

1053**Code : 15ME41T****Register
Number**

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IV Semester Diploma Examination, Oct./Nov.-2019**HYDRAULICS & PNEUMATICS****Time : 3 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 properties. 5
 - (a) Viscosity
 - (b) Surface Tension
2. Explain with a neat sketch Differential Monometer. 5
3. Define Hydraulic co-efficients. 5
4. Explain water hammer in pipes. 5
5. Differentiate Impulse and Reaction Turbines. 5
6. What are air vessels ? Mention its functions. 5
7. List the components of Hydraulic system with a block diagram. 5
8. What are Accumulators ? Sketch and explain spring loaded Accumulator. 5
9. Write short notes on Ports and positions of valves. 5

PART - B

15ME41T
(i) Sketch
(ii) Explain

10. (i) List different types of monometers and mechanical gauges. 3
(ii) Explain Bourdon's tube pressure gauge with a neat sketch. 7
11. (i) Distinguish between 6
(a) Steady and unsteady flow
(b) Compressible and Incompressible flow
(ii) List the applications of Bernoulli's theorem. 4
12. (i) Mention three Assumptions made in Bernoulli's theorem. 3
(ii) Water is flowing through a pipe having diameters 200 mm and 150 mm at section 1 & Section 2 respectively. The rate of flow through pipe is 40 litres per second. Section 1 is 6 m above the datum and section 2 is 3 m above the datum. If the pressure at section 1 is 295 kPa. Find the intensity of pressure at section 2. 7
13. Water is supplied to a town of 400000 inhabitants. The reservoir is 6.4 km away from the town and loss of head due to friction in pipeline is measured as 1.5 m. Calculate the size of supply main, if each inhabitant consumes 180 litres of water per day and half of the daily supply is pumped in 8 hours. Take the frictional factor for the pipeline as 0.030. 10
14. A pelton wheel has to develop 5000 kW under a net head of 300 m, while running at a speed of 500 rpm. If the co-efficient of velocity for the jet is 0.97, Speed ratio is 0.46 and the ratio of jet diameter is 1/10 of wheel diameter. Calculate (a) Quantity of water supplied to wheel (b) Diameter of pitch circle (c) Diameter of jet and (d) No. of jets. Assume overall efficiency of wheel as 80%. 10
15. (i) What is negative slip of pump ? 3
(ii) A single acting Reciprocating pump having a bore of 150 mm diameter and stroke of 300 mm length discharges 200 lts/min of water at 40 rpm. Neglecting losses; find
(a) Theoretical discharge in lts/min.
(b) Co-efficient of discharge
(c) Slip of the pump 7

16. (i) Sketch and explain working principle of Lobe Pump. 5
(ii) Explain pressure Relief valve with diagram. 5
17. (i) List the applications of Hydraulic System. 5
(ii) Explain the construction of Rotary Spool valve. 5
18. (i) What is FRL unit ? State the functions of FRL unit. 4
(ii) Explain the working of Reciprocating Air Compressor with neat sketch. 6
19. (i) Explain the working of Single acting cylinder with neat sketch. 5
(ii) Write the symbolic representations of the following : 5
- (a) FRL Unit
 - (b) 3/2 Pilot operated DCV
 - (c) Variable displacement compressor
 - (d) Flow control valve
 - (e) Shuttle valve
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BETA CONSOLE