

22655

23242

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. Attempt any FIVE of the following: 10
- a) State two advantages and two limitations of Pneumatic system.
  - b) Draw ISO symbols for:
    - i) Pressure Relief Valve.
    - ii) 4/3 Direction control Valve.
  - c) Classify different types of Gear Pump.
  - d) State different types of actuators used for getting linear motions.
  - e) Differentiate between pressure relief valve and pressure reducing valve.
  - f) State the function of FRL unit used in pneumatic system.
  - g) State the common faults that are observed in Hydraulic circuit.

P.T.O.

**2. Attempt any THREE of the following: 12**

- a) Differentiate between Hydraulic system and Pneumatic system on the basis of following points.
  - i) Working Medium
  - ii) Pressure Range
  - iii) Accuracy
  - iv) Applications
- b) Explain with neat sketch working of Balanced type vane pump.
- c) Explain with neat sketch working of Temperature Compensated Flow control valve along with it's symbol.
- d) Classify Accumulator and explain weight loaded accumulator with neat sketch.

**3. Attempt any THREE of the following: 12**

- a) Explain with neat sketch the linear actuator used in dumper for lowering the material.
- b) Explain with neat sketch the 4/3 direction control valve used in hydraulic system.
- c) Out of the three speed control methods, select one method used for both positives as well as negative loading condition and explain it with circuit diagram.
- d) Draw and explain Regenerative circuit.

**4. Attempt any THREE of the following: 12**

- a) Classify the control valves used in hydraulic system.
- b) Explain with neat sketch working of pilot operated pressure relief valve.
- c) Explain with neat sketch working of Double Acting compressor.
- d) Draw and explain the suitable circuit, where second cylinder will start it's forward stroke after completion of forward stroke of first cylinder by using sequence valve.
- e) Explain with neat sketch Time Delay Valve.

- 5. Attempt any TWO of the following:** **12**
- a) Draw and explain with neat sketch a linear actuator for an application where two number of cylinders/pistons are connected in series giving maximum force at the end of piston rod.
  - b) Discuss the situations in which following type of centre position of 4/3 DC valves are preferred-
    - i) Centre tap.
    - ii) All ports open.
  - c) State Venturi effect and explain with neat sketch the function of lubricator used in pneumatic system.
- 6. Attempt any TWO of the following:** **12**
- a) Draw and explain the hydraulic circuit used in milling machine and also state the importance of booster pump used in circuit.
  - b) Draw and explain the pneumatic circuit used for speed control of pneumatic motor rotating in clockwise and anticlockwise direction.
  - c) List common faults observed in Hydraulic and pneumatic systems along with their remedies.
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