

17608

11920

3 Hours / 100 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. a) Attempt any THREE of the following: **12****
- (i) Describe essential properties of oil used in oil hydraulic circuits.
 - (ii) Draw symbol of
 - (1) Pressure relief valve
 - (2) Pressure reducing valve
 - (3) Bi-directional hydraulic motor
 - (4) 5/3 D.C. valve.
 - (iii) Give merits and demerits of hydraulic system.
 - (iv) Why accumulators are used in hydraulic system?
Explain any one of them with neat sketch.

P.T.O.

- b) **Attempt any ONE of the following:** **06**
- (i) Explain construction and working principle of internal gear pump.
 - (ii) Describe with sketch pressure compensated flow control valve.
2. **Attempt any TWO of the following:** **16**
- a) Explain with neat sketch the working of hydraulic circuit for milling machine.
 - b) State the function of pressure relief valve for pneumatic system. Explain its working with neat sketch.
 - c) Using double acting cylinder, flow control valve, with check valve, pressure relief valve filter, D.C. valve, develop circuit for speed control during return stroke.
3. **Attempt any FOUR of the following:** **16**
- a) What are different mounting methods of hydraulic cylinder. Explain any one with sketch.
 - b) State any four functions of hydraulic seals and state any four reasons for seal failure.
 - c) Explain with neat sketch working of two cylinder synchronizing circuit.
 - d) Write any four applications of hydraulic system.
 - e) Give the function of FRL unit and also draw its symbol.
4. a) **Attempt any THREE of the following:** **12**
- (i) State any four advantages and disadvantages of pneumatic system.
 - (ii) With neat sketch describe construction and working of double acting pneumatic cylinder.
 - (iii) Describe with neat sketch how speed of bidirectional air motor is controlled.
 - (iv) With neat sketch explain time delay pneumatic circuit.

- b) **Attempt any ONE of the following:** **06**
- (i) Sketch and explain working of axial piston pump used in hydraulic system.
 - (ii) Give the types of rotary actuators and explain any one with neat sketch.
5. **Attempt any TWO of the following:** **16**
- a) Classify pneumatic actuators on the basis of
 - (i) Motion
 - (ii) Mode of action
 - (iii) Displacement
 - (iv) Describe telescopic cylinder with neat sketch.
 - b) Develop pneumatic circuit for operation of two D.A. cylinders that operates sequentially.
 - c) Draw pneumatic circuit for speed control of D.A. cylinder in forward direction. Write its applications.
6. **Attempt any FOUR of the following:** **16**
- a) Give selection criteria of air compressor for pneumatic system.
 - b) Classify flow control valve with their applications.
 - c) Draw a general layout of hydraulic system.
 - d) What is hose? Enlist factors affecting on selection of hose in hydraulic system.
 - e) Draw a simple pneumatic circuit to control speed of single acting cylinder.
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