

22345

11920

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 answers 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) State Pascal's law.
- (b) Define density and specific gravity.
- (c) Enlist different types of minor losses.
- (d) Name any four components of Pneumatic system.
- (e) Define cavitation in centrifugal pump.
- (f) Write any two classifications of hydraulic actuators.
- (g) State the function of FRL unit.

2. Attempt any THREE of the following : 12

- (a) State Bernoulli's theorem. Write meaning of each term in it.
- (b) Draw a general layout of oil hydraulic system and label the parts.
- (c) Explain time delay valve with neat sketch.
- (d) Define dynamic viscosity and kinematic viscosity. Write the relation between them.

3. Attempt any THREE of the following : 12

- (a) Draw and explain pressure relief valve.
- (b) Sketch and label vane pump. Explain its working.
- (c) Explain the phenomenon of surface tension and capillarity.
- (d) Sketch and label Venturimeter. Write its construction.

4. Attempt any THREE of the following : 12

- (a) Draw the symbols for
 - (i) Sequence valve
 - (ii) Pressure relief valve
 - (iii) Check valve
 - (iv) 2×2 Direction control valve
- (b) Explain vane type air motor with neat sketch.

- (c) Write Darcy's equation for frictional losses and state meaning of each term in it.
- (d) Compare meter-in and meter-out hydraulic circuits.
- (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 co-efficient of discharge as 0.98.
- (b) Classify filters used in hydraulic system. Write its function and location.
- (c) Draw a neat sketch of 4×2 direction control pneumatic valve. Explain its working.

6. Attempt any TWO of the following :

12

- (a) Explain various types of hoses used in pneumatic system.
 - (b) Sketch and label the components of Rotor pump. Explain its working.
 - (c) Classify hydraulic seals. State the functions of seals.
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