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Fifth Semester B.E. Degree Examination, July/August 2022
Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Hydraulic System. Explain Pascal's law with example. State application. (07 Marks)
b. Explain Construction and working of Vane type motor. (08 Marks)
c. A Vane pump has volume displacement of 82cm^3 . The diameter of the rotor is 50mm and that of camring is 75mm. If the width of the vane or rotor is 40mm, find the maximum eccentricity. (05 Marks)

OR

- 2 a. Explain the Construction and working of Swash Plate motor. (08 Marks)
b. Explain the Working of Hydraulic Cylinder Cushioning, with neat sketch. (06 Marks)
c. With neat sketch, explain Pumping theory. (06 Marks)

Module-2

- 3 a. Explain Pilot Operated Direction Control Valve with sketch. (10 Marks)
b. Explain Pressure Sequence Valve with sketch and graphical symbol. (07 Marks)
c. State the causes and remedies of Low Pressure. (03 Marks)

OR

- 4 a. Classify Flow Control Valve. Explain Pressure Compensated Valve. (08 Marks)
b. Explain the Operation of Direct Acting Pressure Relief valve, with a neat sketch also draw the graphical symbol. (08 Marks)
c. With a neat sketch, explain in brief the working of Check valve. (04 Marks)

Module-3

- 5 a. Define Double Acting Cylinder. Explain Control of Double Acting Cylinder using 4/3 dc valve. (10 Marks)
b. Explain with neat sketch, Accumulator as Emergency Power Source. (10 Marks)

OR

- 6 a. With a hydraulic circuit diagram, explain Meter – in and Meter – out speed control of Hydraulic Actuators. (12 Marks)
b. Write a neat Circuit diagram. Explain Accumulator as a Leakage Compensator. (08 Marks)

Module-4

- 7 a. With neat sketch, explain 3/2 Poppet Valve. (08 Marks)
b. With neat sketch, explain Magnetic type and Cable type rodless cylinder. (08 Marks)
c. List out the characteristics of Compressed Air. (04 Marks)

OR

- 8 a. Explain with a suitable circuit diagram, a Quick Exhaust Valve. (06 Marks)
b. Describe the Filters and Lubricators used in a Pneumatic system with relevant figure. (10 Marks)
c. Mention any four differences between Pneumatic System and Hydraulic System. (04 Marks)

Module-5

- 9 a. Explain Cascade method of Pneumatic Circuit design. (12 Marks)
b. With neat sketch, explain Pilot Assisted Solenoid Control of DC Valves. (08 Marks)

OR

- 10 a. Sketch and explain : (12 Marks)
i) Push – Button Switch ii) Electrical Relay iii) Solenoids. (08 Marks)
b. Explain with a neat circuit diagram, Signal Elimination Techniques.

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