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18AU56

## Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025

### 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. Explain the Pascal's law with example. State its applications. (08 Marks)
- b. With a neat sketch, explain unbalanced vane pump. (08 Marks)
- c. Write the advantages of Hydraulics system. (04 Marks)

**OR**

- 2 a. With a neat sketch, explain external gear motor. (08 Marks)
- b. With a neat sketches, and examples, explain First, second and third class lever system. (12 Marks)

#### Module-2

- 3 a. Classify the direction control valve. Write the graphical symbol for the following :
  - i) Variable Displacement pump
  - ii) 3/2 DC valve
  - iii) Pressure relief valve
  - iv) Variable displacement Bi-directional motor
  - v) Check valve
  - vi) Variable restriction flow control valve
  - vii) Heater(10 Marks)
- b. With a neat sketch, explain pressure sequence valve. (10 Marks)

**OR**

- 4 a. With a neat sketch, explain Reservoir system. State the functions. (10 Marks)
- b. State the causes and remedies for the following in Hydraulic system.
  - i) No-flow
  - ii) Rise in temperature.(10 Marks)

#### Module-3

- 5 a. Explain the following with circuit diagram
  - i) Double acting cylinder with 4/2 dc valve
  - ii) Regenerative circuit(12 Marks)
- b. Explain the counter balancing valve circuit in hydraulic system. (08 Marks)

**OR**

- 6 a. Explain the speed control and reversing of direction of hydraulic motor. (10 Marks)
- b. Define and classify Accumulator. Explain Accumulator as an emergency power source. (10 Marks)

#### Module-4

- 7 a. Explain the pneumatic system with block diagram. (10 Marks)
- b. Explain the following type Rodless cylinder
  - i) C-shaped Housing R.C
  - ii) Magnetic type R.C(10 Marks)

OR

- 8 a. Explain the 3/2 poppet valve with graphical symbol. (10 Marks)  
b. Explain the Quick exhaust valve and circuit. (10 Marks)

**Module-5**

- 9 a. Explain displacement step diagram and displacement time diagram. (08 Marks)  
b. Explain the cascade method pneumatic system. (12 Marks)

OR

- 10 a. With a neat sketch, explain Relay and Solenoid. (12 Marks)  
b. Explain the Pilot Assisted solenoid control DC valve in pneumatic system. (08 Marks)

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