

Reg. No. :

**Question Paper Code : 11434**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Second Semester

Electrical and Electronics Engineering

GE 2152/185204/ME 26/10111 CE 206/081510002/GE 1151 A — BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Biomedical Engineering and Medical Electronics Engineering, Instrumentation and Control Engineering, Computer Science and Engineering and Information Technology)  
(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the arithmetic equation used in rise and fall method of levelling.
2. Name any two properties of good cement.
3. What is a foundation (for building)?
4. What are the types of flooring used in residential building?
5. Sketch a pictorial view of a rectangular block subjected to a shear force and indicate shear area. Hence, state what is a shear stress?
6. State the advantages of thermal power plant over hydro electric power plant.
7. What are the effects of cavitation in centrifugal pump?
8. What are the main components of an I.C. engine?
9. What is the purpose of lubrication in an IC engine?
10. State the role of condenser in vapor compression refrigeration cycles.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Name any four classifications of surveying based on the instruments used. (4)
- (ii) The leveling work is carried out in the field and the measured levels are given below. Calculate the reduced levels of points. Use height of collimation method. The reduced level of last point is 200 m. (12)

Instrument station	Staff station	B.S.	I.S.	F.S.
P	A	2.380	-	-
	B	-	0.865	-
	C	-	1.380	-
	D	-	1.965	-
Q	E	1.465	-	2.850
	F	-	2.495	-
	G	-	1.560	-
	H	-	1.845	-
	I	-	0.625	-
	J	-	-	1.340

Make usual arithmetic check.

Or

- (b) (i) What are the sources of sand? State the properties of good sand. What are functions of sand in mortar? (8)
- (ii) Sketch any four steel sections that are commonly used in civil engineering. (8)
12. (a) (i) Define Bearing capacity of soils and give the methods of improving the bearing capacity. (6)
- (ii) State the various functions of a foundation for a building. (4)
- (iii) When do we use deep foundations? With the help of suitable sketches, distinguish between bearing pile foundation and friction pile foundation. (6)

Or

- (b) (i) A 200 kN compressive load was applied on cylindrical specimen of 30 mm diameter and 200 mm length. The decrease in the length of specimen was observed as 0.4 mm. Find out the stress, strain and Young's modulus of the material. (5)
- (ii) What is a bridge? What are meant by 'superstructure' and 'substructure' of a bridge? (3)
- (iii) Sketch a line diagram showing the top view of a bridge and state what are 'Piers', 'Abutments', 'Wing walls' and 'Clear span' of a bridge. (3)
13. (a) (i) Draw the layout of a Diesel Power Plant. State the subsystems and components of the plant and explain each one of them briefly. (12)
- (ii) State the advantages and disadvantages of diesel power plant. (4)

Or

- (b) (i) State the basic principle of working of a reciprocating pump. (2)
- (ii) With the help of a neat sketch of a single acting reciprocating pump, name the various components and explain its working. (10)
- (iii) What is the difference between single acting and double acting reciprocating pumps? (4)
14. (a) (i) What is the difference between internal combustion engines and external combustion engines? Give an example for each type. (4)
- (ii) With the help of a diagram, define the parameters: Bore, Stroke, TDC, BDC, Clearance volume, Swept volume and Compression ratio of an internal combustion engine. (12)

Or

- (b) Explain the working of a two-stroke petrol engine, with sketches for the following events:
- (i) End of compression
- (ii) Beginning of exhaust
- (iii) Beginning of 'transfer of charge' into the cylinder
- (iv) Start of compression (16)
15. (a) With the help of a neat schematic diagram, explain the working principle of a vapor absorption refrigeration system. (16)

Or

- (b) Draw the layout diagram of a typical domestic refrigerator and explain the working of its various components. (16)