17522

15116

3 Hours / 100 Marks   Seat No. ☐☐☐☐☐☐☐

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. (A) Attempt any THREE of the following :   **12**

(a) Define specific weight and specific gravity.

(b) Give the classification of valves.

(c) Give classification of hydraulic actuators. Write application of each.

(d) State the types of seals and gaskets and write applications of seals.

(B) Attempt any ONE of the following :   **6**

(a) Represent schematically atmospheric, gauge, vacuum and absolute pressure. State the relations between them.

(b) Explain with sketch working of gear type hydraulic motor.

2. Attempt any FOUR of the following :   **16**

(a) Explain the term vena contracta as applied to flow of water through a sharped edge orifice.

(b) What is priming of a centrifugal pump ? Why is it necessary ?

(c) What is cavitation and what are its causes ?

(d) Explain construction and working of Hydraulic Ram with neat sketch.

(e) Draw a neat labelled sketch of Swash plate type pump.

P.T.O.

3. **Attempt any FOUR of the following :** 16

    (a) Explain with neat sketch working of vane type pump.

    (b) Write two advantages and two applications of air motor.

    (c) Explain with neat sketch operation of non-return valve.

    (d) State the function of FRL unit in a pneumatic system. Draw symbol of FRL unit.

    (e) Explain construction and working of full flow type filter with neat sketch.

4. **(A)** **Attempt any THREE of the following :** 12

    (a) Explain construction and working of hydraulic jack with neat sketch.

    (b) Explain the working of single acting air cylinder with sketch.

    (c) State types of hoses and give its two applications.

    (d) Draw a symbol for :

        (i) Variable speed unidirectional pump.

        (ii) Air motor with two directional flow.

  (B) **Attempt any ONE of the following :** 6

    (a) Explain with neat sketch meter-in hydraulic circuit.

    (b) Give six points of comparison between hydraulic and pneumatic circuits.

5. **Attempt any TWO of the following :** 16

    (a) (i) State law of continuity and write its applications.

        (ii) State Bernoulli's theorem and write its applications.

    (b) Compare centrifugal pump with the reciprocating pump.

    (c) Draw hydraulic circuit for hydraulic press and explain its working.

6. **Attempt any TWO of the following :** 16

    (a) A horizontal venturimeter with inlet and throat diameters 300 mm and 150 mm respectively is used to measure the flow of water. The reading of differential manometer connected the inlet and throat is 200 mm of mercury. Determine the rate of flow. Take $C_d = 0.98$

    (b) Explain construction and working of centrifugal pump with neat sketch.

    (c) Explain with neat sketch sequencing pneumatic circuit. Write application of this circuit.

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