Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Automation & Robotics) (2018 Batch) (Sem.–3)

FLUID MECHANICS AND FLUID MACHINES

Subject Code : BTAR-304-18

M.Code : 76503

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

(a) Define specific viscosity

(b) Define surface tension.

(c) State different types of fluid flow

(d) What are the different forms of draft tubes?

(e) Define slip in pumps.

(f) What is the function of air vessels?

(g) Define mechanical efficiency of turbine.

(h) Name the various problems commonly experienced during operation of centrifugal pumps.

(i) What is NPSH?

(j) Define Reynold's number.

SECTION-B

2. A horizontal venturimeter with inlet diameter 20 cm and throat diameter 10 cm is used to measure the flow of water. The pressure at inlet is 17.658 N/cm^2 and the vacuum pressure at the throat is 30 cm of mercury. Find the discharge through venturimeter by assuming Cd=0.98.

3. Discuss any three similarity model laws.

4. Discuss the working of Single acting Reciprocating Pump with diagram.

5. A centrifugal pump is to discharge 0.118 m^3/s at a speed of 1450 rpm against a head of 25 m. The impeller diameter is 250 mm, its width at outlet is 50 mm and manometric efficiency is 75%. Determine the vane angle at outlet.

6. Discuss Unit Quantities in Turbines.

SECTION-C

7. Derive an equation for friction in pipes.

8. A Pelton wheel is having mean bucket diameter of 1 m and is running at 1000 rpm. The net head on the Pelton wheel is 700 m. If the side clearance angle is 15 degree and discharge through nozzle is 0.1 m^3/s, find the power available at the nozzle and hydraulic efficiency.

9. Discuss the main characteristics curves of turbines.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.