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15AU554

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022

Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. State Pascal's law. Explain its application with a neat sketch. (04 Marks)
b. With a neat sketch, explain the construction and working of an Internal gear pump. (06 Marks)
c. A pump having a displacement of 25cm^3 , operating with a pressure of 250 bar and speed of 1390 rpm, volumetric efficiency of 0.85 and mechanical efficiency of 0.80. Calculate,
i) Pump delivery in LPM
ii) Input power at pump shaft in KW
iii) Drive torque at pump shaft. (06 Marks)

OR

- 2 a. Explain the construction and working of a double acting hydraulic cylinder with a neat sketch. (08 Marks)
b. Sketch and explain Vane Motor. (08 Marks)

Module-2

- 3 a. Explain the operation of a simple pressure relief valve with a neat sketch. Also draw the graphical symbol. (08 Marks)
b. Explain pressure compensated flow control valve, with a neat sketch. Also draw the graphical symbol. (08 Marks)

OR

- 4 a. Write about filter and Strainers. (08 Marks)
b. What are the desirable properties of a hydraulic fluid? Explain briefly any five of them. (08 Marks)

Module-3

- 5 a. Explain briefly the principle involved in a pump unloading circuit. (08 Marks)
b. Explain with suitable circuits, the control of double acting cylinder. (08 Marks)

OR

- 6 a. With required diagram, explain cylinder synchronizing circuits. (08 Marks)
b. What are Hydraulic Accumulator? Classify the different accumulator used in hydraulic system. (08 Marks)

Module-4

- 7 a. Sketch and explain Rod-less cylinder. (08 Marks)
b. Explain the following: i) Pneumatic Actuators ii) Pneumatic Cylinder Cushioning. (08 Marks)

OR

- 8 a. Sketch and explain poppet valves. (08 Marks)
b. Explain with a suitable diagram, a Quick Exhaust valve. (08 Marks)

Module-5

- 9 a. Explain signal elimination using Reversing valves. (08 Marks)
b. Explain with a suitable circuit diagram, controlling of a simple single cylinders. (08 Marks)

OR

- 10 Write short notes on : a. Solenoids b. Air filters c. Air Driers d. Lubricators. (16 Marks)
