

17608

11819

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. **Attempt any FIVE :**

20

- (a) Compare oil and air as a medium in fluid system.
- (b) State applications of hydraulic system.
- (c) Draw IS symbol for
 - (i) Dead weight accumulator,
 - (ii) Tandem Cylinder
 - (iii) Unloading valve and
 - (iv) Heat Exchanger
- (d) Show the layers of hydraulic hose with a neat sketch. State materials used for each layer.
- (e) Draw and explain meter in circuit.
- (f) Draw general layout of pneumatic system and state function of each component in it.
- (g) Forward stroke of a double acting pneumatic cylinder needs to be controlled as per requirement. Draw a suitable circuit and name each component in it.

2. Attempt any TWO :**16**

- (a) Explain with sketch working of swash plate type axial piston pump.
- (b) Explain with sketch working of pilot operated pressure relief valve. How it is different from direct acting type ?
- (c) State the meaning of pressure compensation in flow control valve. Draw a sketch of pressure compensated flow control valve and explain its working.

3. Attempt any FOUR :**16**

- (a) Compare Gear Pump and Vane Pump (4 important points)
- (b) Define viscosity index and state its significance.
- (c) Explain two applications of check valve with the help of suitable circuit diagram.
- (d) Explain with sketch working of 4/3 rotary spool DC valve.
- (e) Compare meter out and bleed off circuit (4 imp. points)
- (f) Draw and explain hydraulic regenerative circuit.

4. Attempt any TWO :**16**

- (a) State the meaning of balanced vane pump. Explain its working with a sketch.
- (b) Explain with the help of sketch and symbol, working and application of quick exhaust valve.
- (c) Classify pneumatic actuators and explain with a neat sketch working of vane type of air motor.

5. Attempt any FOUR :**16**

- (a) Explain with figure working of bag type accumulator.
- (b) Draw a sketch of pressure regulator in pneumatic circuit and explain its working.
- (c) State the advantages and limitations of pneumatic system.
- (d) Draw symbol of
 - (i) Twin pressure valve
 - (ii) FRL unit
 - (iii) Silencer and
 - (iv) Shuttle valve
- (e) Draw a sketch and explain working of gear type of air motor.
- (f) There are two pneumatic cylinders which operate in sequence. Forward stroke of first cylinder take place followed by automatic forward stroke of second cylinder. However retraction takes place first in second cylinder followed by the same in first cylinder. Draw suitable circuit and name all components.

6. Attempt any TWO :**16**

- (a) Draw and explain two pump unloading circuit. State its application
 - (b) Draw symbol of pneumatic time delay valve and explain its application with suitable circuit.
 - (c) A bidirectional pneumatic motor needs to be operated at variable speed in both the direction. Draw a well labelled circuit diagram and explain its working. State whether it is a 'meter in' or 'meter out' circuit.
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