

22345

24225

3 Hours / 70 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) Preferably, write answers in sequential order.

Marks

1. **Attempt any FIVE of the following :** **10**
 - (a) State Pascal's Law.
 - (b) Define Density and Specific gravity.
 - (c) State the types of fluid flow.
 - (d) Write any four applications of oil hydraulic system.
 - (e) Define Priming.
 - (f) Draw symbol of 4/2 Direction control valve.
 - (g) State the components of pneumatic system.

2. **Attempt any THREE of the following :** **12**
 - (a) Describe the working of Venturimeter with suitable sketch.
 - (b) Differentiate between hydraulic and pneumatic system.



- (c) Explain time delay valve with neat sketch.
- (d) A circular plate 1.2 m diameter is placed vertically in water so that centre of plate is 2 m below the free surface. Determine total pressure and the depth of centre of pressure.

3. Attempt any THREE of the following :

12

- (a) Describe the construction and working of Vane type pump.
- (b) Describe simple oil hydraulic circuit with neat sketch and state the function of each component used in it.
- (c) Explain the concept of absolute, atmospheric, gauge and vacuum pressure. State the relation between them.
- (d) Explain Law of continuity.

4. Attempt any THREE of the following :

12

- (a) Draw the symbol for :
 - (i) Sequence valve
 - (ii) Pressure relief valve
 - (iii) Check valve
 - (iv) 2×2 Direction control valve
- (b) Describe the construction and working of external gear type air motor.
- (c) Write Darcy's equation for frictional losses and state meaning of each term in it.
- (d) Describe construction and working of pressure relief valve with line sketch.
- (e) Explain Bourdon's tube pressure gauge with a neat sketch.

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

- (a) A horizontal venturimeter with inlet and throat diameter 30 cm and 15 cm respectively is used to measure the flow of water. The reading of differential manometer connected to inlet and throat is 20 cm of mercury. Determine the rate of flow. Take coefficient of discharge as 0.98.
- (b) Write any eight industrial applications of pneumatic system.
- (c) Classify filters used in hydraulic system. Write its function and location.

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

- (a) Explain with neat sketch working of FRL unit in pneumatic system.
 - (b) Explain meter-in-hydraulic speed control circuit for double acting cylinder.
 - (c) Draw and explain working of motion synchronization circuit.
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