



# CBCS SCHEME

18MT54

## Fifth Semester B.E. Degree Examination, Jan./Feb. 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. Define Hydraulic system. Explain the advantages, disadvantages and applications of Pascal's law. (10 Marks)  
b. With a neat sketch, explain vane pump. (10 Marks)

OR

- 2 a. With a neat block diagram, explain the structure of a Hydraulic control system. (12 Marks)  
b. A gear pump has gears of external and internal diameter of 75mm and 50mm respectively and volumetric efficiency is 90% at rated pressure. What is the actual flow rate of the pump, if the speed of the pump is 1000rpm? (08 Marks)

### Module-2

- 3 a. Why cushioning is needed in a hydraulic cylinder? With a neat sketch, explain end cushioning in Hydraulic cylinder. (10 Marks)  
b. With a neat sketch, explain external gear motor. (10 Marks)

OR

- 4 a. Explain the following with circuit diagram:  
i) Pressure relief valve  
ii) Pressure reducing valve. (10 Marks)  
b. With circuit diagram, explain pilot operated DC valve. (10 Marks)

### Module-3

- 5 a. With a neat circuit diagram, explain working of a regenerative circuit. (10 Marks)  
b. With neat hydraulic circuit explain the control of position of single acting and double acting cylinder. (10 Marks)

OR

- 6 a. What are sealing devices? Explain the types of sealing devices with neat sketch. (10 Marks)  
b. Briefly explain the properties of Hydraulic fluid. (10 Marks)

### Module-4

- 7 a. Briefly explain the characteristics and advantages of compressed air. (10 Marks)  
b. Explain the different types of mountings. (10 Marks)

OR

- 8 a. With a neat sketch, explain 2/2 normally closed ball type poppet valve. (10 Marks)  
b. Explain the following: i) Shuttle valve ii) Quick exhaust valve. (10 Marks)

### Module-5

- 9 a. Explain the motion step diagram for a double acting cylinder. (10 Marks)  
b. Briefly explain displacement time diagram and displacement step diagram. (10 Marks)

OR

- 10 a. Explain with a neat the working of electromechanical relay. (10 Marks)  
b. Explain the different methods of actuation of control valves in electro pneumatic control. (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.