

314339

24225

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) List any four properties of fluids.
- (b) State the function of air filter with its symbol.
- (c) List any four types of hydraulic pumps.
- (d) Draw the symbol of time delay valve used in pneumatics.
- (e) State the purpose of pressure relief valve used in hydraulic system.
- (f) Draw the actuating position of uni-directional air motor.
- (g) List any four devices used for automation of fluid power system.

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

**12**

- (a) Describe and list an ISO grades of hydraulic oil.
- (b) Explain working of internal gear pump with neat sketch.
- (c) Draw and explain working of double acting cylinder.
- (d) Draw and explain general layout of oil hydraulic system for actuation of single acting cylinder.



- 3. Attempt any THREE of the following : 12**
- (a) Compare hydraulic and pneumatic system (Any four points).
  - (b) Draw and explain working of FRL unit with symbol.
  - (c) Sketch and explain commonly used 3-position 4-way direction control valves.
  - (d) Construct a circuit to operate bi-directional air motor using appropriate DCV.
- 4. Attempt any THREE of the following : 12**
- (a) State the advantages and limitations of pneumatic systems.
  - (b) Draw screw compressor and explain its working.
  - (c) Draw and explain working of pressure reducing valve.
  - (d) Justify need of pressure control valve in fluid power system.
  - (e) Explain the construction and working of following control components :
    - (i) Shuttle valve
    - (ii) Twin Pressure valve
- 5. Attempt any TWO of the following : 12**
- (a) State the function of accumulator in circuit. State different types of accumulator and explain any one with neat sketch.
  - (b) Construct meter out circuit for oil hydraulic system using appropriate DCV.
  - (c) Explain time delay valve with circuit diagram.
- 6. Attempt any TWO of the following : 12**
- (a) Construct a sequencing circuit to operate two pneumatic single acting cylinders in sequence using sequence valve.
  - (b) Construct automation circuit for the operation of double acting cylinder using pilot operated direction control valve.
  - (c) Construct electro-pneumatic circuit for the operation of single acting cylinder with 3/2 solenoid-operated valve.
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