

CBCS SCHEME

Srinivas Institute of Technology
Library, Mangalore

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18AE733

Seventh Semester B.E. Degree Examination, June/July 2023 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. Explain the structure of Hydraulic control system with a neat sketch. State the advantages of Hydraulic system. (10 Marks)
b. Discuss the construction and working of vane type motor. (10 Marks)

OR

- 2 a. What is the need of cylinder mounting? Explain the types of mountings with neat sketch. (10 Marks)
b. With a neat sketch and examples, explain the first class lever system. Derive an expression for the same. (10 Marks)

Module-2

- 3 a. Classify the Direction control valve. Write the graphical symbol for the following :
i) Check valve ii) Heater iii) Pressure relief iv) 3/2 DC valve
v) Variable Displacement pump vi) Variable displacement 2-direction motor
vii) Variable restriction flow control valve. (10 Marks)
b. With a neat sketch explain pilot operated Direction control valve. (10 Marks)

OR

- 4 a. Discuss the construction and working of pressure counter balance valve. (08 Marks)
b. Explain the following with Graphical symbol / sketch:
i) 4/3 Spool type DC valve (Center off)
ii) Pressure compensated FCV (Restrictor type) (12 Marks)

Module-3

- 5 a. Explain the following with circuit diagram :
i) Single acting cylinder with 3/2 DC valve (Spring return).
ii) Dwell position of cylinder with 4/3 DC valve. (12 Marks)
b. Explain the Double Pump Hydraulic System with neat sketch. (06 Marks)

OR

- 6 a. Discuss the speed control of hydraulic cylinder using meter in circuit with advantages. (10 Marks)
b. Describe the Accumulator as leakage compensator with circuit diagram. (10 Marks)

Module-4

- 7 a. Explain the properties of hydraulic fluid. (10 Marks)
b. State the causes and remedies for the following in hydraulic system:
i) Low flow ii) Low pressure. (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.

OR

- 8 a. Describe the filters and lubricators used in a pneumatic system with figure. (12 Marks)
b. Explain End position cushioning in air cylinder with a neat sketch. (08 Marks)

Module-5

- 9 a. Discuss the following with suitable figure: (12 Marks)
i) 3/2 Poppet valve
ii) Quick Exhaust valve. (08 Marks)
b. Explain the control of Air Cylinder with metering inlet and metering outlet. (08 Marks)

OR

- 10 a. With a circuit diagram, explain pilot operated solenoid control DC valve in pneumatic system. (08 Marks)
b. Explain the control of shuttle valve in pneumatic circuit using 'OR' function. (08 Marks)
c. Explain use of solenoid in Electro-pneumatic control system. (04 Marks)
