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Seventh Semester B.E. Degree Examination, Jan./Feb.2021 Fluid Power Systems

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. What are the various applications of fluid power systems? (05 Marks)
b. State Pascal's law and mention the various advantages of fluid power systems. (05 Marks)
c. Explain the various components used in hydraulic systems and its symbol. (10 Marks)

OR

- 2 a. Describe the various functions of hydraulic fluids and its types. (05 Marks)
b. Define the fluid properties such as viscosity, viscosity index, pour point, fire point, flash point. (05 Marks)
c. Explain the working of return line and suction line filtering with the aid of sketches. (10 Marks)

Module-2

- 3 a. What are the various types of positive displacement pump used in fluid power system? (05 Marks)
b. Explain with a sketch the construction and working of bladder type accumulator used in fluid power system. (05 Marks)
c. Explain the construction and working of external gear pump with a neat sketch. (10 Marks)

OR

- 4 a. Explain the construction and working of double acting cylinder with a neat sketch. (05 Marks)
b. An 8 cm diameter hydraulic cylinder has a 4 cm diameter rod. If the cylinder receives flow at 100 LPM and 12 MPa. Find the
(i) Extension and retraction speeds.
(ii) Extension and retraction load carrying. (05 Marks)
c. Explain the construction and working of a hydraulic cylinder cushioning with a neat sketch. Also draw symbol. (10 Marks)

Module-3

- 5 a. List various types of control valves. (03 Marks)
b. With a neat sketch explain the working of pressure relief valve. (07 Marks)
c. Explain the hydraulic regenerative circuit with a neat sketch. (10 Marks)

OR

- 6 a. With a neat sketch, explain the working of ball type check valve. (05 Marks)
b. With a neat sketch, explain the working of the 4/2 manually operated direction control valve. (05 Marks)
c. Explain the hydraulic cylinder sequencing circuits with a neat sketch. (10 Marks)

**Module-4**

- a. Describe the various components used in pneumatic power systems and its symbol. (05 Marks)
- b. Explain the working of a single acting type of pneumatic cylinder with a neat sketch. (05 Marks)
- c. Explain the construction and working of lubricator used in pneumatic system with a neat sketch. (10 Marks)

OR

- 8 a. Explain the working of a shuttle valve used in pneumatic system with a neat sketch. (05 Marks)
- b. What are the various ways the pneumatic cylinders are mounted? (05 Marks)
- c. Explain the working of solenoid operated valve with a neat sketch. (10 Marks)

Module-5

- 9 a. Explain the speed control pneumatic circuits with a suitable sketch. (10 Marks)
- b. Explain the OR function of controlling the single acting pneumatic cylinder with a neat circuit. (10 Marks)

OR

- 10 a. Explain the controlling of pneumatic cylinders in a sequence as $A^+ B^+ B^- A^-$ by cascading method. (10 Marks)
- b. Explain electro pneumatic control of double acting cylinder with a suitable circuit. (10 Marks)

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