

# 17608

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
- (i) Write any four applications oil hydraulic systems.
- (ii) What are the effects of contaminants in the oil?
- (iii) Draw a general layout of pneumatic system and state the function of components.
- (iv) Draw the hydraulic circuit showing control of DA cylinder. Using  $4 \times 2$  DC valve. Explain the working in brief.
- b) Attempt any ONE of the following: 6
- (i) Draw actual hydraulic system and explain its working.
- (ii) Explain with neat sketch the working of rotary spool type DC valve.

P.T.O.

- 2. Attempt any TWO of the following:** **16**
- a) What is swash plate? What is its use? What will happen if we change the angle of swash plate? Explain with sketch.
  - b) Why pressure relief valve is used in hydraulic circuit? Explain in details with neat sketches.
  - c) Explain the construction and working of doubled acting reciprocating compressor with neat sketch.
- 3. Attempt any FOUR of the following:** **16**
- a) Write any four advantages of oil hydraulic system.
  - b) Draw symbols of:
    - (i) Oil reservoir
    - (ii) Oil filter
    - (iii) Heat exchanger
    - (iv) Unidirectional fixed displacement pump.
  - c) Explain the principle of regenerative circuit.
  - d) What is FRL unit? Explain its function.
  - e) Draw pilot operated DA cylinder circuit using  $4 \times 2$  DC valve and  $3 \times 2$  pilot valve.
- 4. a) Attempt any THREE of the following:** **12**
- (i) What is the use of direction control valve? Explain with sketch.
  - (ii) Draw bleed off circuit and label it.
  - (iii) What are the limitations of pneumatic system?
  - (iv) Draw symbol of:
    - 1)  $2 \times 2$  DC valve
    - 2) Fixed type flow control valve
    - 3) Pressured relief valve.
    - 4) Muffler

- b) **Attempt any ONE of the following:** **6**
- (i) What is the meaning of unidirectional air motor and bi directional air motor? Explain with sketch and draw symbol of both.
  - (ii) Compare linear actuators and rotary actuators.
- 5. Attempt any TWO of the following:** **16**
- a) (i) Draw symbol of any three types of Hydraulic motors.
  - (ii) What is impulse circuit? Explain.
  - b) Explain construction and working of gear pump.
  - c) Explain working of directly operated (Poppet type) check valve with neat sketch.
- 6. Attempt any FOUR of the following:** **16**
- a) In cold climate why oil tank is equipped with oil heaters? Explain.
  - b) Compare meter in circuit and meter out circuit.
  - c) Draw the hydraulic circuit for shaping machine. Explain its working.
  - d) Draw constructional details of pneumatic hose. Why hose is required in pneumatic circuits?
  - e) How can the speed control of any actuator be achieved? Explain the speed control circuit of bi directional air motor with sketch.
-