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C09-M-406

3506

**BOARD DIPLOMA EXAMINATION, (C-09)
OCT/NOV—2018
DME—FOURTH SEMESTER EXAMINATION
HYDRAULICS & FLUID POWER SYSTEMS**

*Time : 3 hours**[Total Marks : 80***PART—A**

10×3=30Marks

- Instructions :** (1) Answer **all** questions
(2) Each questions carries **three** marks.
(2) Answer should be brief and straight to the point and shall not exceed **five** simple sentences.

1. Define specific weight and specific gravity of fluid.
2. State Bernoulli's theorem and write it mathematically.
3. What is the purpose of syphon? Write the limitations encountered in flow through syphon.
4. Write an expression for the normal force of impact of jet on an inclined fixed plate.
5. Write any three differential between impulse and reaction turbine.
6. What is meant by governing of hydraulic turbines?
7. What is meant by cavitation and what are the effects of cavitation in pumps?
8. What is purpose of accumulator.
9. Write the applications of pneumatic power circuits.
10. What are the advantages of combined air and oil systems?

PART—B

- Instructions :** (1) Answer any **five** questions
(2) Each question carries **ten** marks.
(2) The answer should be comprehensive and the criteria for valuation is the content test not the length of the answer.
- 11.** A U-tube manometer is used to measure pressure of oil flowing in a pipe. The level of mercury in the left limb is 0.7 m below the centre of pipe-line and right limb is open to atmosphere. The level of mercury in right limb is 0.5 m above that in the left limb. Find the oil pressure in the pipe. Take specific gravity oil as 0.8.
- 12.** A Venturimeter 300×100 mm is used for measuring the discharge of an oil flowing through a pipe. The difference of pressures measured by a differential mercury manometer is 150 mm. The specific gravity of oil is 0.8 and the coefficient of discharge of venturimeter is 0.97. Calculate the discharge of oil in liters/sec.
- 13.** What is discharged from a tank maintained at a constant head of a 6 m above the exit of a straight 100 m long pipe. Estimate the rate of flow if the diameter of pipe is 200 mm. Take Darcy's friction factor $f = 0.01$.
- 14.** A jet of water of diameter 10 cm strikes a flat plate normally with a velocity of 15 m/s. The plate is moving with a velocity of 6 m/s in the direction of jet and away from the jet. Find
i) Force exerted by the jet on the plate.
ii) Work done by the jet on the plate per second.
iii) Efficiency of Jet.
- 15.** Explain the working of kaplan turbine with a neat sketch.
- 16.** Explain the working of a Centrifugal pump with a neat sketch.
- 17.** Explain the principle of working of Hydraulic jack with a neat sketch.
- 18.** Explain the principle of working of pneumatic safety circuit against overload.