

CBCS SCHEME

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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 law and explain structure of a hydraulic control system with sketch. (10 Marks)
b. Explain the construction and working principle of balanced vane pump with neat sketch. (10 Marks)
- 2 a. Explain the construction and working of swash plate piston motor. (08 Marks)
b. With a neat sketch, derive an expression for second-class lever system with hydraulic cylinder to drive a load. (07 Marks)
c. A gear pump has a 75mm outer diameter 50mm internal diameter and 25mm width. If the volumetric efficiency is 90% at rated pressure, find the corresponding actual flow rate in litres/min, given pump speed is 1000rpm. (05 Marks)
- 3 a. Explain with a neat sketch construction and working of 4/3 spool type direction control valve. (10 Marks)
b. Explain construction and working of simple pressure relief valve. (07 Marks)
c. Write graphical symbol for double solenoid actuated spring centered 4/3 valve. (03 Marks)
- 4 a. With neat sketches explain Full flow filter and proportional flow filter in fluid flow system. (10 Marks)
b. Mention the types of hydraulic fluids. Explain any two hydraulic fluids. (06 Marks)
c. Explain static seals and dynamic seals with examples. (04 Marks)
- 5 a. Explain with a neat circuit diagram the working of double pump hydraulic system used in punch press applications. (10 Marks)
b. Explain spring loaded accumulator with a neat sketch. (04 Marks)
c. Explain construction and working of double acting cylinder. (06 Marks)
- 6 a. What is regenerative circuit? Sketch schematically regenerative circuit to increase the extension speed of a double acting cylinder. (10 Marks)
b. Explain with a neat circuit diagram of counter balance valve circuit. (10 Marks)
- 7 a. Explain end position cushioning in air cylinder with a neat sketch. (10 Marks)
b. Sketch and explain structure of pneumatic control system. (10 Marks)
- 8 a. Explain the working of poppet valve with a neat sketch. (10 Marks)
b. Explain direct and indirect control of pneumatic cylinders. (10 Marks)
- 9 a. Explain cascade method of pneumatic circuit design. (12 Marks)
b. Explain coordinated motion control with circuit diagram. (08 Marks)
- 10 a. With a circuit diagram, explain pilot assisted solenoid control of DC valve. (08 Marks)
b. Explain the limit switches and Relay with neat sketches. (12 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.

