16117
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.

(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**

(a) Define specific weight and viscosity. Also state their SI unit.

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

(c) Write classification of control valves.

(d) Describe the construction of hydraulic hose and state its materials.

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

(a) Represent schematically and explain Atmospheric Gauge, Vaccum and Absolute Pressure.

(b) Classify Hydraulic Actuators. Describe construction and working of double acting cylinder with neat sketch.

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

(a) Define all hydraulic coefficients.

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

(c) What factors will you considered while selecting a centrifugal pump ?

(d) Describe the working of suspended type hydraulic lift with neat sketch.

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

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

(a) Compare vane pump and gear pump on the basis of

(i) Construction

(ii) Pressure

(iii) Speed

(iv) Applications

(b) Draw a labelled sketch of radial piston type pneumatic motor. Describe its working.

(c) Describe construction and working of sliding spool type 4/3 direction control value.

(d) Describe mechanical type pneumatic filter with neat sketch.

(e) State different types of seals used in hydraulic circuit and explain 'O' ring with neat sketch.

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

(a) Describe the working of hydraulic jack with neat sketch. State its applications.

(b) Draw a labelled sketch of sequence valve and describe its working.

(c) Differentiate between filters and strainers.

(d) Draw symbols of :

(i) Hydraulic pump

(ii) FRL unit

(iii) 3/2 direction control valve

(iv) Variable flow control valve

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

(a) Compare hydraulic and pneumatic circuits on the basis of

(i) operating pressure

(ii) ease of operation

(iii) Noise

(iv) speed

(v) cost

(vi) applications

(b) Differentiate between Meter In and Meter out hydraulic systems.

5. Attempt any TWO of the following : 16

(a) State Bernoulli's theorem. Derive an expression for measurement of discharge through orifice meter.

(b) Compare reciprocating pump and centrifugal pump on the basis of :

Discharge, pressure, speed, weight of pump, floor area used, maintenance, cost and applications.

(c) Construct the hydraulic circuit for milling machine and describe its working.

6. Attempt any TWO of the following : 16

(a) A horizontal venturimeter 150 mm × 75 mm is used to measure flow rate of water. Determine the deflection of mercury in water mercury gauge if the flow rate is 35 litres per second.

Take cd = 0.96.

(b) (i) State the functions of air vessels.

(ii) What is cavitations ? Give reasons of cavitations in reciprocating pump.

(c) Construct the pneumatic circuit using sequence valve to control two operations performed in a proper sequence and describe its working.

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