2154

B. E. 4th Semester (Civil Engg.)
Examination – May, 2012

FLUID MECHANICS - II

Paper : CE-206-E

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any five questions.

1. (a) How are cavitation be avoided ?   10

     (b) Draw the various shapes of the outlet velocity diagram.   10

2. Show the hydraulic efficiency for an Inward reaction turbine discharging radially at outlet is given by.   20

$$\eta h = \cfrac{1}{1 + \left[\cfrac{\frac{1}{2}\tan^2 \alpha}{1 - \cfrac{\tan \alpha}{\tan \theta}} \right]}$$

where α = guide angle

θ = runner vane angle

3. Explain construction and working of Pelton turbine with diagram and all features. 20

4. A liquid flow through a pipe of dia 250 mm. The local velocities at the centre mid radius are 2.31 m/sec. and 2.09 m/sec. Find the discharge and pipe roughness. 20

5. Find at what bed slope a 4 m wide rectangular channel be laid so that the flow is critical at a normal depth of 1.25 m. Take N = 0.015. 20

6. An undershot water wheel is fed with water from head race at a head of 2.75 m above centre of sluice. Find the dia of wheel if its speed is 10 rpm. The peripheral speed is 0.47 times the jet speed. Take $C_v = 0.97$. 20

7. (a) Write a short notes on runaway speed. 10

   (b) Write a short note on drag on a sphere. 10

8. Explain construction, working and Principle of Simplex, Duplex pumps with advantages, disadvantages and applications. 20

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