



- N. B. :
- (1) Question No. 1 is compulsory.
 - (2) Attempt any three questions out of the remaining five questions.
 - (3) Assume suitable data wherever necessary.

1. Attempt any four questions : -
 - (a) What is Piezometer ?
 - (b) Differentiate between Venturimeter and Orificemeter.
 - (c) How can we predict the type of flow based on Reynold's number ? Calculate the Reynold's number of flow for a liquid of density 1000 kg/m^3 flowing with a velocity 1 m/s and viscosity 1 cp . The diameter of the pipe is 8 cm .
 - (d) Explain Rittinger's Law for size reduction.
 - (e) Explain the types of impellers.
 - (f) Explain belt conveyer with neat sketch.

2. (a) The right limb of a simple U-tube manometer containing mercury is open to the atmosphere while the left limb is connected to a pipe in which a fluid of density 900 kg/m^3 (specific gravity 0.9) is flowing. The centre of the pipe is 12 cm below the level of mercury in the right limb. Find the pressure of fluid in the pipe if the difference of mercury level in the two limbs is 20 cm . 10
- (b) Two horizontal plates are placed 1.25 cm apart the space between them being filled with oil of viscosity 14 poise . Calculate the shear stress in oil if upper plate is moved with a velocity of 2.5 m/s . 5
- (c) The diameters of a pipe at the section 1 and 2 are 15 cm and 20 cm respectively. Find the discharge through the pipe if velocity of water at section 1 is 4 m/s . Determine the velocity at section 2. 5

3. (a) Give the classification of energy losses occurring in pipe. Find the head loss due to friction in a pipe of diameter 250 mm and length 60 m through which water is flowing at velocity of 3 m/s using Darcy formula. 10
- (b) Explain principle, construction and working of Rotameter with neat sketch. 10

4. (a) With respect to Centrifugal pump explain :
 - (i) Cavitation and its prevention 10
 - (ii) Priming
 - (iii) Net positive suction head.
- (b) Derive Bernoulli's equation for flow of incompressible fluid through a non-uniform pipe. 10

5. (a) What is screen analysis ? How data obtained in screen analysis is represented ? 10
- (b) Explain batch test of sedimentation with neat diagram. 10

6. Write short notes on (any four) : -
 - (a) Bourdon Gauge 20
 - (b) Pitot Tube
 - (c) Fluid Energy Mill
 - (d) Blowers
 - (e) Helical Blade Mixer.