

17522

11819

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) What is capillarity? When capillary rise and fall occur?
- (ii) Define hydraulic and pneumatic actuator give its applications.
- (iii) Explain construction of ball type non return valve with neat - sketch.
- (iv) Give the classification of filter and state how it is different then a strainer.
- b) **Attempt any ONE of the following:** **6**
- (i) List different manometers used for measurement of pressure. Explain with neat sketch inverted 'U' tube differential manometer.
- (ii) Explain with neat sketch construction and working of telescopic cylinder.

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- 2. Attempt any FOUR of the following: 16**
- a) Give the classification of fluids and write the example of each.
 - b) What factors will you consider while selecting a centrifugal pump?
 - c) Define:
 - (i) Mechanical efficiency and
 - (ii) Hydraulic efficiency of centrifugal pump
 - d) Explain construction and working of hydraulic Ram with neat sketch.
 - e) Compare Gear pump and Vane pump (four points)
- 3. Attempt any FOUR of the following: 16**
- a) Explain with neat sketch construction and working of gear pump.
 - b) Explain 4/3 rotary spool DC valve with neat sketch.
 - c) Differentiate between spool and poppet type valves. (minimum four points)
 - d) Classify the seals and state function of each type.
 - e) Draw different type of hoses and connectors.
- 4. a) Attempt any THREE of the following: 12**
- (i) Draw the labelled sketch of bent axis swash plate pump.
 - (ii) Explain with neat sketch radial piston motor.
 - (iii) Explain proportional type filter with a neat sketch.
 - (iv) Draw the symbol for :
 - (1) Air compressor
 - (2) Cylinder with end cushioning
 - (3) 4/2 DCV
 - (4) Bidirectional hydraulic motor

- b) **Attempt any ONE of the following:** **6**
- (i) Draw and explain hydraulic press circuit.
 - (ii) Draw circuit diagram air braking system. Explain its working.
- 5. Attempt any TWO of the following:** **16**
- a) State Bernoulli's theorem and give its assumption. Derive an expression for measurement of velocity of flow by pitot tube.
 - b) Explain construction and working of single acting reciprocating pump.
 - c) Explain pneumatic sequencing circuit with neat sketch.
- 6. Attempt any TWO of the following:** **16**
- a) 200 mm × 100 mm venturimeter is mounted in a vertical pipe carrying water the flow being upwards. The throat section is 200 mm above the entrance section of the venturi meter for a certain flow through the meter the differential gauge between throat and entrance indicates a deflection of 250 mm of Hg. Assuming venturi coefficient as 0.98. Find discharge.
 - b) Explain construction and working of centrifugal pump with neat sketch.
 - c) Differentiate between:
 - (i) Meter in and meter out circuit
 - (ii) Hydraulic and Pneumatic system.
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