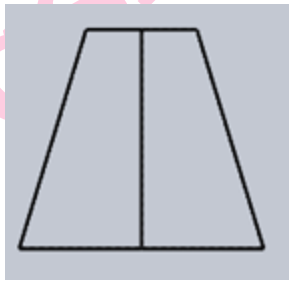
d) 

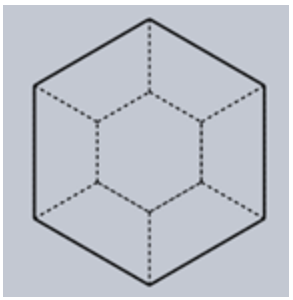
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

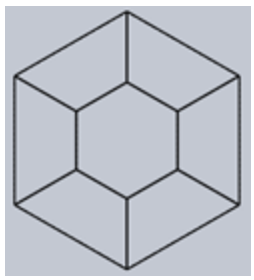
10. Identify the front view from the isometric view for the below given figure.



a) 

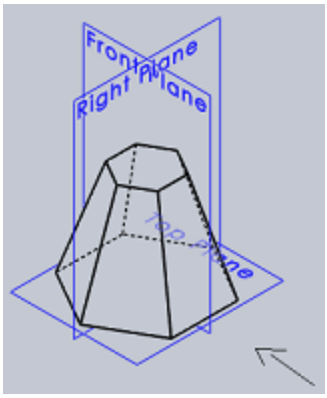
b) 

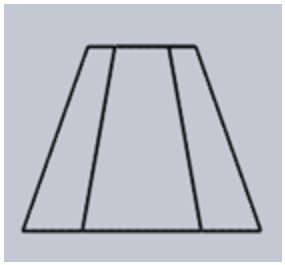
c) 

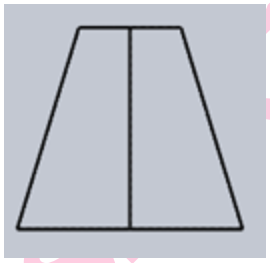
d) 

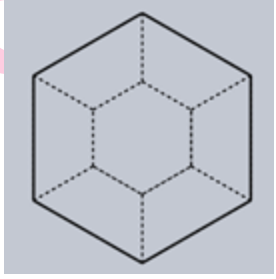
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

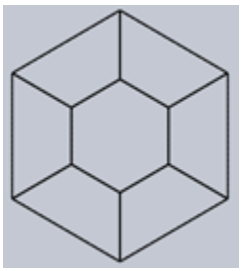
11. Identify the side view from the isometric view for the below given figure.



a) 

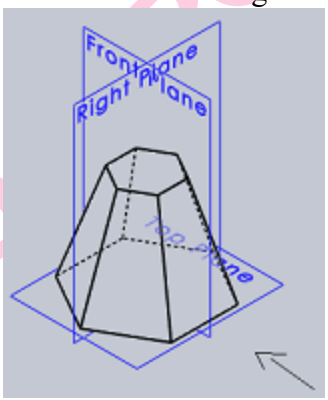
b) 

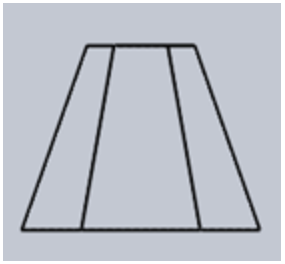
c) 

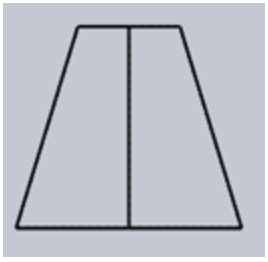
d) 

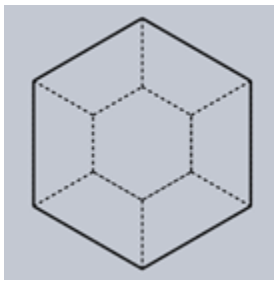
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

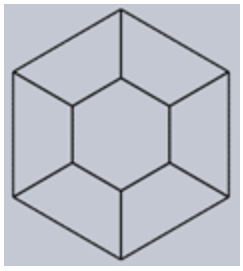
12. Identify the top view from the isometric view for the below given figure.



a) 

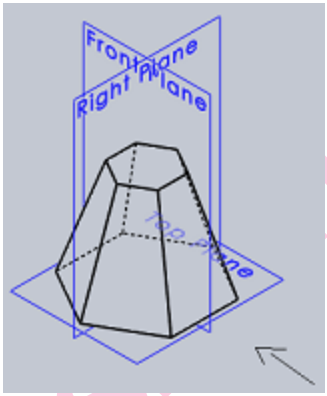
b) 

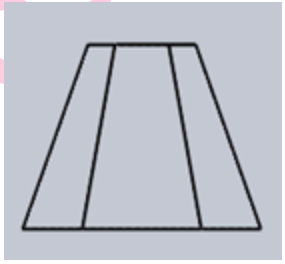
c) 

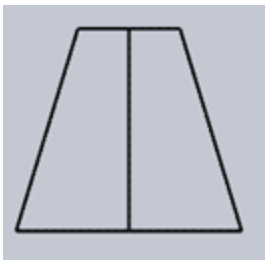
d) 

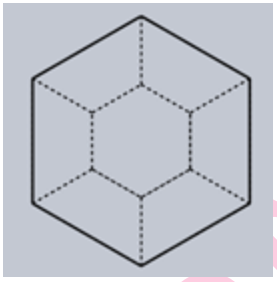
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

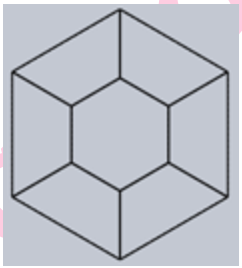
13. Identify the bottom view from the isometric view for the below given figure.



a) 

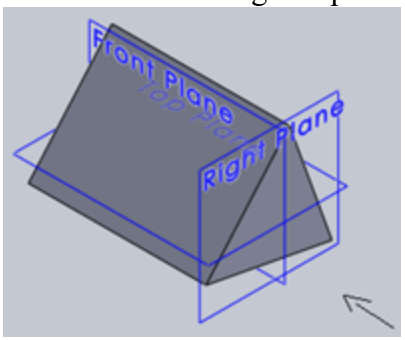
b) 

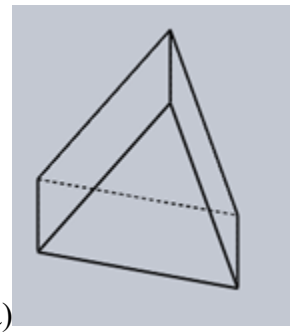
c) 

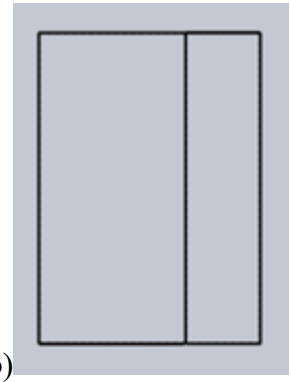
d) 

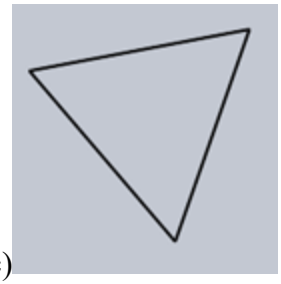
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

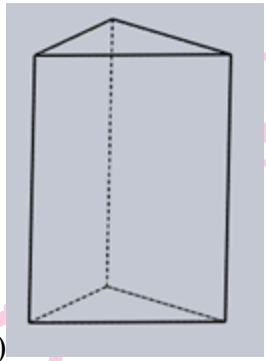
14. Identify the front view from the isometric view for the below given prism.



a) 

b) 

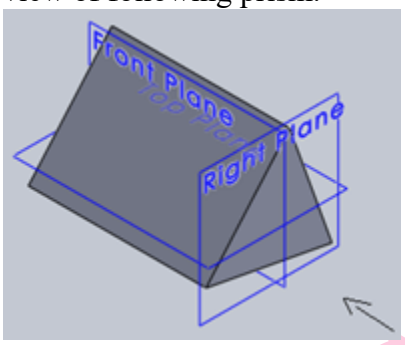
c) 

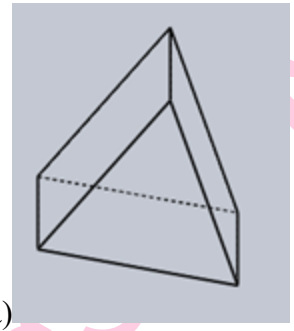
d) 

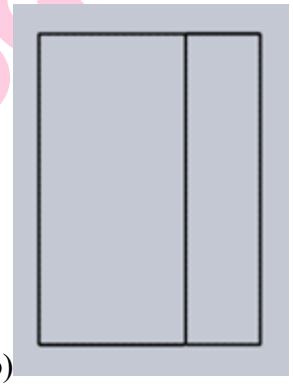
Answer: c

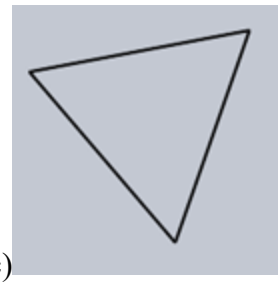
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

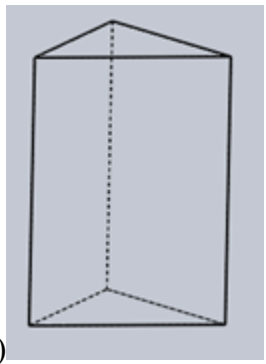
15. Identify the top view from the isometric view of following prism.



a) 

b) 

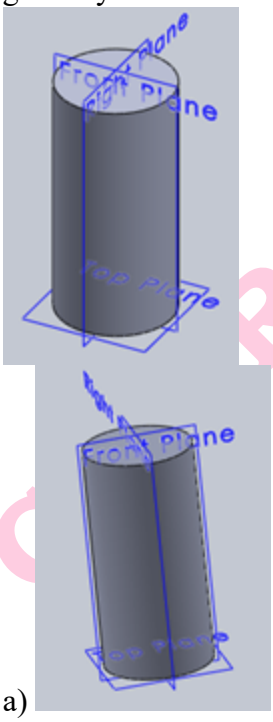
c) 

d) 

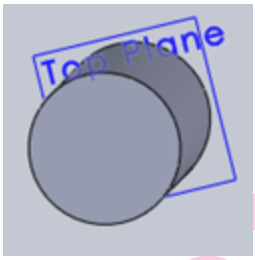
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front is taking and dotted lines represent hidden edges and lines.

TOPIC 5.5 ISOMETRIC DRAWING OF CYLINDERS

1. Identify the front view from the below given cylinder.

a) 

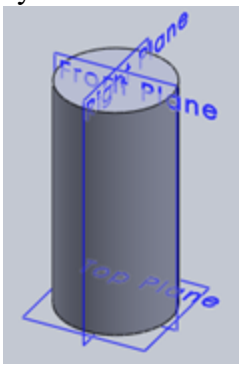
b) 

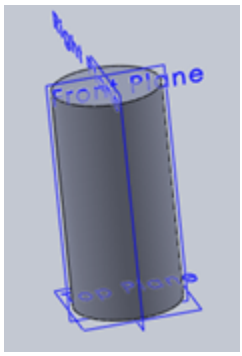
c) 

d) 

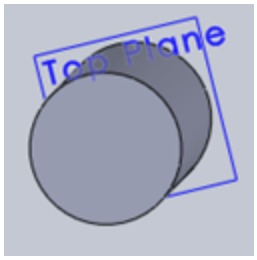
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

2. Identify the top view from the below given cylinder.



a) 

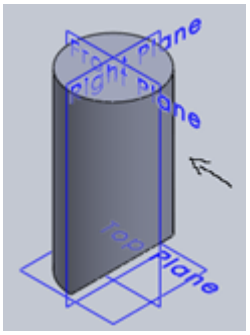
b) 

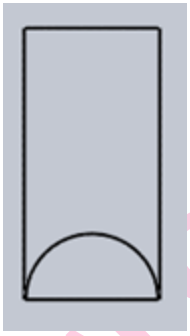
c) 

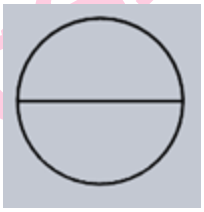
d) 

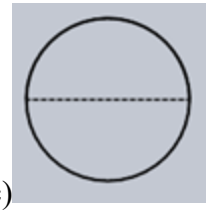
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

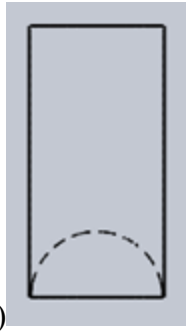
3. Identify the front view for the below given cylinder.



a) 

b) 

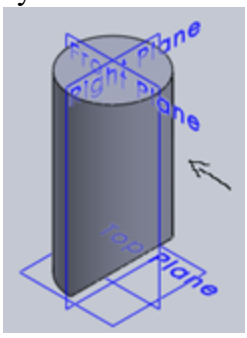
c) 

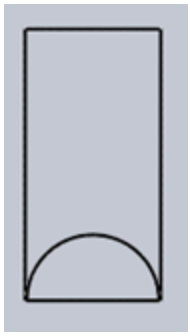
d) 

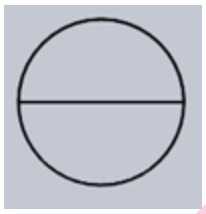
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are

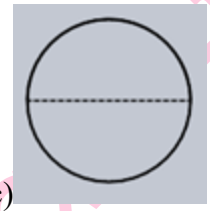
visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

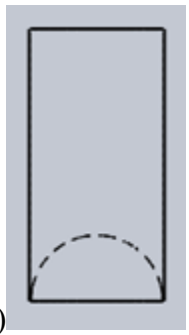
4. Identify the top view from the following cylinder.



a)


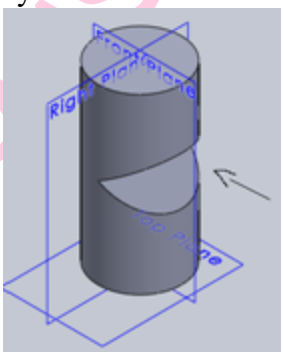
b)


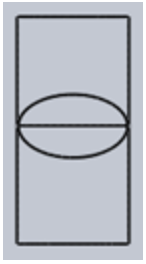
c)


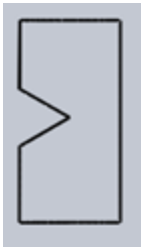
d)


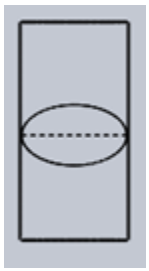
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

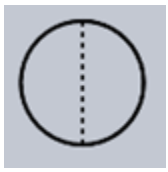
5. Identify the front view from the following cylinder.



a)


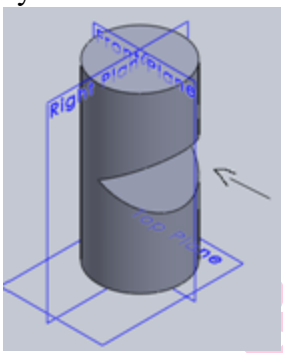
b)


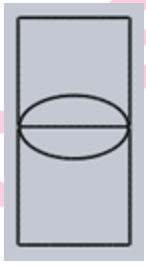
c) 

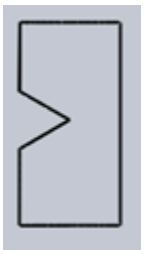
d) 

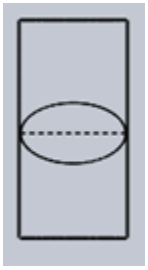
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

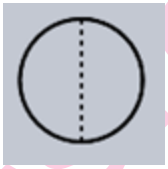
6. Identify the side view for the below given cylinder.



a) 

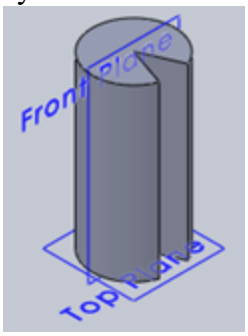
b) 

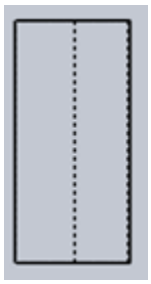
c) 

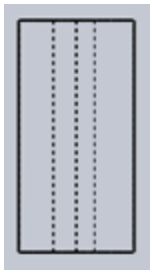
d) 

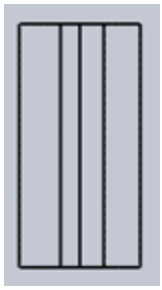
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

7. Identify the front view for the below given cylinder.



a) 

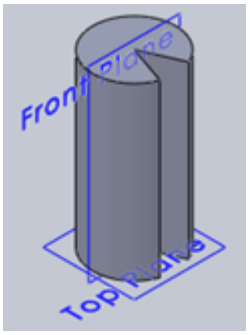
b) 

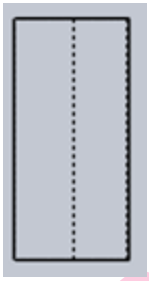
c) 

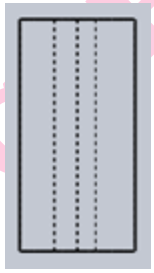
d) 

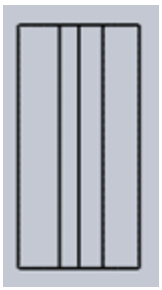
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

8. Identify the back view for the below given cylinder.



a) 

b) 

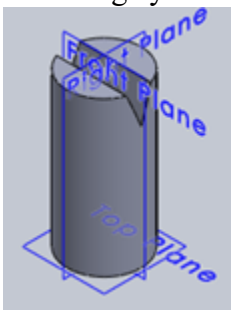
c) 

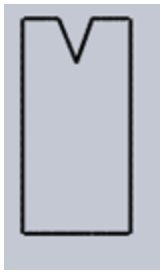
d) 

Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show

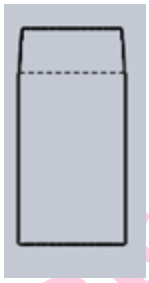
the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

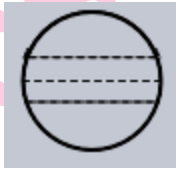
9. Identify the bottom view from the following cylinder.



a) 

b) 

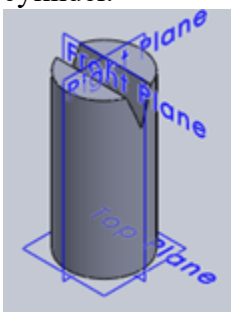
c) 

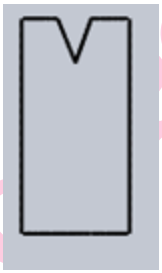
d) 

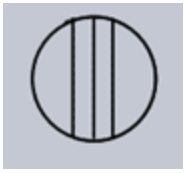
Answer: d

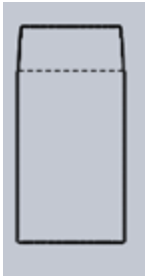
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

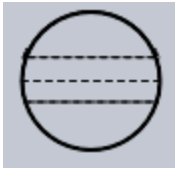
10. Identify the top view for the below cylinder.



a) 

b) 

c) 

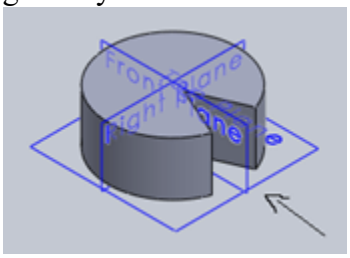
d) 

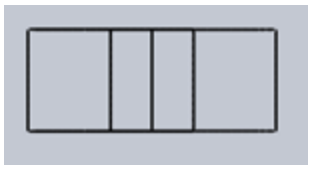
Answer: b

Explanation: The isometric view should be drawn according to the given views and in

such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

11. Identify the front view for the below given cylinder.



a) 

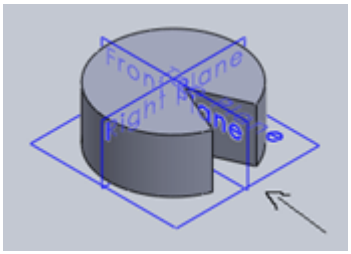
b) 

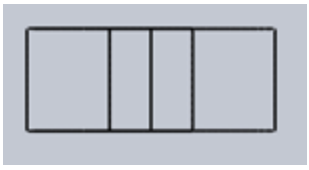
c) 

d) 

Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

12. Identify the back view for the below given cylinder.



a) 

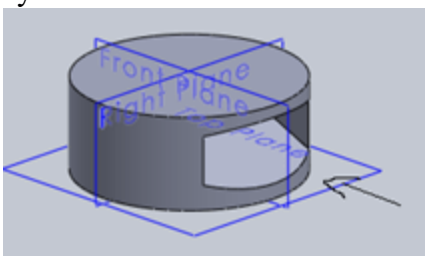
b) 

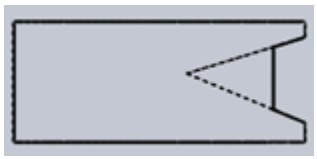
c) 

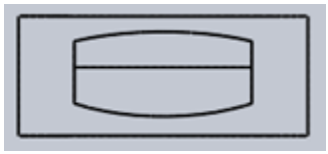
d) 

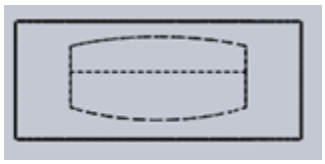
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

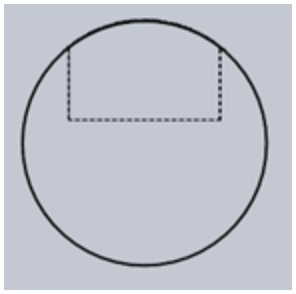
13. Identify the back view for the below cylinder.



a) 

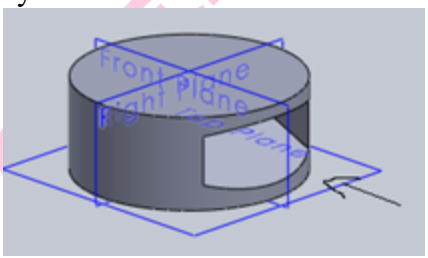
b) 

c) 

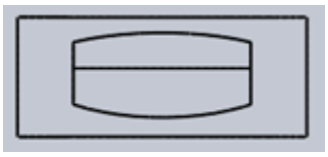
d) 

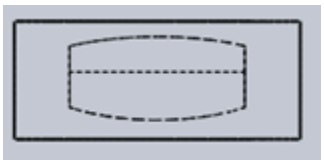
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

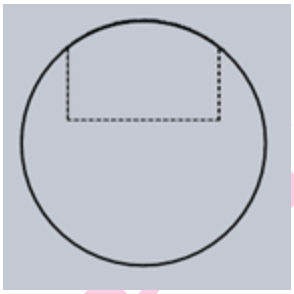
14. Identify the side view for the below given cylinder.



a) 

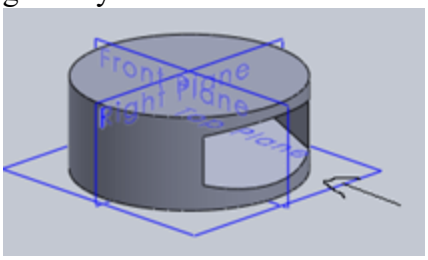
b) 

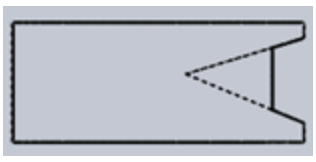
c) 

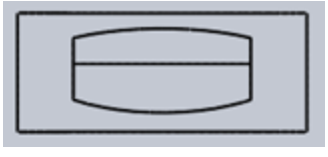
d) 

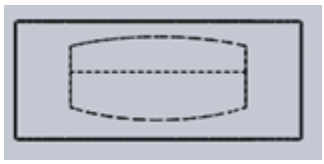
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

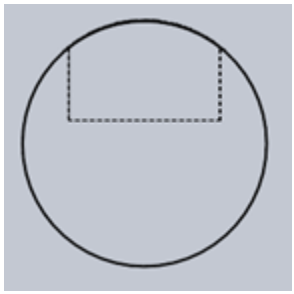
15. Identify the front view for the below given cylinder.



a) 

b) 

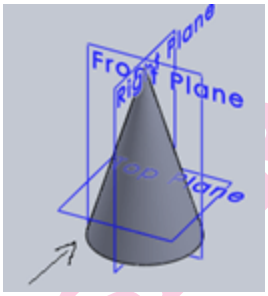
c) 

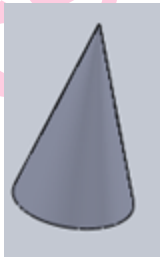
d) 

Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

TOPIC 5.6 ISOMETRIC DRAWING OF CONES

1. Identify the front view of the below given cone.



a) 

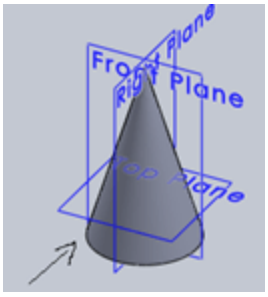
b) 

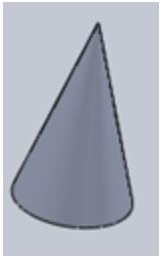
c) 

d) 

Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

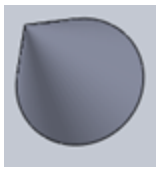
2. Identify the top view for the below given cone.



a) 

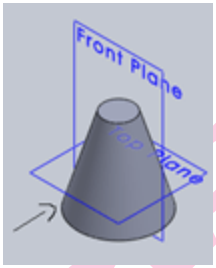
b) 

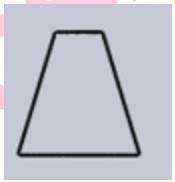
c) 

d) 

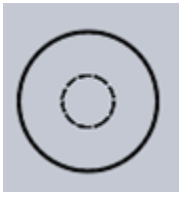
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

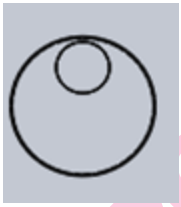
3. Identify the top view for the below given cone.



a) 

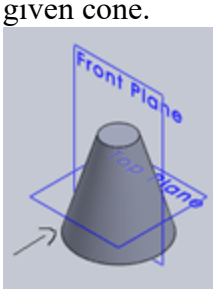
b) 

c) 

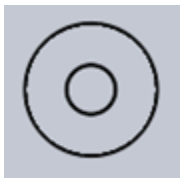
d) 

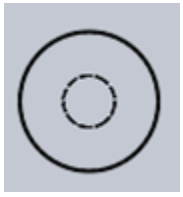
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

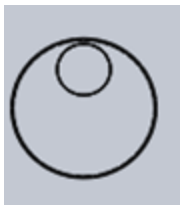
4. Identify the bottom view for the below given cone.



a) 

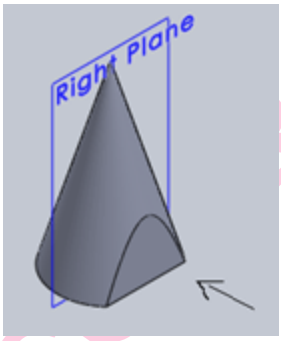
b) 

c) 

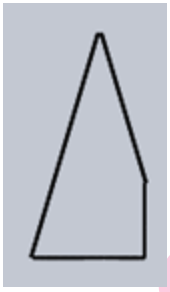
d) 

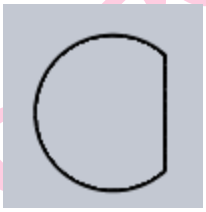
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

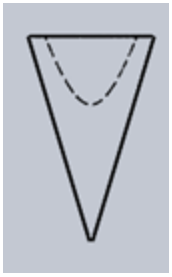
5. Identify the side view for the below given cone.



a) 

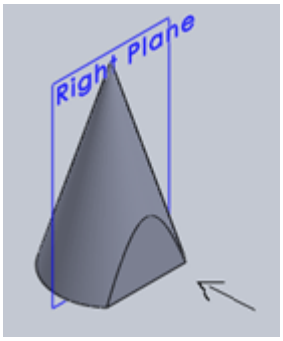
b) 

c) 

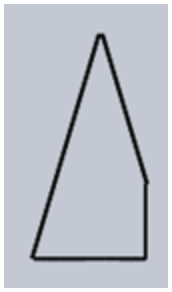
d) 

Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

6. Identify the top view for the below given cone.



a) 

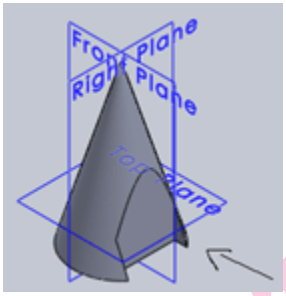
b) 

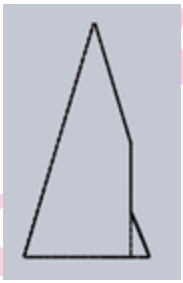
c) 

d) 

Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

7. Identify the top view for the below given cone.



a) 

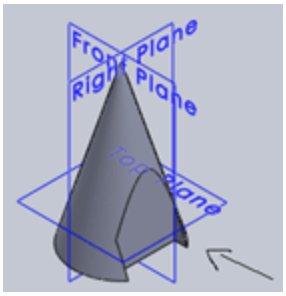
b) 

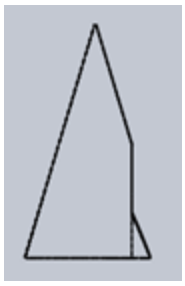
c) 

d) 

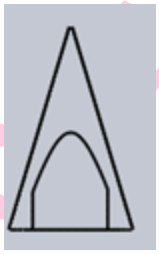
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

8. Identify the back view for the below given cone.



a) 

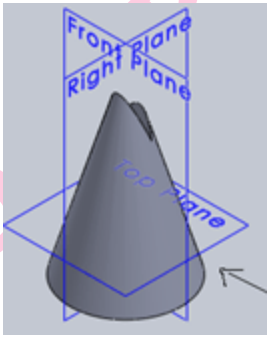
b) 

c) 

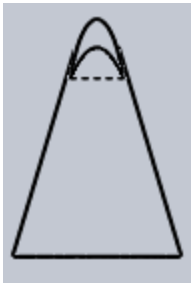
d) 

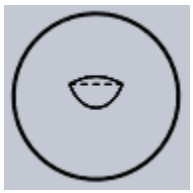
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

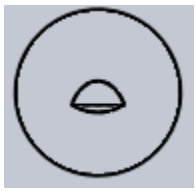
9. Identify the top view for the below given cone.



a) 

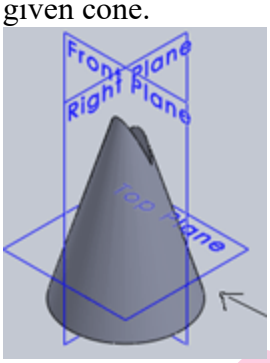
b) 

c) 

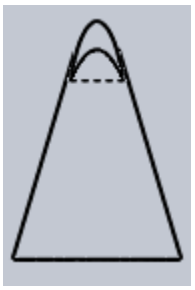
d) 

Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

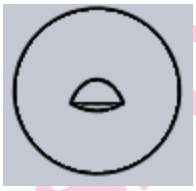
10. Identify the front view for the below given cone.



a) 

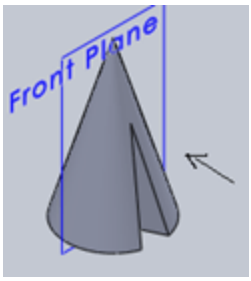
b) 

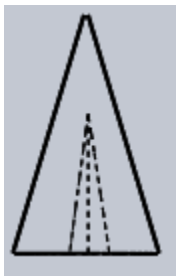
c) 

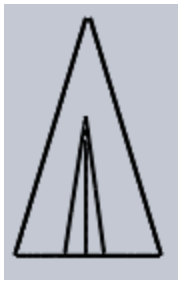
d) 

Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

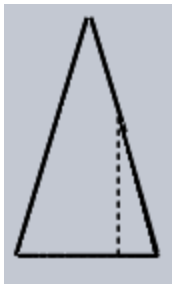
11. Identify the top view for the below given cone.



a) 

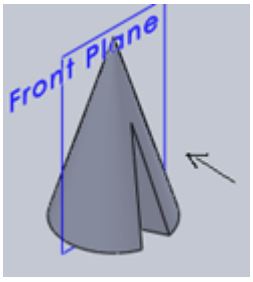
b) 

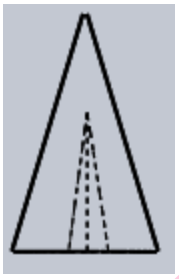
c) 

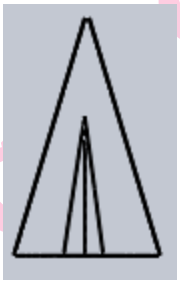
d) 

Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

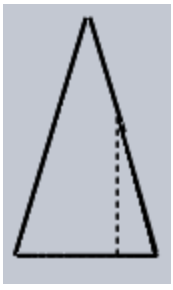
12. Identify the front view of the following cone.



a) 

b) 

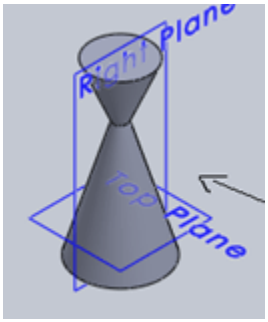
c) 

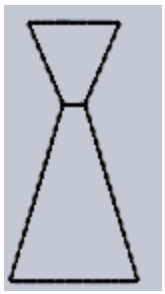
d) 

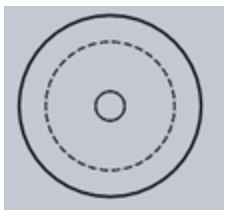
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and

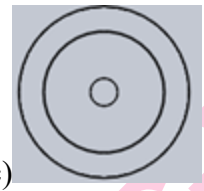
dotted lines represent hidden edges, parts and lines.

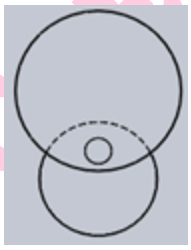
13. Identify the top view for the below given cone.



a) 

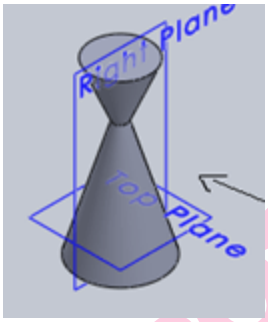
b) 

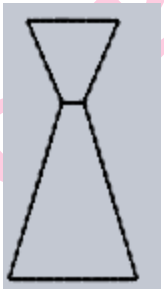
c) 

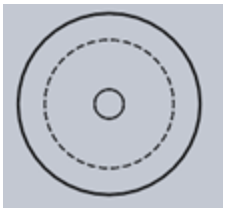
d) 

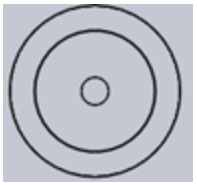
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

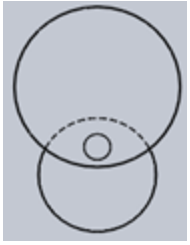
14. Identify the bottom view for the below given cone.



a) 

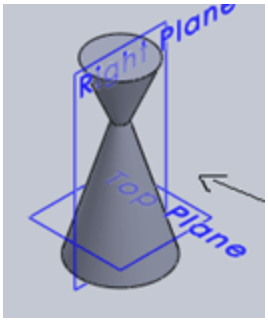
b) 

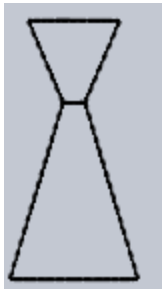
c) 

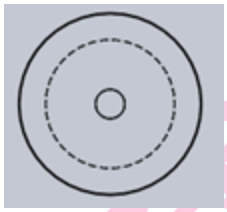
d) 

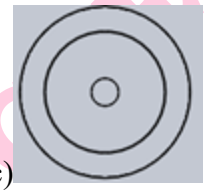
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

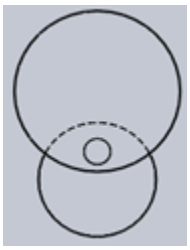
15. Identify the side view for the below given cone.



a) 

b) 

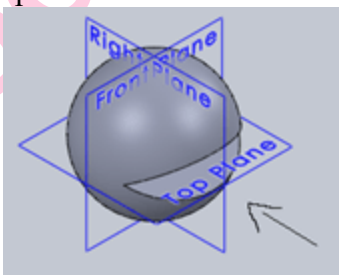
c) 

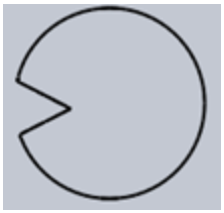
d) 

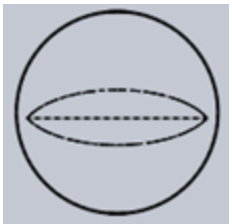
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

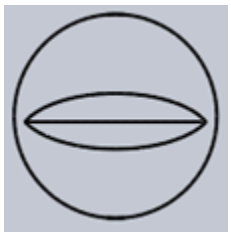
TOPIC 5.7 ISOMETRIC DRAWING OF SPHERES

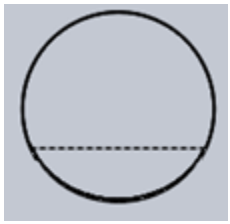
1. Identify the top view for the below given sphere.



a) 

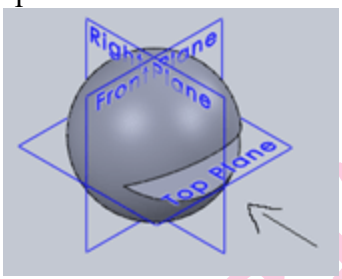
b) 

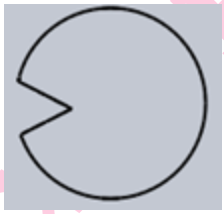
c) 

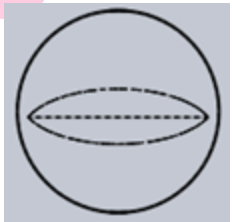
d) 

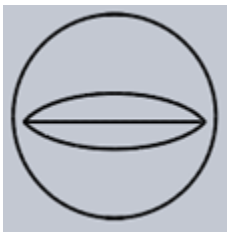
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

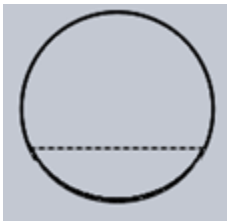
2. Identify the side view for the below given sphere.



a) 

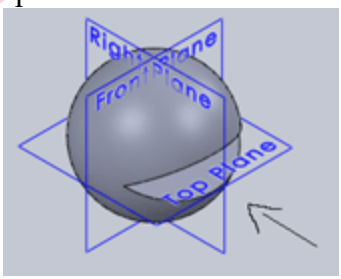
b) 

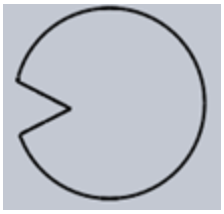
c) 

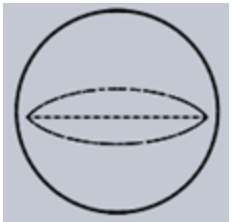
d) 

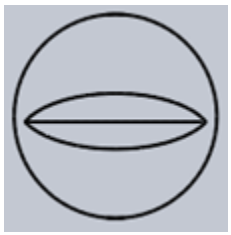
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

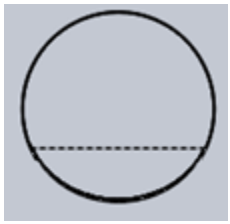
3. Identify the front view for the below given sphere.



a) 

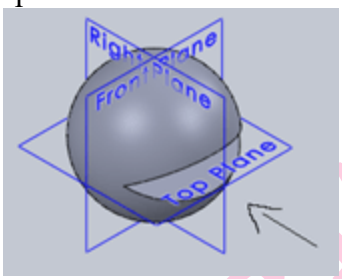
b) 

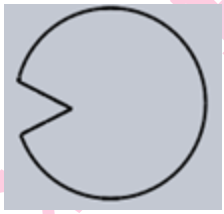
c) 

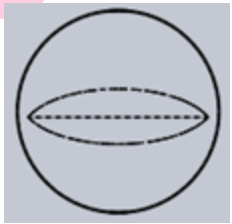
d) 

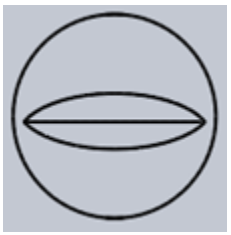
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

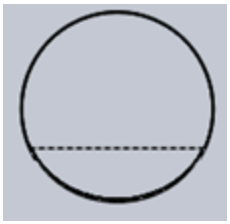
4. Identify the back view for the below given sphere.



a) 

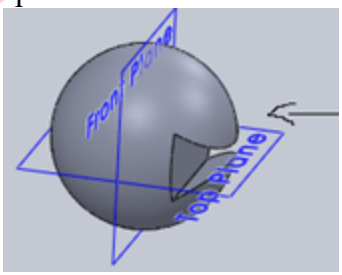
b) 

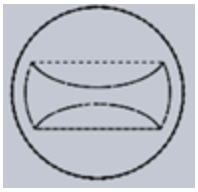
c) 

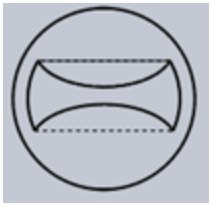
d) 

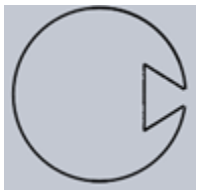
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

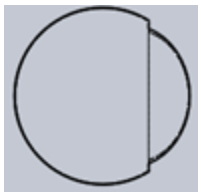
5. Identify the back view from the following sphere.



a) 

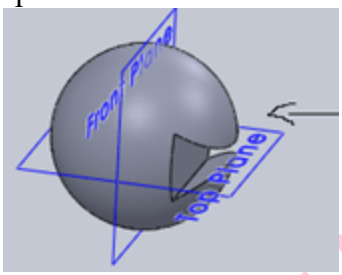
b) 

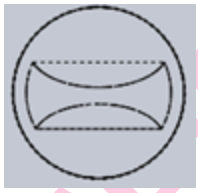
c) 

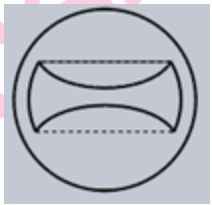
d) 

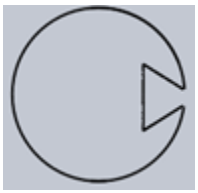
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

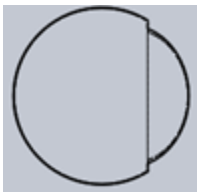
6. Identify the front view for the below given sphere.



a) 

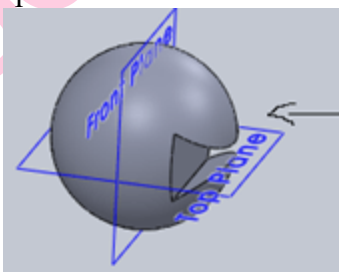
b) 

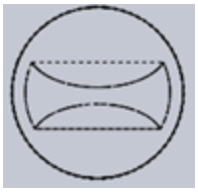
c) 

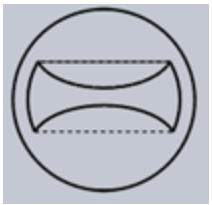
d) 

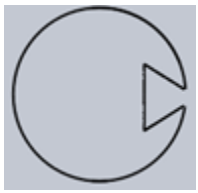
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

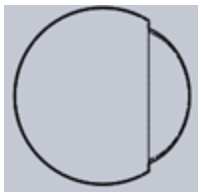
7. Identify the side view for the below given sphere.



a) 

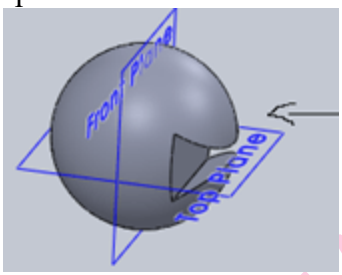
b) 

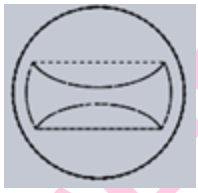
c) 

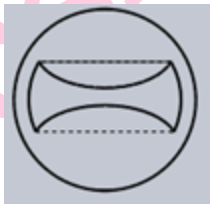
d) 

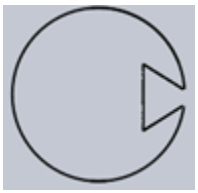
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

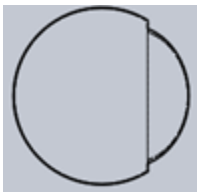
8. Identify the top view for the below given sphere.



a) 

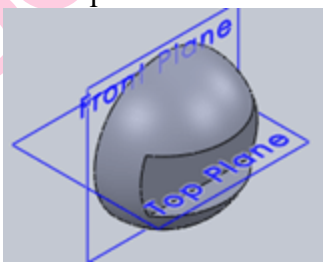
b) 

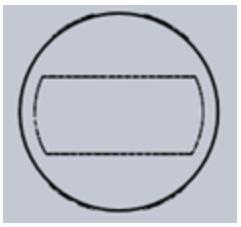
c) 

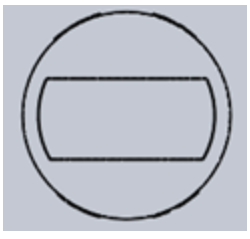
d) 

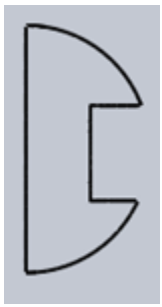
Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

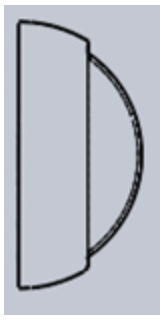
9. Identify the back view for the below given hemi-sphere.



a) 

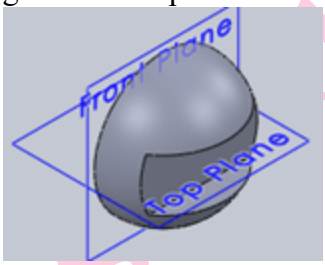
b) 

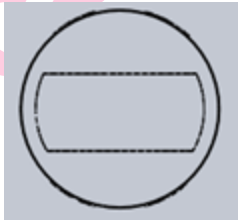
c) 

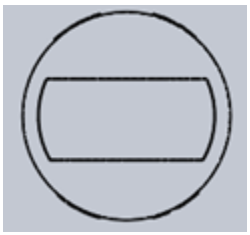
d) 

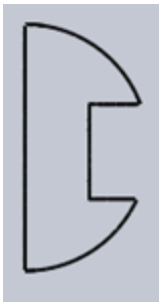
Answer: a
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines. If arrow is not given the name on plane gives u enough information about observer.

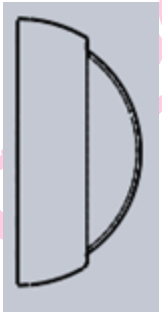
10. Identify the front view for the below given hemi-sphere.



a) 

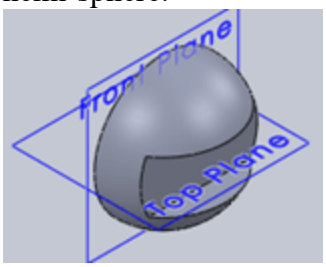
b) 

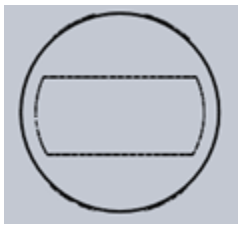
c) 

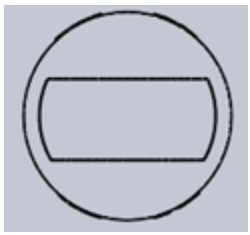
d) 

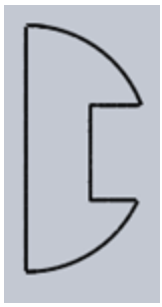
Answer: b
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

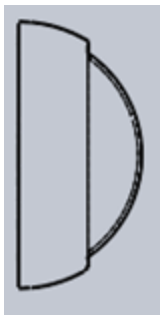
11. Identify the side view for the below given hemi-sphere.



a) 

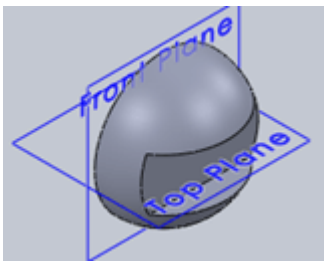
b) 

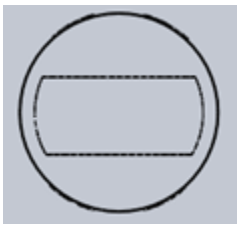
c) 

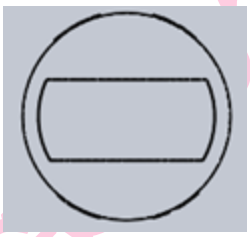
d) 

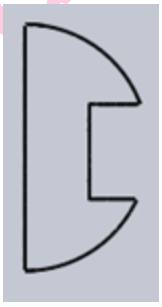
Answer: c
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and dotted lines represent hidden edges, parts and lines.

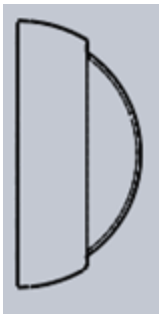
12. Identify the top view for the below given hemi-sphere.



a) 

b) 

c) 

d) 

Answer: d
Explanation: The isometric view should be drawn according to the given views and in such a way that maximum possible details are visible. Arrow mark in the given figure show the direction in which front view is taking and

dotted lines represent hidden edges, parts and lines.

TOPIC 5.8 TYPES OF PERSPECTIVE

1. When an object has its one or more faces parallel to the picture plane, its perspective is called _____ perspective also called one point perspective.
a) parallel
b) oblique
c) vanishing
d) angular

Answer: a
Explanation: When an object has its one or more faces parallel to the picture plane, its perspective is called parallel perspective also called one point perspective as the edges converge to a single vanishing point of the parallel faces.

2. When an object has its two faces inclined to the picture plane, its perspective is called _____ perspective also called two point perspectives.
a) parallel
b) oblique
c) vanishing
d) angular

Answer: d
Explanation: When an object has its two faces inclined to the picture plane, its perspective is called angular perspective also called two point perspectives as the edges of the object converge to two vanishing points.

3. When an object has its three faces inclined to the picture plane, its perspective is called _____ perspective also called 3 point perspective.
a) parallel
b) oblique
c) vanishing
d) angular

Answer: b
Explanation: When an object has its three faces inclined to the picture plane, its perspective is called oblique perspective also called 3 point perspective as edges of the object converge to three vanishing points.

4. Vanishing points for all horizontal lines are inclined at 45 degrees to the picture plane are given special name of _____ points.
a) vanishing
b) far
c) distance
d) distant

Answer: c
Explanation: Vanishing points for all horizontal lines are inclined at 45 degrees to the picture plane are given special name of distance points on account of their definite positions. They are equidistant from the center of vision.

5. Which are equidistant from the center of vision?
a) Station point
b) Ground point
c) Distance point
d) Vanishing point

Answer: c
Explanation: The distance points are equidistant from the center of vision the distance of each from the centre of vision being equal to the distance of the station point from the picture plane the perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the horizon line.

6. The distance of which points from the centre of vision being equal to the distance of the station point from the picture plane?
a) Station point
b) Ground point
c) Distance point
d) Vanishing point

Answer: c
Explanation: The distance points are equidistant from the center of vision the distance of each from the centre of vision being equal to the distance of the station point from the picture plane the perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the horizon line.

7. The perspectives of all horizontal lines inclined at ___ degrees to the picture plane converge to a distance points on the horizon line.
a) 30
b) 45
c) 60
d) 90

Answer: b
Explanation: The distance points are equidistant from the center of vision the distance of each from the centre of vision being equal to the distance of the station point from the picture plane the perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the horizon line.

8. The perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the _____
a) ground line
b) perpendicular axis
c) horizon line
d) center of vision

Answer: c
Explanation: The distance points are equidistant from the center of vision the distance of each from the centre of vision being equal to the distance of the station point from the picture plane the perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the horizon line.

9. The perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a _____ points on the horizon line.
a) vanishing
b) far
c) distance
d) distant

Answer: c
Explanation: The distance points are equidistant from the center of vision the distance of each from the centre of vision being equal to the distance of the station point from the picture plane the perspectives of all horizontal lines inclined at 45 degrees to the picture plane converge to a distance points on the horizon line.

10. The measuring line or the line of heights is the trace or the line of intersection with the _____ plane, of the vertical plane containing the point or points whose heights are to be determined.
a) ground plane
b) picture plane
c) horizontal plane
d) central plane

Answer: b
Explanation: The measuring line or the line of heights is the trace or the line of intersection with the picture plane, of the vertical plane containing the point or points whose heights are to be determined. Heights of points lying in the different vertical plane can be measured from their respective line of heights.

11. Heights of points lying in different _____ can be measured from their respective line of heights.
a) ground plane
b) picture plane
c) vertical plane
d) central plane

Answer: c
Explanation: The measuring line or the line of heights is the trace or the line of intersection with the picture plane, of the vertical plane containing the point or points whose heights are to be determined. Heights of points lying in different vertical plane can be measured from their respective line of heights.

12. The measuring line or the line of heights is the trace or the line of intersection with the picture plane, of the _____ plane containing the point or points whose heights are to be determined.
a) ground plane
b) picture plane
c) vertical plane
d) central plane

Answer: c
Explanation: The measuring line or the line of heights is the trace or the line of intersection with the picture plane, of the vertical plane containing the point or points whose heights are to be determined.

TOPIC 5.9 PERSPECTIVES OF CIRCLES AND SOLIDS

1. The perspective view of a circle in any type of typical position be _____
a) circle
b) ellipse
c) oval
d) lemniscate

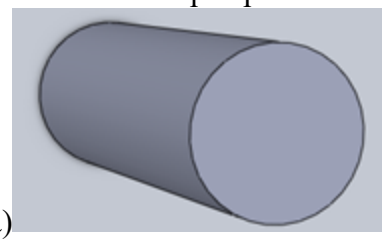
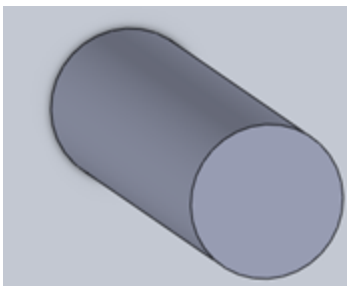
Answer: b
Explanation: The station point in anywhere from the picture plane if a circle is placed in any angle with the ground plane in the maximum possible critical position the perspective of the circle will always be an ellipse.

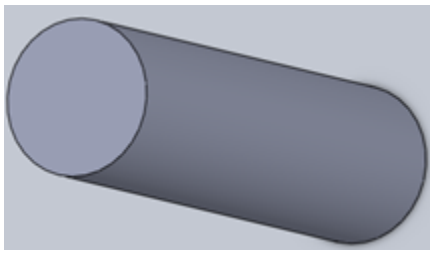
2. To draw the perspective view of a circle the circle should be enclosed in _____ and then pointing points and next steps goes on.
a) square
b) rectangle
c) rhombus
d) parallelogram

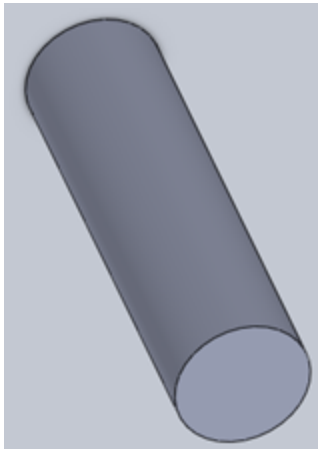
Answer: a
Explanation: To obtain points on an ellipse, the circle should be enclosed in a square and mid points of sides and intersection of diagonals with the circle are 8 points. Lines are drawn through these points, parallel to the sides of the square.

3. The perspectives of concentric circles are not concentric _____
a) circles
b) ellipses
c) spheres
d) ellipsoids

Answer: b
Explanation: Perspectives of concentric circles are not concentric ellipses. Though the both circles give ellipses but inner ellipse might be closer to one of side of outer ellipse and also might be closer to only one side of outer ellipse.

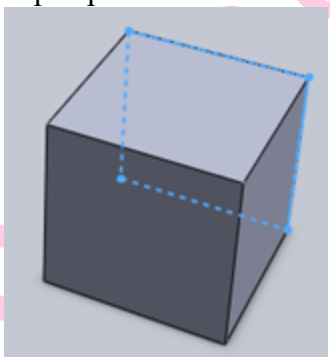
4. Given all are regular cylinders. Identify the one which is in perspective view.
a) 
b) 

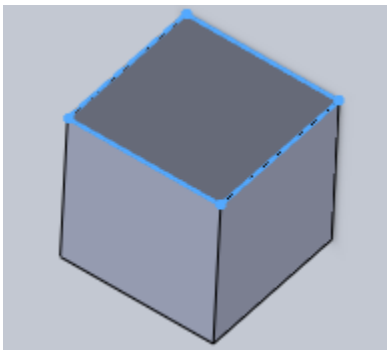
c) 

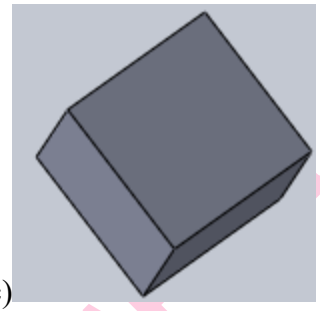
d) 

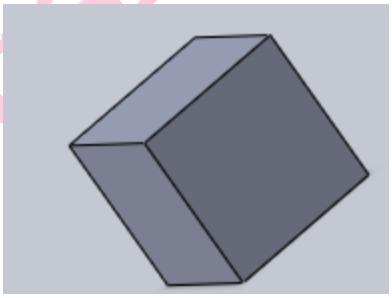
Answer: a
Explanation: In orthographic projection, isometric projection the parallel faces in the solid which having same dimensions will show true exact sizes or in proportions and also in parallel faces but in perspective view the parallel line, edges, faces show differ in dimensions.

5. Given all are cubes. Identify the one which is in perspective view.

a) 

b) 

c) 

d) 

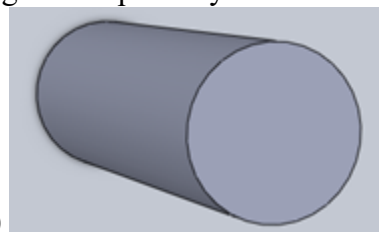
Answer: a
Explanation: In orthographic projection, isometric projection the parallel faces in the solid which having same dimensions will show true exact sizes or in proportions and also in parallel faces but in perspective view the parallel line, edges, faces show differ in dimensions.

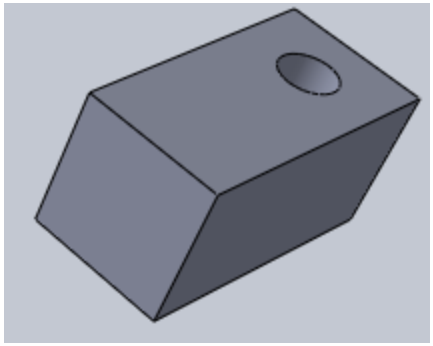
6. Curve of any shape can be drawn in perspective by enclosing it in a _____
a) rectangle
b) cube
c) cylinder
d) square

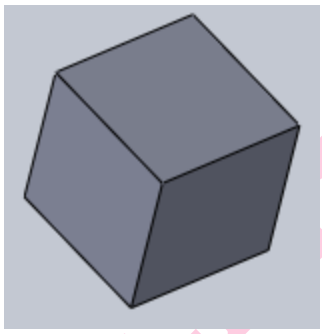
Answer: a
Explanation: Curve of any shape can be drawn in perspective by enclosing it in a

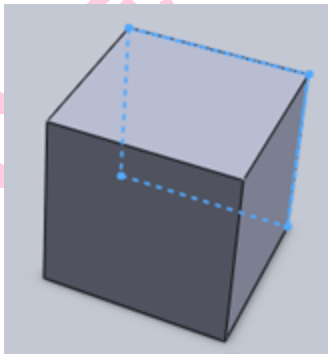
rectangle and then drawing horizontal and vertical lines through a number of points on the curve similar to a circle which is enclosed in square.

7. Which of the following is not in a perspective view? All given figures are regular shapes only.

a) 

b) 

c) 

d) 

Answer: c
Explanation: In orthographic projection, isometric projection the parallel faces in the solid which having same dimensions will show true exact sizes or in proportions and also in parallel faces but in perspective view the parallel line, edges, faces show differ in dimensions.

8. The perspective will remain same even if the station point changes.
a) True
b) False

Answer: b
Explanation: The position of the station point is of great important. Upon its position, the general appearance of the perspective depends. Hence, it should be so located as to view the object in the best manner.

9. For large objects such as buildings, the station point is usually taken at the eye level of a person of normal height that is about _____ meters.
a) 2
b) 1
c) 1.5
d) 1.8

Answer: d
Explanation: For large objects such as buildings, the station point is usually taken at the eye level of a person of about 1.8 meters. For small objects, the station point should be fixed at such a height which gives good view of top faces and side faces.

10. The position of picture plane relative to the object is independent of a size of perspective view.
a) True
b) False

Answer: b
Explanation: The perspective will show the object reduced in size when it is placed behind the picture plane. If the object is

moved nearer the picture plane the size of the perspective will increase and vice versa.

11. The perspective will show the object _____ in size when it is placed behind the picture plane. If the object is moved nearer the picture plane the size of the perspective will _____
a) reduced, decrease
b) reduced, increase
c) increased, reduce
d) increased, increase

Answer: b
Explanation: The perspective will show the object reduced in size when it is placed behind the picture plane. If the object is moved nearer the picture plane the size of the perspective will increase and vice versa.

12. The perspective will show the object _____ in size when it is placed in front of the picture plane. If the object is moved nearer the picture plane the size of the perspective will _____
a) reduced, decrease
b) reduced, increase
c) increased, reduce
d) increased, increase

Answer: c
Explanation: The perspective will show the object increased in size when it is placed in front of the picture plane. If the object is moved nearer the picture plane the size of the perspective will reduce and vice versa.