II B. Tech II Semester Supplementary Examinations, November - 2018
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Mark70

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) Write different types of flows
   b) What is energy dissipation
   c) Write the different dimensionless numbers
   d) Write the expressions for work done
   e) What are different surge tanks
   f) Write the classification of turbines

PART -B

2. Prove that for a channel of circular section the depth of flow d = 0.95 D for maximum discharge where d = depth of flow and D = diameter of circular channel

3. a) Explain Rayleigh's method..
   b) Derive the condition for a most economical rectangular channel.

4. Define the term Reynold's number and Froude's number and Differentiate between Tranquil and Torrential flow in open channel

5. Explain unit and specific quantities in detail with derivations.

6. An impulse turbine of 2.75 m diameter is rated at 11000kW at 300 r.p.m under a head of 490 m. It uses 2.7 m^3/sec discharge if the turbine is operated under a head of 400 m.
(a) What will be the speed, power and discharge.
(b) Determine the size of the wheel to develop 7000kW power under a head of 300 m. Also determine the speed and discharge

7. When a run-of-river plant operates as a peak load station with a weekly load factor of 20%, all its capacity is firm capacity. What will be the minimum flow in the river so that the station may serve as the base load station?. It is given that Rated installed capacity of generator = 10,000kW
Operating head = 15m
Plant efficiency = 80%
Estimate the daily load factor of the plant, if the stream flow is 15cumec
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