B.Tech. 4th Semester (FT)-F-Scheme Examination, May–2018

Paper–FT–210

Pumping machinery and Fluid Mechanics

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt any **five** questions in all. **Q. No. 1 is compulsory** and select at least **one** question from each section.*

1. (a) Derive Force Exerted By Jet on A Series of Moving Radial Curved Vanes. 5
   (b) Differentiate pump and turbine. 5
   (c) Write Short Note on equation of continuity. 5
   (d) State the assumptions made in Bernoulli's equation of motion. 5

Section–A

2. A Jet of water having velocity of 20m/s strikes a curved vane, which is moving with a velocity of 20m/s. The jet makes an angle of 20° with the direction of motion of vane at inlet and leaves at angle of 130° to the direction of motion of vane at outlet. Calculate :
   (i) Vane angles, so that water enters and leaves the vanes without shock.
   (ii) Work done /sec/unit weight of water striking / sec. 20

3. What is pump ? How can you classify the different types of pump ? Explain the reciprocating pump along with its all parts ? 20

Section–B

4. Explain the various water lifting devices and how the selection of same is done explain. 20

5. Explain with neat sketch the working principle of Centrifugal pump. 20

Section–C

6. Describe the differential equation of continuity in cylindrical co-ordinates. 20

7. Explain the one dimensional method of flow analysis. 20

Section–D

8. State and prove Bernoulli's Theorem with assumptions made and also discuss the practical applications of Bernoulli's equation. 20

9. Derive an expression for discharge in orifice. 20