

CBCS SCHEME

15MT53



Fifth Semester B.E. Degree Examination, June/July 2023 Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks : 80

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

Module-1

- 1 a. State Parcal's law. With a neat sketch, explain the basic hydraulic power system. (08 Marks)
- b. With a neat sketch, explain the construction and working of external gear pump. (08 Marks)

OR

- 2 a. With a neat sketch, explain the operation of a vane pump. (08 Marks)
- b. Explain the advantages, limitations and applications of hydraulic systems. (08 Marks)

Module-2

- 3 a. Explain briefly with figure hydraulic cylinder cushioning. (08 Marks)
- b. Write a note on hydraulic motor performance. (08 Marks)

OR

- 4 a. Explain briefly with neat figure 4-way and 3-way directional control valve. (08 Marks)
- b. Draw the cross section of pressure reducing valve and briefly explain how it operates. (08 Marks)

Module-3

- 5 a. Explain the operation of double pump hydraulic system, list the components required, sketch neat circuit diagram explain one complete cycle. (10 Marks)
- b. List the functions of an accumulator and explain the operation of diaphragm accumulator with a neat sketch. (06 Marks)

OR

- 6 a. List the desirable properties of hydraulic oils. (04 Marks)
- b. With the help of neat sketch explain the construction and working of reservoir system used in hydraulics. (06 Marks)
- c. Sketch and explain the hydraulic locked cylinder circuit using pilot check valve. (06 Marks)

Module-4

- 7 a. What are the characteristics of compressed air? Explain them. (08 Marks)
- b. With a neat sketch explain structure of pneumatic control system. (08 Marks)

OR

- 8 a. With a neat sketch explain poppet and spool valve. (08 Marks)
- b. Explain supply air throttling and exhaust air. (08 Marks)

Module-5

- 9 a. Discuss clearly the use of logic gates in pneumatic application. (06 Marks)
- b. Explain Cascade method of pneumatic circuit design. (10 Marks)

OR

- 10 a. What is an electrical relay? How does it work? Explain it with a neat diagram. (08 Marks)
- b. Explain the working of solenoid controlled pilot-operated DCV with a neat sketch and list out the advantages. (08 Marks)

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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.