

17522

11920

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) Define viscosity and surface tension with their S.I. units.
- (ii) Give the classification of valves used in hydraulic system.
- (iii) Explain hydraulic motors with neat sketch.
- (iv) State the functions of seals and gaskets with their material.
- b) **Attempt any ONE of the following:** **06**
- (i) Describe with neat sketch Bourdon tube pressure gauge.
- (ii) Write construction and working of non return valve with neat sketch

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) State Bernoulli's theorem and give its applications.
 - b) What is priming and why it is necessary in centrifugal pump.
 - c) Give any four reasons for cavitations.
 - d) Draw a labelled diagram of swash plate type pump.
 - e) Describe with neat sketch working of hydraulic jack.
- 3. Attempt any FOUR of the following:** **16**
- a) Compare gear pump and vane pump on the basis of
 - (i) Function
 - (ii) Construction
 - (iii) Pressure
 - (iv) Delivery of oil
 - b) Describe working of single acting hydraulic cylinder with neat sketch.
 - c) Draw labelled sketch of sequence valve and describe its working.
 - d) Explain full flow hydraulic filter with neat sketch.
 - e) State function of FRL unit and draw a symbol of it.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe the working of hydraulic press with neat sketch.
 - (ii) Explain working of piston type hydraulic motor with neat sketch.
 - (iii) Explain flexible hose and state its two application.
 - (iv) Draw the symbol for : (any two)
 - (1) Pressure relief valve
 - (2) 4/2 directional control valve
 - (3) Filter

- b) **Attempt any ONE of the following:** **06**
- (i) Draw a layout of air brake system and explain its working.
 - (ii) Compare hydraulic and pneumatic circuit.
5. **Attempt any TWO of the following:** **16**
- a) Derive an expression of discharge through orifice meter.
 - b) Explain construction and working of double acting reciprocating pump with neat sketch.
 - c) Draw meter out circuit and explain its working.
6. **Attempt any TWO of the following:** **16**
- a) A 300 mm × 200 mm venturimeter is inserted in a vertical pipe carrying water flowing in upward direction. A differential mercury manometer is connected to the inlet and throat of venturimeter gives a reading of 20cm. Find discharge, take $C_d = 0.98$
 - b) Explain construction and working of centrifugal pump with neat sketch.
 - c) Draw and explain pneumatic circuit to control the speed of double acting cylinder.
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