

22345

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- 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.

Marks

1. Attempt any FIVE :

10

- (a) State the unit of
 - (i) Dynamic Viscosity and
 - (ii) Specific Weight
- (b) Give two examples of each :
 - (i) Non-Newtonian Fluid
 - (ii) Real Fluid
- (c) Define :
 - (i) Streamline Flow
 - (ii) Steady Flow
- (d) State the functions of hydraulic oil.
- (e) Define Priming in Pump.
- (f) Draw symbol of 4/2 direction control valve.
- (g) State the components of pneumatic system.

2. Attempt any THREE :

12

- (a) Describe the construction and working of turbine air motor.
- (b) Classify hydraulic oils and give examples of each.
- (c) Explain Chezy's equation for frictional losses.
- (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 :** **12**
- (a) State the advantages & disadvantages of rubber hose.
 - (b) Explain with neat sketch, working of radial piston pump.
 - (c) Explain the concept of absolute, atmospheric, gauge & vacuum pressure. State the relation between them.
 - (d) Describe with neat sketch working of venturimeter.
- 4. Attempt any THREE :** **12**
- (a) Classify filters & explain them.
 - (b) Explain with neat sketch dual control pneumatic circuit.
 - (c) Explain with neat sketch pressure compensated flow control valve.
 - (d) Draw general layout of hydraulic system.
 - (e) Define :
 - (i) Compressibility
 - (ii) Vapour pressure
 - (iii) Surface Tension
 - (iv) Capillarity
- 5. Attempt any TWO :** **12**
- (a) Describe any six losses in pipe fittings.
 - (b) Explain the selection criteria for compressors in pneumatic systems.
 - (c) State Bernoulli's theorem and derive equation of discharge for venturimeter.
- 6. Attempt any TWO :** **12**
- (a) Explain with neat sketch spring loaded accumulator. Also state advantages of it.
 - (b) Explain with neat sketch working of pressure regulator in FRL unit. Draw symbol of regulator.
 - (c) Explain meter out hydraulic speed control circuit for double acting cylinder.
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