

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025 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. Define Pascal's law. Explain the concept and application of Pascal's law. (10 Marks)
- b. With a neat sketch, explain external gear pump. (10 Marks)

OR

- 2 a. With a neat block diagram, explain the structure of a Hydraulic control system. (10 Marks)
- b. With a neat sketch, explain Radial Piston Pump. (10 Marks)

Module-2

- 3 a. Classify hydraulic motors and explain anyone with a sketch. (10 Marks)
- b. Explain the advantages and applications of Hydraulic motors (10 Marks)

OR

- 4 a. Explain the following with neat sketch
 - i) Pressure Reducing Valve
 - ii) Pressure Unloading Valve
 (10 Marks)
- b. With a neat sketch, explain sliding spool flow control valve. (10 Marks)

Module-3

- 5 a. With a neat hydraulic circuit, explain the controlling of single and double acting cylinder. (10 Marks)
- b. With a neat sketch, explain Regenerative circuit. (10 Marks)

OR

- 6 a. Briefly explain the problems associated with hydraulic system. (10 Marks)
- b. With a neat sketch, explain reservoir system. (10 Marks)

Module-4

- 7 a. Briefly, explain the block diagram of a pneumatic system. (10 Marks)
- b. Explain End position cushioning in pneumatic cylinder with diagram. (10 Marks)

OR

- 8 a. Explain the following :
 - i) Shuttle valve
 - ii) 3/2 poppet valve
 (10 Marks)

- b. With a circuit diagram, explain 3/2 dc valve for a single acting spring return cylinder.

(10 Marks)

Module-5

- 9 a. Write the circuit for AND function using three, 3/2 DC valves and OR function with one DC valve and two shuttle valve. (10 Marks)

- b. Explain the motion step diagram for double acting cylinder. (10 Marks)

OR

- 10 a. Explain the working of solenoid controlled pilot operated DCV with a neat sketch and list the advantages. (10 Marks)

- b. With a circuit diagram, explain control of single acting spring return cylinder. (10 Marks)

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