

# CBCS SCHEME

USN

15AU554



**Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025**

## Hydraulic 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. Write the advantages and disadvantages of Hydraulic system. (04 Marks)
- b. With a neat sketch, explain hydraulic control system. (06 Marks)
- c. With a neat sketch, explain unbalanced vane pump. (06 Marks)

**OR**

- 2 a. With a neat sketch, explain External gear motor. (06 Marks)
- b. Explain with neat sketch of variable displacement type in – line axial piston motor. (10 Marks)

### Module-2

- 3 a. Explain with a neat sketch Ball type check valve with symbolic representation. (06 Marks)
- b. Explain with a neat sketch of 3/2 spool valve with symbolic representation. (06 Marks)
- c. Explain with a neat sketch of needle valve with symbolic representation. (04 Marks)

**OR**

- 4 a. What are the desirable properties of hydraulic fluid? (06 Marks)
- b. Explain with a neat sketch, constructional features of hydraulic reservoir. (06 Marks)
- c. Define Beta ratio and beta efficiency with respect to filters. (04 Marks)

### Module-3

- 5 a. Explain briefly the principle involved in a pump unloading circuit. (08 Marks)
- b. Explain with suitable circuits, the control of double acting cylinder. (08 Marks)

**OR**

- 6 a. With required diagram, explain cylinder synchronizing circuits. (08 Marks)
- b. What are Hydraulic Accumulator? Classify the different accumulator used in hydraulic system. (08 Marks)

### Module-4

- 7 a. With a neat sketch, explain the construction and working of Double acting cylinder. (08 Marks)
- b. Sketch and explain : i) Vane type semi rotary type actuator ii) Rack and pinion type actuator. (08 Marks)

**OR**

- 8 a. With a neat sketch, explain : i) 2 way spool valve ii) 3 way spool valve. (08 Marks)
- b. With a neat circuit diagram, explain : i) Supply air throttling ii) Exhaust air throttling. (08 Marks)

**Module-5**

- 9 a. Explain with a neat sketch motion control diagram for a two-cylinder circuit. (08 Marks)  
b. Sketch and explain :  
i) Push – button switch.  
ii) Electrical relay. (08 Marks)

**OR**

- 10 a. With the help of a neat diagram, explain production of compressed air. (08 Marks)  
b. Sketch and explain :  
i) Refrigerated dryer.  
ii) Absorption (chemical) dryer. (08 Marks)

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