

22474

22223

3 Hours / 70 Marks

Seat No.

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- 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) 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) State Pascal's Law.
 - b) Draw symbol of unidirectional fixed displacement Air compressor.
 - c) Classify actuators.
 - d) State any two applications of sequencing circuit.
 - e) Draw symbol of Pressure relief valve.
 - f) Draw symbol of Time Delay valve.
 - g) Draw push button operated 5×2 DCV.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State any four field applications of fluid power system.
 - b) Draw general layout of hydraulic system and explain its working.
 - c) Draw control of single acting cylinder pneumatic circuit using 3×2 DCV and explain its working.
 - d) State advantages of pneumatic system.
- 3. Attempt any THREE of the following:** **12**
- a) Explain external gear type pump with neat sketch.
 - b) Draw and explain pneumatic meter-in circuit to control speed of extension.
 - c) Draw and explain in brief hydraulic bleed off circuit.
 - d) Explain working of FRL unit with symbol.
 - e) Draw and explain working of pressure reducing valve.
- 4. Attempt any THREE of the following:** **12**
- a) Compare meter-in circuit with meter-out circuit.
 - b) Explain with neat sketch Quick Exhaust valve.
 - c) Draw the hydraulic circuit showing control of DA cylinder. Using four way two position DC valve. Explain its working.
 - d) Enlist electrical components used in Electro-pneumatics system.
 - e) State causes and remedies for the following.
 - i) Pump not delivering oil.
 - ii) Excessive pump noise.
 - iii) System excessively hot.
 - iv) Low pressure in system.

- 5. Attempt any TWO of the following:** **12**
- a) Describe with neat sketch pressure and temperature compensated flow control valve.
 - b) Construct electro-pneumatic circuit of single acting cylinder with 3/2 solenoid-operated spring return valve.
 - c) Develop a pneumatic circuit for operation of two double acting cylinders such that one operates after other at a certain time interval using time delay valve.
- 6. Attempt any TWO of the following:** **12**
- a) Compare the following systems-Hydraulic, Pneumatic and Mechanical.
 - b) State the function of Accumulator in circuit. State different types of accumulator and explain any one with neat sketch.
 - c) A bidirectional pneumatic motor needs to be operated at variable speed in both direction. Draw a well labelled circuit diagram and explain it's working.
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