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Question Paper Code: 59704

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Mechanical Engineering

15UME904-APPLIED HYDRAULICS AND PNEUMATICS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which fluid is used in hydraulic power systems? CO1- R
(a) Water (b) Oil (c) Non-compressible fluid (d) All of the above
2. Open loop system CO1- R
(a) Does not use feedback system
(b) Use feedback system by measuring the element to a comparator
(c) Use feedback system
(d) None of the above
3. Which of the following is used as a component in hydraulic power unit? CO2- R
(a) Pressure gauge (b) Filler gauge (c) Valve (d) Reservoir
4. What is the relation between speed and flow rate for fixed displacement vane pump? CO2- R
(a) Flow rate increases with increase in speed of rotor
decreases with increase in speed of rotor.
(b) Flow rate decreases with increase in speed of rotor.
(c) Flow rate is constant and does not change with change in speed.
(d) None of the above.

5. What is the function of a flow control valve? CO3- R
- (a) Flow control valve changes the direction of oil flow.
 (b) Flow control valve can adjust the flow rate of hydraulic oil
 (c) Both (a) and (b)
 (d) None of the above
6. What does the numbers in 4/2 valve mean? CO3- R
- (a) 4 positions and 2 ways. (b) 4 ways and 2 positions.
 (c) 2 positions and 2 ways (d) 4 ways and 4 positions.
7. Which of the following factors is/are considered while selecting a compressor? CO4 -R
- (a) Type of oil filter required. (b) Volumetric efficiency.
 (c) Viscosity of the liquids used. (d) All of the above.
8. Which of the following notations is used to represent a regulator unit? CO4- R
- (a) 3.0 (b) 0.3 (c) 3 (d) 0.33
9. Which of the following statements is true for cascade method which is used to draw a pneumatic circuit CO5- R
- (a) Signal processing valves are connected in parallel.
 (b) When the number of signal processing valves is greater than 4, the signals are strong.
 (c) Cascade method does not consider the cost factor.
 (d) All of the above
10. Overlapping of signals in pneumatic systems can be avoided by using CO5- R
- (a) Rolling lever valve. (b) Idle roller lever valve.
 (C) Both (a) and (b). (d) None of the above.

PART – B (5 x 2= 10 Marks)

11. Define Pascal's –Law. CO1- R
12. State the function of hydraulic actuator? CO2- R
13. Write the function of accumulator. CO3- R
14. Differentiate between hydraulic and pneumatic systems? CO4- R
15. What is ladder diagram? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) With neat sketch explain the hydraulic and pneumatic fluid power systems. CO1- U (16)
- Or
- (b) What are the desirable properties of hydraulic fluids? Discuss any eight of them in detail. CO1- U (16)
17. (a) How do you classify pumps? Explain with suitable sketch the working of vane pump. CO2- U (16)
- Or
- (b) Explain the construction of double acting cylinder with neat sketch. CO2- U (16)
18. (a) With a sketch describe the construction and operation of any two flow control valve. CO3- Ana (16)
- Or
- (b) Draw and explain Shuttle valve and check valve. CO3- Ana (16)
19. (a) What is synchronizing? Explain the synchronizing circuit with suitable approaches. CO4- U (16)
- Or
- (b) State the function of compressor and explain the working principle of piston type compressor with neat sketch. CO4- U (16)
20. (a) With a neat diagram explain the construction and working principle of hydro mechanical servo valves. CO5- U (16)
- Or
- (b) Explain the working principle of a PLC with neat block diagram. CO5- U (16)

