

**6447****BOARD DIPLOMA EXAMINATION, (C-16)****MARCH / APRIL — 2021****DME — FOURTH SEMESTER EXAMINATION****HYDRAULICS & FLUID POWER CONTROL SYSTEMS***Time : Three Hours]**[Maximum Marks : 80***PART-A**

3×10=30

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

1. Define Dynamic viscosity and Kinematic viscosity.
2. Distinguish between Rotational flow and Irrotational flow.
3. Mention any three uses of Syphon.
- * 4. Find the force exerted by water jet moving with a velocity 10 m/sec strikes normally a moving plate with 5 m/sec. The plate is moving in the direction of jet. Diameter of jet = 40 mm.
5. State the functions of Runner and Breaking jet of a Pelton wheel.
6. What is Cavitation? Mention the effects of Cavitation.
7. List any six applications of Oil power systems.
8. What is the function of Check valve?
9. List out various seals which are using in pneumatic cylinders.
10. State the functions of Regulator.

- Instructions :**
- (i) * Answer any **five** questions.
 - (ii) Each question carries **ten** marks.
 - (iii) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Describe the working of Bourdon tube pressure gauge with a sketch.
12. A Venturimeter $200 \text{ mm} \times 100 \text{ mm}$ is used for measuring the flow of oil of specific gravity 0.8. The oil-mercury differential gauge shows a deflection of 250 mm. Find the discharge of oil in lit/sec. Take $C_d = 0.98$.
13. A water pipe is used for maximum transmission of power of 300 kW under most efficient condition. The length of pipe is 1500 m. The pressure head at the inlet of the pipe is 509.7 m. Determine the diameter of pipe, take $f = 0.03$.
14. A jet of water with 50 mm diameter impinges on a curved vane at its centre and is deflected through 135° . The vane moves in the same direction as that of jet with a velocity of 5 m/sec. If the rate of flow of water is 30 lit/sec, determine
 - (i) Force on the vane in the direction of motion,
 - (ii) Work done per sec,
 - (iii) Efficiency.
15. Two jets strikes the buckets of an impulse turbine. The diameter of each jet is 25 cm. The shaft power of the turbine is 15.5 MW. The net head on the turbine is 330 m. Find overall efficiency of turbine. Take $C_v = 0.98$.
16. Explain the construction and working of single acting reciprocating pump.
17. Describe the working and construction of $3/2$ DCV and $4/2$ DCV with neat sketches.
18. What are the essential components of pneumatic circuit and state their functions?

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