PVP 14

Code: CE4T4

II B.Tech - II Semester–Regular/Supplementary Examinations–April 2018

HYDRAULICS & HYDRAULIC MACHINERY
(CIVIL ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22M

1. a) What is Chezy's formula? What is its significance?
   b) What do you understand by most efficient channel section?
   c) What is Froude number? What is its importance?
   d) What is dimensional analysis?
   e) Define impulse-momentum equation.
   f) Define: (i) Load Factor (ii) Utilization Factor
   g) Explain the concept of multistage pump?
   h) What is the purpose of surge tank?
   i) What is manometric head of a pump?
   j) Define specific speed of a pump?
   k) What is a reaction turbine?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Classify and explain about various types of flows in open channels. 8 M

   b) Explain the phenomenon of formation of hydraulic jump. 8 M

3. a) The efficiency 'η' of a fan depends on density 'ρ', viscosity 'μ', angular velocity 'ω', diameter 'D', and discharge 'Q'. Find the π-terms. 8 M

   b) Name and define various dimensionless numbers. 8 M

4. a) Derive an expression for the impact of jet striking tangentially at one of the tips of a stationary unsymmetrical curved vane. 8 M

   b) A jet of water 50 mm in diameter having a velocity of 20 m/s strikes normally a flat smooth plate. Determine the thrust on the plate (i) if the plate is at rest (ii) if the plate is moving in the direction of jet at 8 m/s. Find the work done and efficiency. 8 M

5. a) Explain with a neat diagram the functionality of a Pelton wheel turbine. 8 M

b) Explain the concept of governing of turbine with the help of neat sketch. 8 M

6. a) Explain about 8 M
(i) Impeller (ii) Volute casing (iii) Suction & Delivery pipes (iv) Pump losses

b) Write about the phenomenon of cavitation and its control in centrifugal pumps. 8 M