B.E(FT+MBA CHEM.) 2nd year
Mis semester exam
Fluid flow

Max. marks : 30

Q1: The resistance R experienced by a partially submerged body depends upon the velocity V, length of the body l, viscosity of the fluid μ, density of the fluid ρ and gravitational acceleration g. Obtain a dimensionless express for R. (5)

Q2: The impeller of a centrifugal pump has external and internal diameter of 500mm and 250mm respectively, width of outlet is 50mm and running at 1200rpm.it works against a head of 48m. the velocity of the flow through the impeller is constant and equals to 3.0 m/s. The veins are set back at an angle of 40degree at outlet. Determine (10)

1)inlet vane angle

2) work done by the impeller on the water per second.

3)Manometer efficiency.

Q3) : (a) Oil of specific gravity 0.82 is pimped through a horizontal pipeline of 15 cm diameter, 3 cm long at the rate of 900 lit/min. The pump has en efficiency of 60% and requires 10hp to pump the oil. Determine the dynamic viscosity of the oil and verify whether the flow is laminar or turbulent.

(b) Derive an equation for flow measurement using venturi-meter, and list all assumptions. (10)

Q4 : (a) Find the loss of head when a pipe of diameter 250 mm is suddenly enlarged to a diameter of 450 mm. The rate of flow of water through the pipe is 300 lit/sec.

(b) What is the significance of Mach No.? Also define Mach No.

(c) Define and explain the concept of stagnation Point.

(d) Explain the characteristics curve of pumps and NPSH. (10)