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3 Hours / 70 Marks Seat No. | | | | | | | | |

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 fluid and its types.

b) Write four application of Hydraulic system.

c) State Pascal's Law.

d) List any two demerit's of pneumatic system.

e) Classify the types of compressor.

f) Draw the detailed symbol of FRL unit.

g) State functions of Actuator.

P.T.O.

Marks

2. Attempt any THREE of the following : **12**

a) Classify oil used in hydraulic system and explain Biodegradable oil with examples.

b) Describe with sketch construction of quick exhaust valve.

c) Explain with sketch general layout of pneumatic system which used in plastic processing machines.

d) Define given properties of compressible fluid –

i) Viscosity

ii) Density

iii) Specific weight

iv) Specific gravity

3. Attempt any THREE of the following : **12**

a) Differentiate between Hydraulic and pneumatics system. (Any four points)

b) List any four merits of pneumatic system.

c) Describe the selection criteria of pump used in hydraulic system.

d) Compare gear pump and vane pump on the basis of –

i) Operation

ii) Design

iii) Efficiency

iv) Application

Marks

4. Attempt any THREE of the following : **12**

a) Classify the pumps used in Hydraulic system.

b) Explain the working of Internal gear pump with neat sketch.

c) Describe construction and working principle of reciprocating compressor.

d) Draw labelled sketches of –

i) Twin pressure valve

ii) Shuttle valve

e) Select suitable component for filtering, Regulating and Lubricating compressed air in pneumatic circuit. Justify your answer with sketch and neat symbol.

5. Attempt any TWO of the following : **12**

a) Draw and explain pneumatic circuit to control the speed of Double Acting Cylinder.

b) State the purpose of direction control valve used in hydraulic system. Classify the direction control valve on basis of Actuation Method.

c) Explain working of direct operated pressure relief valve with sketch.

6. Attempt any TWO of the following : **12**

a) Describe how the accumulator and oil filter work together to maintain optimal performance and reliability in hydraulic system.

b) Discuss the situation in which following types of center positions of D–C valves are preferred –

i) All ports open

ii) All ports closed.

c) Explain with neat sketch general Layout of hydraulic system.

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