

# CBCS SCHEME

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## Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 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 and its applications. (06 Marks)  
b. With a neat sketch, explain Pumping theory. (06 Marks)  
c. Explain Balance Vane pump, with a neat sketch. (08 Marks)

OR

- 2 a. Explain the following type of cylinders with a neat sketch :  
i) Tandem cylinder ii) Telescopic cylinder iii) Double Rod cylinder. (09 Marks)  
b. Explain the working of hydraulic cylinder cushioning, with a neat sketch. (06 Marks)  
c. Explain with a neat diagram, working of an External gear motor. (05 Marks)

### Module-2

- 3 a. Explain the working of 4/2 manually operated Direction control valve with a neat sketch. (08 Marks)  
b. Brief the Construction features and working of Pressure relief valve. (08 Marks)  
c. With a neat sketch, brief the working of check valve. (04 Marks)

OR

- 4 a. Explain the desirable properties of a good Hydraulic fluid. (10 Marks)  
b. What is the purpose of Seals in fluid power system? List the various types of Seals used in fluid power system. (06 Marks)  
c. With a neat sketch, explain the working of a Hydraulic filter. (04 Marks)

### Module-3

- 5 a. Explain with a neat circuit diagram the working of a regenerative circuit. (10 Marks)  
b. Explain with a neat circuit diagram, sequencing of two double acting cylinders using a sequencing valve. (10 Marks)

OR

- 6 a. Explain with a neat circuit, the Meter – in and Meter – out method of speed control of a cylinder. (10 Marks)  
b. Explain with a neat circuit diagram, the working of using accumulator as a leakage compensator and as a emergency power source. (10 Marks)

### Module-4

- 7 a. List out the characteristics of compressed air. (06 Marks)  
b. Explain with a block diagram, the structure of a Pneumatic system. (06 Marks)  
c. What is meant by Cushioning of cylinders? Why cushioning is necessary? Explain the working of a cushioned cylinder. (08 Marks)

OR

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.

- 8 a. Explain with a neat sketch, the construction of :  
i) Magnetic type rod less cylinder      ii) Cable type rod less cylinder.      (08 Marks)  
b. Explain with a neat diagram, the construction and working features of a 3/2 and 4/2 Poppet valve.      (12 Marks)

**Module-5**

- 9 a. Explain the concept of Motion step and Motion time diagrams and the procedure for drawing them.      (08 Marks)  
b. Explain with a neat circuit diagram, Signal elimination techniques.      (08 Marks)  
c. What are the Advantages of Cascade design?      (04 Marks)

**OR**

- 10 a. What is an Electrical Relay? How does it work?      (04 Marks)  
b. Explain with a neat diagram, Electro – Pneumatic control of a Single acting cylinder using a 3/2 directional control valve.      (08 Marks)  
c. Explain with a neat sketch, the working of a filter and water trap separator.      (08 Marks)

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