

1513**Code : 15ME41T***Register
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IV Semester Diploma Examination, April/May-2019**HYDRAULICS & PNEUMATICS****Time : 4 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any six questions from PART – A.
(ii) Answer any seven questions from PART – B.

PART – A

1. Define the following properties and mention their units : 5
 - (i) Specific gravity
 - (ii) Specific Volume
2. Explain the following terms with units. 5
 - (i) Dynamic Viscosity
 - (ii) Kinematic Viscosity
3. State Bernoulli's theorem. Mention the assumptions made. 5
4. Explain different types of losses in fluid flow through pipes. 5
5. Explain Surge tank. Mention its functions. 5
6. Differentiate between centrifugal pump and reciprocating pump. 5
7. List the hydraulic system components with their functions. 5
8. List the advantages of Pneumatic System. 5
9. Sketch the following Pneumatic symbols : 5
 - (i) FRL unit
 - (ii) Air Compressor
 - (iii) Single acting cylinder
 - (iv) 2/2 DC Valve
 - (v) Non-return valve

PART – B

10. (a) Write any two advantages and two disadvantages of Manometers. 4
(b) Explain with a neat sketch Bourdon's tube pressure gauge. 6
11. (a) Explain equation of continuity. 4
(b) A 25 cm dia. pipe carries oil of specific gravity 0.9 at a velocity of 3 m/s. At another section the diameter is 20 cm. Find the velocity at this section, discharge through the pipe and mass rate of flow. 6
12. (a) Distinguish between Laminar and turbulent flow. 4
(b) A horizontal venturimeter with inlet and throat dia. 30 cm and 15 cm respectively is used to measure the flow of water. The reading of differential manometer connected to inlet and throat is 20 cm of mercury. Determine the rate of flow. Take $C_d = 0.98$. 6
13. The pressure at inlet of pipe is 400 kPa and pressure drop is 200 kPa. The pipeline is 1.5 km long. If 100 kW is to be transmitted over this pipeline, find the diameter of the pipe and efficiency of transmission. Take $f = 0.006$. 10
14. (a) Explain : (i) Penstock (ii) Anchor Block 4
(b) A pelton wheel develops 2000 kW under a head of 100 m with an overall efficiency of 85%. Find the diameter of the nozzle if C_v for nozzle is 0.98. 6
15. A Centrifugal pump having an overall efficiency of 75% is discharging 30 litres of water/sec. through a pipe of 150 mm dia. 125 m long. Calculate the power required to drive the pump if the water is lifted through a height of 25 m. Take $f = 0.01$. 10
16. (a) State the classification of control valves with their functions. 4
(b) Sketch and explain the pressure reducing valve. 6
17. (a) Sketch and explain the Gear pump. 5
(b) Sketch and explain the Spring loaded Accumulator. 5
18. (a) Explain lubricator. Mention its functions. 5
(b) Explain piston motor with sketch. 5
19. (a) Sketch and label the Vane Compressor. 5
(b) Explain with a neat sketch the double acting Cylinder. 5