17608

15116

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any <u>THREE</u> of the following:** **12**

(i) List any four desirable properties of hydraulic oil used in hydraulic system.

(ii) State the importance of pump used in hydraulic system. Give it's classification.

(iii) Give merits and demerits of hydraulic system.

(iv) Differentiate between gear pump and piston pump on the basis of function, construction, pressure range and delivery of oil.

Marks

b) **Attempt any ONE of the following:** **6**

(i) Draw symbols of

1) Temperature and pressure compensated flow control valve.

2) Pilot operated pressure relief valve.

3) Pedal operated 4/3 DC valve.

(ii) Explain vain type pump with neat sketch.

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

a) Explain with sketch any one type of air motor.

b) State the various lossess in pipes in pneumatic system.

c) Draw a general layout and symbolic representation of pneumatic system.

d) Write any four limitations of pneumatic system.

e) Draw and label the circuit for working of two double acting air cylinders.

f) Explain with neat sketches working of rotory spool type DC valve.

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

a) What is the purpose of hydraulic oil seal? Explain any one type of oil seal.

b) Classify hydraulic actuators.

c) Explain working of telescopic cylinder with neat sketch.

d) Explain reciprocating compressor used in pneumatic system.

e) Compare pneumatic motor with electric motor.

f) Give the function of FRL unit. Draw it's symbol.

Marks

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

(i) Describe construction and working of pressure reducing valve with line sketch.

(ii) With a neat sketch, explain pressure operated flow control valve. Draw the symbol for the same.

(iii) Give classification of filters used in hydraulic system. Explain any one of them.

(iv) Sketch and explain gerotor pump.

b) **Attempt any ONE of the following:** **6**

(i) Explain with neat sketch, working of double acting air cylinder.

(ii) What is the function of hydraulic accumulator? How they are classified? Explain any one with suitable sketch.

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

a) Explain with neat sketch working of hydraulic circuit for shaping machine.

b) Using double acting cylinder, flow control valve with check valve, pressure relief valve, filter and DC valve, develop a circuit for speed control during a return stroke.

c) Develop a pneumatic circuit for operation of two DA cylinders such that one operates after other at a certain time interval using time delay valve.

Marks

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

a) What are the selection criteria for hydraulic pumps?

b) Draw a neat sketch of two stage air compressor and label it's parts.

c) State any four reasons of failure of hydraulic seals.

d) Describe with a neat sketch, how speed of bidirectional air motor is controlled.

e) What is impulse pneumatic circuit? Explain.

f) Draw a neat sketch of working of push button operated 5 × 2 DC valve used in pneumatic system.