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Total No. of Pages: 02
Total No. of Questions: 09

# B. Tech (Sem.-6 ${ }^{\text {th }}$ ) <br> FLUID MACHINERY <br> Subject Code: BTME-603 <br> Paper ID: [A2363] 

Time: 3 Hrs.
Max. Marks: 60

## INSTRUCTIONS TO CANDIDATE:

## 1. Section-A is Compulsory:

2. Attempt any four questions from section $B$ and any two questions from section-C

## SECTION-A

Q1.
a) What are the basic components of turbo machines?
b) What is the condition for hydraulic efficiency of a pelton wheel to be maximum?
c) What is a draft tube?
d) What is cavitation?
e) Define degree of reaction?
f) How are centrifugal pumps classified?
g) Define manometric head?
h) What is negative slip in reciprocating pump?
i) Mention the advantages of an air lift pump?
j) What is priming of a centrifugal pump?

## SECTION-B

Q2. A jet of water of diameter 40 mm moving with a velocity of $30 \mathrm{~m} / \mathrm{s}$ strikes a curved fixed symmetrical plate at the centre. Find the force exerted by the jet water in the direction of the jet if the jet is deflected through an angle of $120^{\circ}$ at the outlet of the curved plate?

Q3. Explain the purpose of providing scroll casing and guide vanes for a reaction turbine.
Q4. What do you understand by Net Positive Suction Head? Discuss its application in determining turbine setting?

Q5. What is governing and how it is accomplished for different types of turbine? Discuss
Q6. Explain with neat sketches the function of air vessels in a reciprocating pump?

## SECTION-C

Q7. A pelton wheel is required to develop 6 MW when working under the head of 300 m . It rotates with a speed of 550 rpm . Assuming jet ratio as 10 and overall efficiency as $85 \%$, calculate: i) diameter of the wheel ii) quantity of water required and iii) number of jets Assume suitable values for the velocity coefficient and the speed ratio.

Q8. A centrifugal pump impeller runs at 80 rpm and has outlet vane angle of $60^{\circ}$. The velocity of flow is $2.5 \mathrm{~m} / \mathrm{s}$ throughout and diameter of the impeller at exit is twice that at inlet. If the manometric head is 20 m and the manometric efficiency is $75 \%$, determine i ) the diameter of the impeller at the exit and ii) inlet vane angle.

Q9. Explain the operation and construction of a hydraulic ram with a neat sketch.

