17608

21415

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.

(6) Preferably, write the answers in sequence order.

Marks

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

(i) Describe essential properties of oils used in oil hydraulic circuits (Any eight)

(ii) Draw sketch of a simple oil hydraulic circuit and write down the name and working function of each of the components used in it.

(iii) Draw symbols of

1) Unidirectional hydraulic pump

2) Pilot operated check valve

3) Sequence valve

4) Heater

(iv) Draw sketch of needle valve and explain its working.

Marks

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

(i) Explain construction and working principle of Internal Gear pump.

(ii) Describe with sketch pressure compensated flow control valve.

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

a) What is Tandem cylinder? What is its beneficial property? Explain with sketch and draw its symbol.

b) Draw and explain working of Bleed-off hydraulic circuit.

c) Write construction and working of double acting reciprocating compressor with neat sketch.

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

a) State any four merits and any four limitations of hydraulic system.

b) State any four functions of hydraulic seals and state any four reasons for seal failure.

c) Explain construction and working principle of Rotary Spool type DC valve with sketch.

d) Draw and label the components in meter - in hydraulic circuit.

e) With neat sketch describe construction and working of pneumatic DA cylinder.

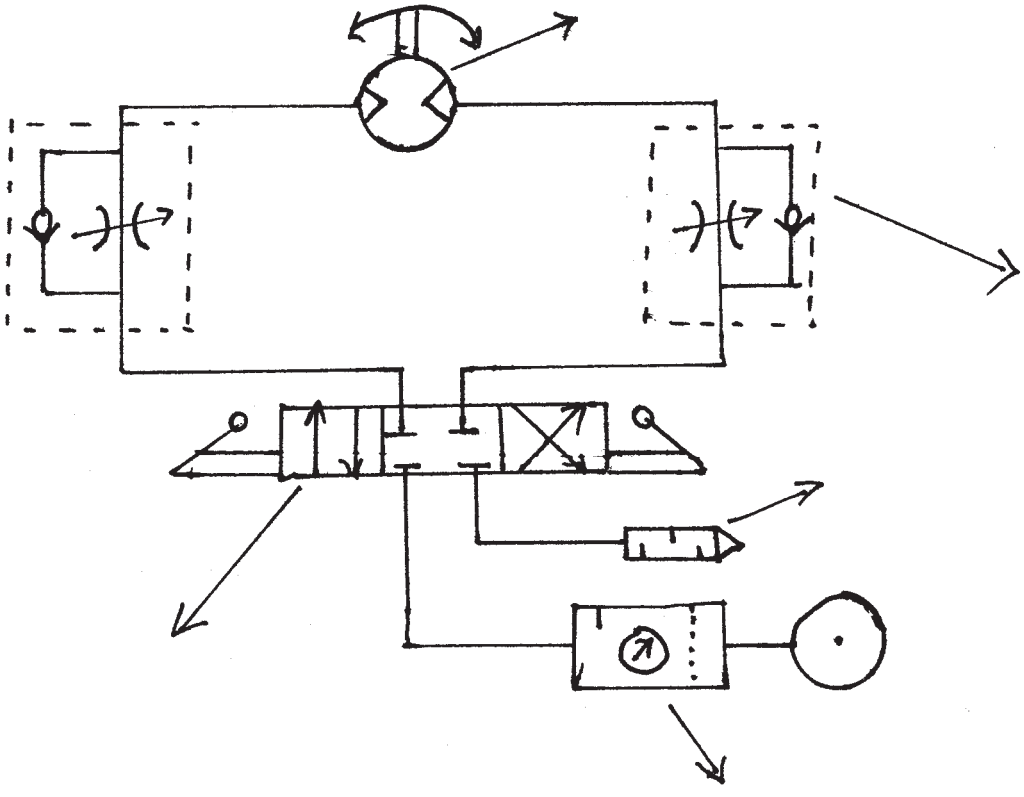
Marks

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

(i) Sketch and label construction details of air receiver of pneumatic system.

(ii) Sketch and label construction details of pneumatic hose.

(iii) From a given circuit answer the following questions.



<u>Fig. No. 1</u>

1) Name the circuit and give its application.

2) Name the components represented by arrow.

(iv) Sketch and explain working of 5/2 DC pneumatic valve.

Marks

b) **Attempt any <u>ONE</u> of the following:** **6**

(i) Sketch and explain working of Gerotor pump used in hydraulic circuits.

(ii) State the function of Accumulator in circuit? State different types of accumulator and explain any one with sketch.

5. Attempt any <u>TWO</u> of the following: **16**

a) Classify pneumatic actuators on the basis of:

(i) Motion

(ii) Mode of action

(iii) Displacement and

(iv) Describe telescopic cylinder with sketch

b) What is FRL unit? Explain its function with the help of sketch. Draw seperate and combined symbol of FRL unit.

c) What is sequencing operation? How will you sequence on DA pneumatic cylinder and one SA pneumatic cylinder using roller operated DC valve? Explain with circuit.

6. Attempt any <u>FOUR</u> of the following: **16**

a) Explain with sketch swash plate Axial piston pump.

b) Explain the importance of filters in hydraulic system. State the different locations where filters need to be fitted in hydraulic system.

c) Explain what is ferrule fitting used in pneumatic circuits.

d) Write any eight industrial applications of pneumatic system.

e) Sketch time delay pneumatic circuit and explain working of it.

———