

22650

24225

3 Hours / 70 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 answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) 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 Capillarity.
 - b) List assumptions made in Bernoulli's theorem.
 - c) What is the use of Pitot-tube?
 - d) Draw following symbols –
 - i) Single acting cylinder
 - ii) Tandem cylinder.
 - e) What is the meaning of following in the direction control valve?
 - i) Port A and B
 - ii) Port P
 - iii) Port R.
 - f) List safety precautions of using hydraulic and pneumatic systems.
 - g) Write any two applications of pneumatic circuits in an automobile.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Explain Atmospheric, gauge, vacuum and absolute pressure and represent them schematically.
 - b) Explain Bourdon's tube pressure gauge with neat sketch.
 - c) Explain priming in centrifugal pump and give its need.
 - d) Compare reciprocating pump and centrifugal pump based on the following points –
 - i) Discharge
 - ii) Pressure
 - iii) Weight of the pump
 - iv) Applications.
- 3. Attempt any THREE of the following:** **12**
- a) Explain U-tube differential manometer with neat sketch.
 - b) Explain hydraulic ram with a neat sketch.
 - c) Explain the external gear pump with neat sketch.
 - d) Compare gear pump and vane pump on the basis of following –
 - i) Construction
 - ii) Pressure
 - iii) Applications
 - iv) Overall efficiency.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the pressure relief valve with a neat sketch.
 - b) Explain the 3/2 direction control valve with a neat sketch.
 - c) Classify the control valves used in hydraulic system.
 - d) Explain the Tandem cylinder with neat sketch.
 - e) Summarize and draw any four methods of actuation of direction control valves.

5. Attempt any TWO of the following:**12**

- a) Predict any three causes and remedies for the following faults in centrifugal pumps –
 - i) Failure to deliver water
 - ii) Pump operates for short time, then stops.
- b) Explain the hydraulic hose pipe and give materials used for each layer.
- c) Justify the use of an FRL unit in a pneumatic system and explain it.

6. Attempt any TWO of the following:**12**

- a) Compare hydraulic and pneumatic circuits.
- b) Design and justify a circuit of a pneumatic drill machine.

c) Identify given circuit in Figure No. 1 and name the components.

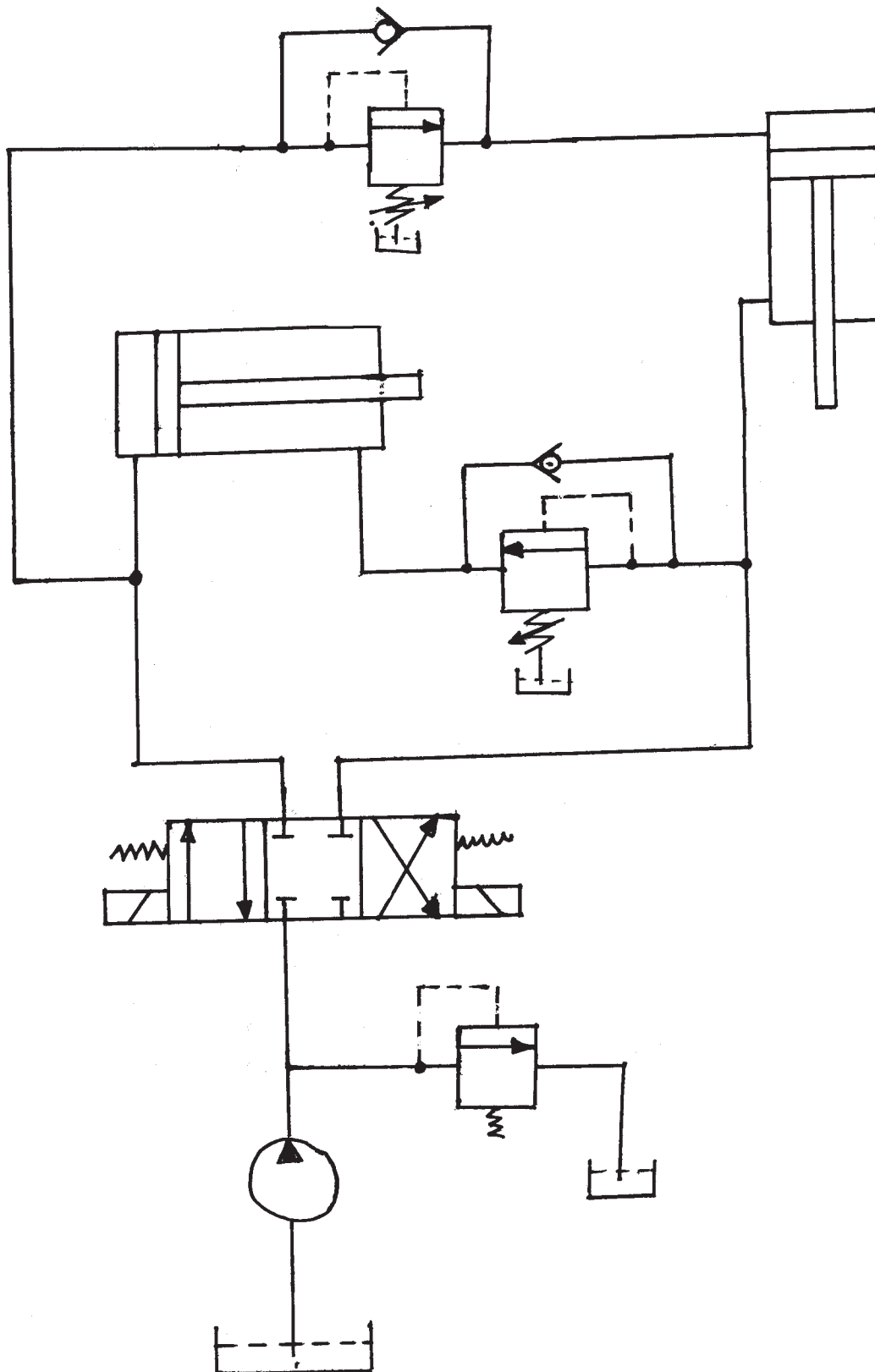


Fig. No. 1