

CBCS SCHEME

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17ME72

Seventh Semester B.E. Degree Examination, July/August 2021

Fluid Power Systems

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain with neat sketch, the basic hydraulic power system. (08 Marks)
b. What are the different materials used for sealing? Explain. (08 Marks)
c. Brief the various advantages of fluid power system. (04 Marks)
- 2 a. Define Pascal's law and explain hydraulic press with a sketch. (06 Marks)
b. Explain any four properties of hydraulic fluids. (08 Marks)
c. With a neat sketch, explain the working of hydraulic filter. (06 Marks)
- 3 a. With a neat sketch, explain the working principle of external gear pump. (06 Marks)
b. Explain the working of double acting cylinder with a neat sketch. (08 Marks)
c. A vane pump has a volumetric displacement of 82 cm^3 . It has a rotor diameter of 5 cm, a cam ring diameter of 7.5 cm, and a vane width of 4 cm, what must be the eccentricity? What is the maximum volumetric displacement? (06 Marks)
- 4 a. Sketch and explain the working of a swash plate type piston motor. (06 Marks)
b. Explain any four pump selection parameters. (08 Marks)
c. A hydraulic motor has a 100 cm^3 volumetric displacement. It has a pressure rating of 140 bar, and receives oil from $0.001 \text{ m}^3/\text{sec}$ theoretical flow rate pump. Find the motor speed, theoretical torque, theoretical kW power. (06 Marks)
- 5 a. Classify the DCV on the basis of center position with symbol. (05 Marks)
b. Explain the working of shuttle valve with a sketch. (05 Marks)
c. With a neat circuit, explain the sequencing hydraulic circuit and its application. (10 Marks)
- 6 a. With a neat sketch, brief the working of check valve. (05 Marks)
b. Differentiate between meter-in and meter-out circuit. (05 Marks)
c. Explain with a circuit, the application of regenerative circuit. (10 Marks)
- 7 a. Brief the advantages and disadvantages of pneumatic system. (06 Marks)
b. Explain the working of tandem cylinders with a neat sketch. (06 Marks)
c. With a neat sketch, explain the sliding spool type of valve. (08 Marks)
- 8 a. Explain with a sketch, the basic pneumatic power system. (08 Marks)
b. Brief the working of quick exhaust valve with a sketch. (06 Marks)
c. Brief the working of memory valve with sketch. (06 Marks)
- 9 a. With a suitable pneumatic circuit, explain the indirect control of single acting cylinder. (10 Marks)
b. Explain the configuration of AND gate with logic equation, truth table and pneumatic symbol. (10 Marks)
- 10 a. Explain the sequencing of two cylinders A and B using cascading method circuit for the cylinder sequence $A^+ B^+ B^- A^-$. (10 Marks)
b. Explain the configuration of OR gate with logic equation, truth table and pneumatic symbol. (10 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.

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