R16

SET - 1

II B. Tech II Semester Supplementary Examinations, April - 2021
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A

1. a) Define critical depth

    b) Draw surface profiles

    c) Define dynamic similarities

    d) Write briefly on Cavitation

    e) Explain on Heads and efficiencies

    f) Write the purpose of centrifugal-pumps

PART -B

2. a) A rectangular channel carries water at the rate of 400*litress* when bed slope is 1 in 2000.Find the most economical dimensions of the channel if c=50.
    b) Explain specific energy curve in detail with figure.

3. Explain the different types of similarities that must exist between the Model and Prototype.

4. Find the expression for the power P developed by a pump when P depends upon the head H, the discharge Q and specific weight W of the fluid.

5. Obtain an expression to the work done per second by water on the runner of a Pelton wheel. Hence derive an expression for maximum efficiency of the Pelton wheel giving the relationship between the jet speed and the bucket speed

6. An inward flow reaction turbine has an exit diameter of 1metre and its breadth at inlet is 250*mm*. If the velocity of flow at inlet is 2*m/s*, find the mass of water passing through the turbine per second. Assume 10% of the area of flow is blocked by blade thickness. If the speed of the runner is 210 r.p.m and guide blades make an angle of 10^0 to the wheel tangent, draw the inlet velocity triangle and find the runner vane angle at inlet, the velocity of wheel at inlet, the absolute velocity of water leaving the guide vanes and the relative velocity of water entering the runner blade.

7. a) Explain the method of selection of centrifugal pumps through the characteristic curves

    b) Explain the various performance characteristic curves of a turbine, in detail.

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