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FOURTH SEMESTER
MID SEMESTER EXAMINATION

Roll No.....
B.TECH[PT]
March-2019

PT202 Fluid Mechanics

Time: 1 Hour 30 minutes **Max. Marks - 30**

Instructions to the candidates:

1) Attempt all questions

Q.1 Write Answers in one word. (6×1 = 6)

(a) Hydraulic pressure is a vector quantity or tensor quantity or scalar quantity?

(b) Write the units of viscosity in SI units.

(c) Give an example of tensor quantity used in fluid mechanics.

(d) Viscosity of a Newtonian fluid depends on _____.

(e) Density of an incompressible fluid is the function of _____.

(f) Name a device, used to measure the flow of a fluid in the closed channel.

Q.2 Write Short Answers (3×2 = 6)

(a) A fluid is flowing from a circular pipe of diameter 0.05 m with velocity 2 m/s. The density of fluid is 1000 kg/m^3 the Reynolds number of flowing fluid is 100. Calculate the viscosity of the fluid.

(b) Explain the Newton's Law of viscosity.

(c) What is the difference between fully developed and developing flow.

P.T.O

Q.3 (a) A U tube manometer is used to measure the pressure drop across an orifice. Manometer liquid is mercury (density 13,590 Kg/m^3). Level of mercury in both tubes differs of 5 centimetre. What is the pressure difference across the manometer?

(3)

(b)What is the difference between laminar and turbulent flow? What is the range of Reynolds number for laminar and turbulent flow in a circular tube

(3)

Q.4 (a) Derive equation of continuity in Cartesian Coordinate systems. Simplify the expression for study state conditions and incompressible fluid.

(6)

Q.5 A Newtonian fluid is flowing through a horizontal circular pipe. Determine the velocity profile of the fluid for study state condition and fully develop region.

(6)

END