

17522

16172

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) 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) Define capillarity and specific gravity alongwith their unit.
- (ii) State any two practical applications of seals and gaskets used in hydraulic system.
- (iii) Give classification of pneumatic actuator.
- (iv) Write the function of 'FRL' unit with its composite and combined symbols.
- b) **Attempt any ONE of the following:** **6**
- (i) Explain the term Vena-Contracta with neat sketch.
- (ii) Write construction and working of sequence valve with neat sketch.

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- 2. Attempt any FOUR of the following:** **16**
- a) How would you apply Bernoulli's theorem in venturi-meter to know the discharge?
 - b) State any two faults of centrifugal, pump. Write two causes and two remedies of each.
 - c) What is NPSH? How is it useful in pump selection?
 - d) Compare the characteristics of vane and gear pump and give one application for each pump.
 - e) Describe with neat sketch the working of hydraulic jack.
- 3. Attempt any FOUR of the following:** **16**
- a) Draw the labelled sketch of swash plate pump.
 - b) Explain construction and working of Rotary spool 4/3 valve with neat sketch.
 - c) Classify valves on the basis of construction, function and application.
 - d) Give the types of End-connectors used in hydraulic system and sketch any one of them with specifying its function.
 - e) Explain with neat sketch proportional flow type filter.
- 4. a) Attempt any THREE of the following:** **12**
- (i) What is Pascal's law? State its applications.
 - (ii) Explain working of single acting pneumatic cylinder with neat sketch.
 - (iii) Specify types of seals used in hydraulic system.
 - (iv) Draw general lay-out of pneumatic system and label the components.

b) Attempt any ONE of the following:

- (i) Draw and explain pneumatic meter-in circuit.
- (ii) 1) Identify the following circuit in Figure No. 1.
2) Label it and state its applications.
3) Explain its working.

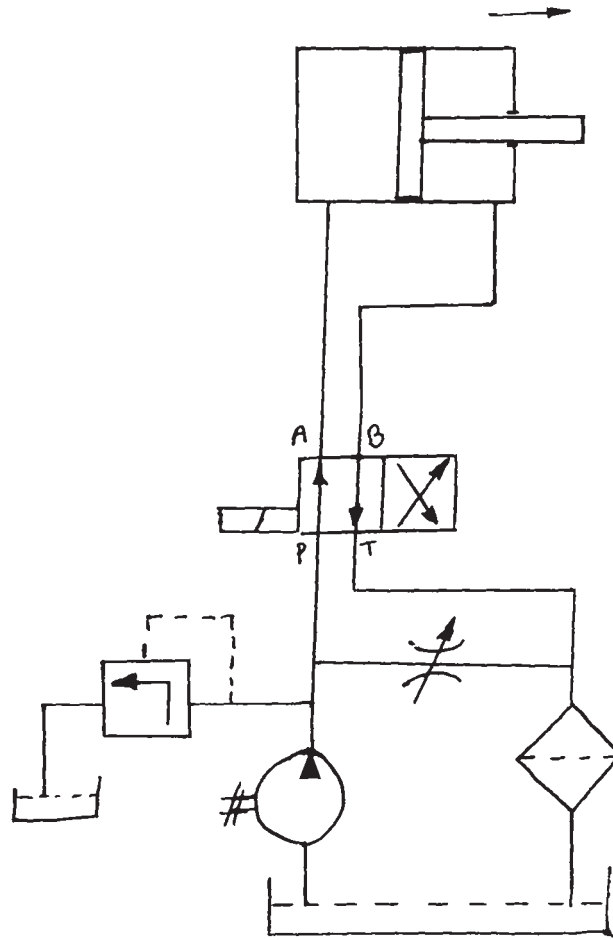


Fig. No. 1

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

- (a) (i) Explain along with suitable example any four types of fluid flow.
- (ii) Give the function and working of piezometric tube with its sketch.
- (b) Explain with neat sketch construction and working of reciprocating pump using air vessels.
- (c) Draw meter-out Hydraulic circuit and explain its working.

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

- a) A oil of sp. gravity 0.75 is flowing through horizontal venturimeter having inlet diameter 30cm and throat of 15cm. The differential manometer shows a reading of 40cm of Hg. Calculate discharge of oil through venturimeter. Take $C_d = 0.98$.
 - b) Explain construction and working of centrifugal pump with neat sketch. Also state its two applications.
 - c) Draw the neat labelled hydraulic circuit of milling machine and explain its working.
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