Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2023

Semester : Semester V - 2020
Course Code : PET2012
Course Name : Sem V - PET2012 - Reservoir Fluid Mechanics
Program : B.Tech. Petroleum Engineering

Date : 9-JAN-2023
Time : 9.30AM - 12.30PM
Max Marks : 60
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.

PART-A

ANSWER ALL THE FOLLOWING QUESTIONS **5Q X 2M = 10M**

1. Define Pascal's law.

(CO1) [Knowledge]

2. Define moment of inertia.

(CO2) [Knowledge]

3. State Newton's law of viscosity. Write units of viscosity in SI, CGS and field unit.

(CO3) [Knowledge]

4. Define Mach number and write the significance.

(CO4) [Knowledge]

5. What is the use of manometer?

(CO1) [Knowledge]

PART-B

ANSWER ALL THE FOLLOWING QUESTIONS **3Q X 10M = 30M**

6. Various forces influence the motion of fluid. List out the different forces. Write down the forces responsible for Reynold's equation, Navies Stoke equation and Euler's equation of motion. Derive the Bernauli's equation from Euler's equation of motion, also write the assumptions for Bernauli's equation.

(CO3) [Comprehension]

7. Fluid flow can be classified based on different conditions. List out the conditions to classify the fluid flow and explain any two of them.

(CO2) [Comprehension]

8. Select the appropriate function and proof that fluid flow is always possible for that function.

(CO1) [Comprehension]

PART-C

ANSWER THE FOLLOWING QUESTION **1Q X 20M = 20M**

9. Write different thermodynamic flow process and their condition for compressible fluid. Air flows isentropically around a submerged object. At section 1 in the approaching stream the pressure p1 = 101.043 kN/m2, the density ρ1 = 1.226 kg/m3 and the velocity V1 = 135 m/s. At point 2 near the object, the pressure p2 is observed to be 39.24 kN/m2. Calculate
   (a) the temperature ratio between these two points
   (b) Mach number at each point. Take k = 1.4 and R = 287 J/kg. K.
   (c) Based on Mach number, select the flow type.

(CO4) [Application]

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