

CBCS SCHEME

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15AU554

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Hydraulics 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. State Pascal's law. Explain its applications, with a neat sketch. (04 Marks)
- b. With a neat sketch, explain the construction and working of an external gear pump. (06 Marks)
- c. A pump having a displacement of 25cm^3 , operates with a pressure of 250 bar and speed of 1390 rpm, Volumetric efficiency of 0.85 and Mechanical efficiency of 0.80. Calculate
- i) Pump delivery in LPM ii) Input power at pump shaft in KW iii) Drive torque at pump shaft. (06 Marks)

OR

- 2 a. Explain the construction and working of a Double acting hydraulic cylinder with a neat sketch. (06 Marks)
- b. With neat sketches, explain First, Second and Third class lever system. (10 Marks)

Module-2

- 3 a. Explain the operation of a simple pressure relief valve with a neat sketch. Also draw the graphic symbol. (08 Marks)
- b. Explain Pressure Compensated Flow control valve, with a neat sketch. Also draw the graphic symbol. (08 Marks)

OR

- 4 a. What are the desirable properties of a hydraulic fluid? Explain briefly any five of them. (08 Marks)
- b. Sketch and explain the "Reservoir System". (08 Marks)

Module-3

- 5 a. Explain briefly the principle involved in a regenerative circuit. (06 Marks)
- b. Explain with suitable circuits how single acting and double acting cylinders are controlled. (10 Marks)

OR

- 6 a. What are Hydraulic Accumulators? Classify the different accumulators used in hydraulic systems. (04 Marks)
- b. With a hydraulic circuit diagram, explain meter – in and meter – out speed control of hydraulic actuators. (12 Marks)

Module-4

- 7 a. Explain the following with neat sketches : (08 Marks)
- i) Pneumatic cylinder cushioning ii) Seals for static and dynamic application.
- b. Sketch and explain a Rod – less cylinder. (08 Marks)

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- 8 a. Differentiate between direct and indirect actuations of pneumatic cylinders. (08 Marks)
b. Explain with a suitable circuit diagram, a Quick exhaust valve. (08 Marks)

Module-5

- 9 a. Explain Signal elimination using reversing valves. (08 Marks)
b. With a neat circuit diagram, explain Electropneumatic control of a single acting cylinder. (08 Marks)

OR

- 10 Write short notes on :
a. Solenoids.
b. Air filters.
c. Air Driers.
d. Motion Diagrams.

(16 Marks)
