

22345

12425

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) Define Kinematic viscosity.
- (b) Define Atmospheric pressure and Gauge pressure.
- (c) State the types of fluid flow.
- (d) Write any four application of oil hydraulic system.
- (e) State the principle of centrifugal pump.
- (f) State different valves used in hydraulic system.
- (g) State the components of pneumatic system.

2. Attempt any THREE of the following :

12

- (a) Explain time delay valve with neat sketch.
- (b) Differentiate between hydraulic and pneumatic system.
- (c) Describe the working pitot tube with suitable sketch.
- (d) Define surface tension and capillarity with example.



- 3. Attempt any THREE of the following : 12**
- (a) Describe the working of Bourdon's gauge with suitable sketch.
 - (b) Describe construction and working of vane type pump.
 - (c) Explain construction and working of pressure regulating valve.
 - (d) Describe the working of venturimeter with suitable sketch.
- 4. Attempt any THREE of the following : 12**
- (a) Differentiate between meter-in and meter-out in hydraulic circuit.
 - (b) State the merits and limitations of pneumatic system.
 - (c) A circular plate 1.2 m diameter is placed vertically in water so that centre of the plate is 2 m below the free surface. Determine total pressure and depth of centre pressure.
 - (d) Draw the symbols for –
 - (i) Sequence valve
 - (ii) Pressure relief valve
 - (iii) Check valve
 - (iv) 2×2 direction control valve
 - (e) Write Darcy's equation for frictional losses and state meaning of each term in it.
- 5. Attempt any TWO of the following : 12**
- (a) Describe any six losses in pipe fitting.
 - (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) Sketch and explain working of Quick exhaust valve used in pneumatics system.
 - (b) Draw and explain working of motion synchronization circuit.
 - (c) State application of gear pump, vane pump, screw pump, piston pump in industry.
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