

22386

12425

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) 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) Define the following terms and state its units :
  - (i) Specific weight
  - (ii) Viscosity
- (b) State any four advantages of hydraulic oil.
- (c) Enlist the desirable properties of hydraulic oil.
- (d) State the types of actuators and function of each.
- (e) State purpose of non-return valve & hydraulic cylinder.
- (f) Differentiate filters & strainers (any 2 points).
- (g) Sketch the cross sectional view of shuttle valve.

**2. Attempt any FOUR of the following :**

**12**

- (a) Explain the general layout of hydraulic system with neat sketch.
- (b) State classification of hydraulic pumps.
- (c) Draw neat sketch of 4/3 D.C. valve. Explain its working.
- (d) Describe construction and working of FRL unit.
- (e) State any four merits and limitations of pneumatic system.



- 3. Attempt any FOUR of the following : 12**
- (a) State the various criteria for selection of pump.
  - (b) Describe working of pressure relief valve with neat sketch.
  - (c) Draw and explain the hydraulic circuit for Injection Moulding Machine.
  - (d) Explain the sequencing of single acting cylinder and double acting cylinder using roller operated direction control valve.
  - (e) State the routine maintenance procedure for actuators.
- 4. Attempt any THREE of the following : 12**
- (a) State the types of flow control valve. Explain any one.
  - (b) Describe the method of actuation.
  - (c) Describe construction and working principle of rotary compressor.
  - (d) State any four faults with their remedies occurred in hydraulic circuit.
  - (e) Draw speed control circuit of bidirectional air motor using  $4 \times 2$  D.C.V.
- 5. Attempt any THREE of the following : 12**
- (a) Explain construction & working of gear pump with diagram.
  - (b) State any two applications of (i) Relief valve (ii) Check valve
  - (c) Draw and explain shuttle valve circuit. State any two applications of this circuit.
  - (d) Explain working of pressure reducing valve. State its two applications.
  - (e) State any four types of accessories used in hydraulic system along with their functions.
- 6. Attempt any TWO of the following : 12**
- (a) With neat sketch, explain the working of double acting cylinder.
  - (b) Identify any six faults observed in pneumatic circuits with their remedies.
  - (c) Draw and explain time delay valve circuit with its applications.
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