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10ME73

Seventh Semester B.E. Degree Examination, June/July 2015
Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1
 - a. What are the advantages, limitations and applications of hydraulic systems? (06 Marks)
 - b. With a neat sketch, explain construction and working of unbalanced type gear pump and derive expression for volumetric displacement of the pump. (09 Marks)
 - c. Define the terms volumetric displacement, theoretical flow rate, volumetric efficiency and mechanical efficiency. (05 Marks)
- 2
 - a. Distinguish clearly between 1st class, 2nd class and 3rd class lever system used in hydraulic system. (09 Marks)
 - b. With a neat sketch, explain the working of axial piston motor. (05 Marks)
 - c. A hydraulic motor has 82cm³ (0.082L) volumetric displacements. If it has pressure rating of 70 bar and it receives oil from 0.0006m³/sec (0.60LPS) theoretical flow rate pump. Find the motor i) Speed ii) Theoretical torque iii) Theoretical power. (06 Marks)
- 3
 - a. With a neat sketch, explain the three types of center flow path configuration for Three positions, Four way valves. (09 Marks)
 - b. With a schematic diagram, explain the working of simple pressure relief valve. (05 Marks)
 - c. Explain the working of sequence valve with an example. (06 Marks)
- 4
 - a. Explain with suitable circuit how Automatic cylinder reciprocates with two sequence valves. (10 Marks)
 - b. Explain with Hydraulic circuit, how speed control can be achieved in Hydraulic motor. (06 Marks)
 - c. Explain spring loaded type accumulator used in Hydraulic system. (04 Marks)

PART - B

- 5
 - a. Give three important functions of Baffle plates used in reservoir. (07 Marks)
 - b. Define the terms Beta ratio and Beta efficiency of filters. (07 Marks)
 - c. Name five things that can cause a noisy pump. (06 Marks)
- 6
 - a. Explain the characteristics of compressed air. (05 Marks)
 - b. Sketch and explain the working of rodless cylinder. (05 Marks)
 - c. Explain briefly the end position cushioning of pneumatic cylinder. (10 Marks)
- 7
 - a. Write a note on direct and indirect actuation of pneumatic cylinders. (10 Marks)
 - b. Explain the logic OR function with a shuttle valve and the double acting cylinder. (10 Marks)
- 8
 - a. Explain the Motion control diagram for a 2 – cylinder circuit. (08 Marks)
 - b. Write a note on relays used in electro – pneumatic control. (06 Marks)
 - c. Sketch and explain the non receiving type pressure regulator. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.