**REG.NO:**

**SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE**

**ACADEMIC YEAR 2013-2014/ODD SEMESTER**

**CYCLE TEST – I**

**DEPARTMENT OF MECHANICAL ENGINEERING**

SET-B

**SUBJECT CODE/TITLE:** ME 2204 FLUID MECHANICS AND MACHINERY

**YEAR/SEM:** II/III **DATE:**

**DURATION:** 90 Mins **MAX.MARKS:** 50

**PART-A**

( 05X2 = 10 marks)

1) Define fluids and classify the different fluids.

2) What are the properties of ideal fluid?

3) What are the types of fluid flow?

4) Define stream line, streak line, path line flow

5) Define Pascal law

**2 marks**

**PART-B**

(8+16+16 = 40 marks)

1.(i).a)One litre of crude oil weighs 9.6 N. Calculate its Specific weight,

density and specific weight. (8)

b) The Velocity Distribution for flow over a flat plate is given by

u=(2/3)y-y2, Where u is the point velocity in meters per second at a distance y

metre above the plate. Determine the shear stress at y=0 and y=15 cm.

Assume dynamic viscosity as 8.63 poises (8)

**(or)**

(ii)a)Two plates are placed at a distance of 0.15mm apart. The lower plate is

fixed while the upper plate having surface area 1.0 m2 is pulled at 0.3 Nm/s.

Find the force and power required to maintain this speed, if the fluid

separating them is having viscosity 1.5 poise. (8)

b) An oil film of thickness 1.5 mm is used for lubrication between a square

plate of size 0.9m \*0.9m and an inclined plane having an angle of inclination

200 . . The weight of square plate is 392.4 N and its slides down the plane with

a uniform velocity of 0.2 m/s. find the dynamic viscosity of the oil. (8)

2.(i)A pipe line carrying oil of specific gravity 0.87, changes in diameter

from 200 mm diameter at a position A to 500 mm diameter at a position

B which is 4 meters at a higher level. If the pressure at A and B which

is 4 m at a higher level. If the pressures at A and B are 9.81 N/Cm 2 and

5.8 86 N/Cm2 respectively and the discharge is 20 litres/s determine the

loss of head and direction of flow. (16)

**(or)**

(ii)Water is flowing through a pipe having diameter 300 mm and 200 mm

at the bottom end is 24.525 N/cm2 and the pressure at the upper end is(8)

9.81 N/Cm2 . Determine the difference in datum head if the rate of

flow through pipe is 40 lit/s. (16)

3.(i)Discuss the thermodynamic properties of fluids (8)

**(or)**

(ii)Explain Differential manometer With Neat sketch. (8)