

CBCS SCHEME

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18IP54

Fifth Semester B.E. Degree Examination, July/August 2021

Hydraulics and Pneumatics

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. State Pascal's. Explain its applications with a neat sketch. (10 Marks)
b. Give the classification of pumps. With a neat sketch explain swash plate type piston pump. (10 Marks)
- 2 a. Sketch and explain double acting cylinder. (10 Marks)
b. A pump supplies oil at 75.8 liters/min to a 50.8mm diameter double acting cylinder. If load is 4448N (extending and retracting) and the rod diameter is 25.4mm find :
i) The hydraulic pressure during extending and retraction stroke
ii) The piston velocity during the extending and retraction stroke
iii) The cylinder power during extending and retraction stroke. (10 Marks)
- 3 a. Give complete classification of hydraulic control valve. With neat sketch, explain simple pressure relief valve and give its graphical symbol. (14 Marks)
b. Explain three center flow path configurations of 4/3 direction control valve with graphical symbol. (06 Marks)
- 4 a. With an graphical symbol explain various ways of actuation of 3/2 direction control valve. (10 Marks)
b. Explain the working principle of pilot operated check valve with a neat sketch. Illustrate the graphical symbol of the valve. (10 Marks)
- 5 a. With the help of suitable direction control valve design a hydraulic circuit diagram to control double and single acting cylinders. (10 Marks)
b. With a neat sketch, explain hydraulic circuit for sequencing of two cylinders. (10 Marks)
- 6 a. Explain regenerative circuit with a neat diagram and deduce regenerative speed of cylinder. (12 Marks)
b. With aid of an appropriate hydraulic circuit explain the principle of speed control of hydraulic motors. (08 Marks)
- 7 a. Explain the basic structure of pneumatic system with its components. (10 Marks)
b. List different types of compressor. Explain with a neat sketch production of compressed air. (10 Marks)
- 8 a. What are the characteristics of compressed air? Explain them. (10 Marks)
b. Write a note on filter, drier and regulator used in preparation of compressed air. (10 Marks)
- 9 a. Give complete classification of pneumatic cylinder. Explain with neat sketch working of Rodless cylinder. (10 Marks)
b. With neat sketch, explain the working principle of quick exhaust valve. (10 Marks)
- 10 a. Explain with pneumatic circuit diagram, the supply and exhaust air throttling. (10 Marks)
b. Explain a typical pneumatic circuit with OR logic using shuttle valve. (10 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.