

17522

21819

3 Hours / 100 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (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) Classify of fluids. Give one example of each type.
 - (ii) List any four features of hoses used in hydraulic and pneumatic circuits.
 - (iii) Draw a sketch and explain the construction and working of puppet valve.
 - (iv) Give classification of pneumatic actuators.

- b) **Attempt any ONE of the following:** **6**
 - (i) Draw a neat sketch to show the relation between various pressures. Define each type of pressure.
 - (ii) Draw a neat sketch of gear type of air motor. State it's applications (any two).

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- 2. Attempt any FOUR of the following:** **16**
- a) Draw a neat sketch and explain construction and working of pitot tube. State how the discharge is measured with pitot tube?
 - b) Draw a neat sketch of axial piston pump used in hydraulic circuit.
 - c) The centrifugal pump fails to start pumping. Give any four cases and four remedies for the same.
 - d) Draw neat labelled sketch of hydraulic press. State two applications of the hydraulic press.
 - e) Explain with neat sketch a mechanical type pneumatic filter.
- 3. Attempt any FOUR of the following:** **16**
- a) State and explain the basic principles applied in fluid flow.
 - b) Draw neat sketch of air vessel. State its functions and advantages.
 - c) List the various gear pumps used in hydraulic circuit. State the applications of each gear pump.
 - d) State two location of each, where seats and gaskets are used in hydraulic system.
 - e) State the necessity of direction control valves in hydraulic circuit? State how direction control valve is designated.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Draw a neat labelled sketch of Hydraulic Jack. State the function of each component involved in hydraulic jack.
 - (ii) Give the comparison between direct acting hydraulic lift and suspended type hydraulic lift.
 - (iii) Draw general layout of pneumatic system and label the components.
 - (iv) State the functions of filters and strainers used in hydraulic system and any two differences between filters and strainers.
 - (v) List the various hoses and connectors used in pneumatic system.

b) **Attempt any ONE of the following:****6**

- (i) Compare the pneumatic system and hydraulic system based on following parameters:
- 1) Fluid used
 - 2) Ease of operation
 - 3) Noise
 - 4) Speed
 - 5) Cost
 - 6) Application.
- (ii) How the hydraulic circuit is utilized in hydraulic brake system? Explain with figure.

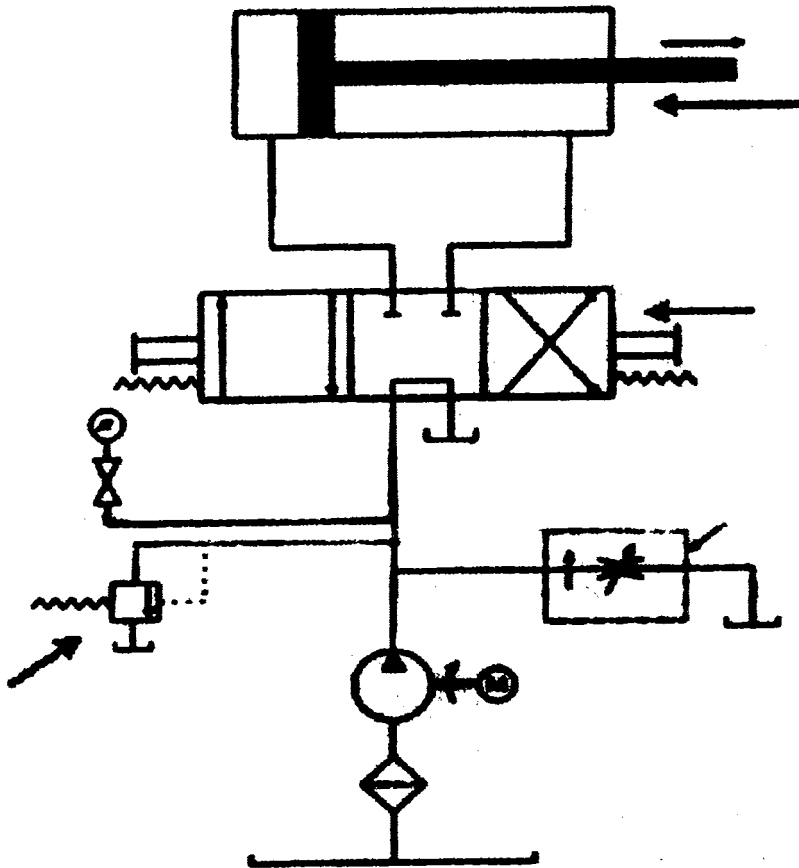
5. Attempt any TWO of the following:**16**

- a) List any six types of flow. Define each type of flow. Give example of each flow.
- b) Explain principle construction and working of double acting reciprocating pump.
- c) Sketch the symbols of following components used in pneumatic and hydraulic circuit:
- (i) 4/2 Direction control valve.
 - (ii) Pressure compensated flow control valve with integral check valve.
 - (iii) Pressure reducing valve.
 - (iv) Fitter with separator.

6. Attempt any TWO of the following:

16

- a) A venturimeter has its axis vertical the inlet and throat diameter being 150 mm and 75 mm respectively. The throat is 225 mm above inlet and coefficient of discharge is 0.96. Petrol of specific gravity 0.78 flows up through the meter at a rate of $0.029 \text{ m}^3/\text{s}$. Find the pressure difference between inlet and the throat.
- b) Explain with neat sketch different casings used in centrifugal pump.
- c) Identify the following circuit in Fig. No. 1. Label it and explain its working. State its applications.

Fig. No. 1