1276

Code : 15ME-41T

Register Number | | | | | | | |

IV Semester Diploma Examination, April/May-2017

HYDRAULICS & PNEUMATICS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** from Part – **A** and any **seven** from Part – **B**.
(ii) Solve the problems in SI units only.

PART – A

1. Explain difference between simple Manometer and Differential Manometer. **5**

2. List the different applications of Bernoulli's theorem. **5**

3. Define the following : **5**
   (i) Compressible fluid
   (ii) Incompressible fluid

4. Define hydraulic turbine and classify the hydraulic turbines. **5**

5. Explain with line diagram, the working principle of Reciprocating pump. **5**

6. Write functions of Control valves. **5**

7. Describe accumulator with neat sketch. **5**

8. List the components of pneumatic system. **5**

9. Explain the general layout of pneumatic system. **5**

PART – B

10. (a) Explain the phenomenon of capillary tube. **4**
    (b) Explain with a neat figure U-tube differential manometer. **6**

11. (a) Write any three difference between simple manometer and differential manometer. 3

(b) Explain with a neat sketch the working of a Bourdon's tube pressure gauge. 7

12. (a) Explain the following : 4

(i) Rotational & Irrotational flow

(ii) Laminar and Turbulent flow

(b) The water is flowing through the pipe is having diameters 200 mm and 100 mm at the cross-section 1 and 2 respectively. The velocity of water at section 1 is 4 m/s. Find the discharge at section 1 and also find the velocity at section 2. 6

13. (a) Draw a neat figure of orifice meter and mention the parts. 3

(b) A venturimeter has an area of 9 to 1, the larger diameter being 300 mm. During the flow the recorded pressure head in the large section is 6.5 m and at throat is 4.25 m. If the co-efficient of discharge is 0.99. Calculate discharge. 7

14. (a) Define the following : 4

(i) Hydraulic gradient line

(ii) Total energy line

(b) A pipe of 300 m long with a diameter of 0.3 m is supplying water. Calculate the discharge of water through the pipe the loss of head due to friction is 1.5 m. Take Darcy's co-efficient as 0.01. 6

15. (a) Write any three difference between Impulse turbine and Reaction turbine. 3

(b) Explain working principle of centrifugal pump with neat figure. 7

16. Two jets strike the buckets of a Pelton wheel, which is having shaft power as 15450 kW. The diameter of each jet is given as 200 mm. If the net head on the turbine is 400 mm. Find the overall efficiency of the turbine, take $C_v = 1.0$. 10

17. (a) Write any four advantages and disadvantages of Hydraulic systems. 4

(b) Explain lobe pump with neat sketch. 6

18. (a) Write any four functions of Control valves. 4

(b) With the neat sketch, explain working principle of gate valve. 6

19. (a) Sate Pascal's law and explain one application with neat sketch. 5

(b) Explain with neat sketch, the double-acting cylinder. 5