

Total No. of Questions : 8]

SEAT No. :

PA-1605

[Total No. of Pages : 2

[5926]-232

**T.E. (Robotics & Automation)**  
**HYDRAULICS & PNEUMATICS**  
**(2019 Pattern) (Semester - I) (311502(A))**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Figures to the right indicates full marks.*
- 3) *Neat Diagram must be drawn wherever necessary.*
- 4) *Assume Suitable data if necessary.*
- 5) *Use of Calculator is allowed.*

**Q1) a)** Draw ISO symbols for the following Hydraulic and Pneumatic Components. **[8]**

- i) F-R-L unit detailed symbol
- ii) 5/2, Solenoid Operated, Spring Return DCV
- iii) 4/3, Float Centre, Lever Operated, detent control DCV

b) Classify different types of Pressure control valves used in the hydraulic circuits. Draw ISO symbol for each. **[9]**

OR

**Q2) a)** Draw neat sketch and explain the following with their applications in circuit. **[8]**

- i) Three Way, Two Position Direction Control Valve
- ii) Four Way, Three Position Direction Control Valve (Closed Centre)

b) Explain shuttle valve with a neat sketch. State its application with a typical circuit. **[9]**

**Q3) a)** Draw a regenerative circuit by using 4/3 DCV and explain its application. **[9]**

b) Explain counter balance valve circuit with neat sketch. **[9]**

OR

**Q4) a)** Differentiate between meter in circuit and meter out circuit. **[9]**

b) Draw a neat sketch of Pump unloading circuit. State function of unloading valve. **[9]**

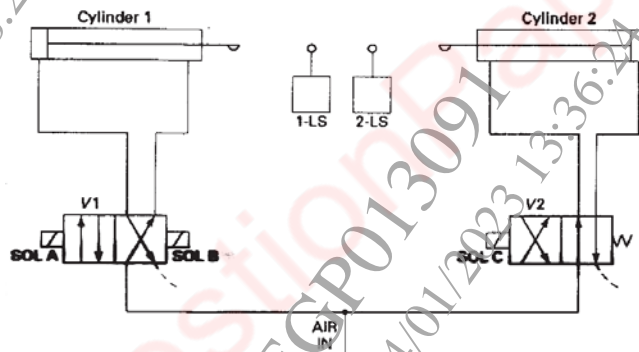
**P.T.O.**

- Q5) a)** Explain with neat sketch working of “AND” valve and with the help of circuit diagram explain any one typical application of it. [9]
- b)** Draw a typical circuit showing control of a double acting cylinder operated through use of an air pilot actuated direction control valve and explain working of the circuit. [9]

OR

- Q6) a)** Draw and explain a typical sketch for sequencing of two double acting cylinders in respect of pneumatics. [9]
- b)** Draw circuit for : [9]
- Controlling speed of pneumatic double acting cylinder.
  - Speed control of a pneumatic motor.

- Q7) a)** Explain an Electro-hydraulic servo system with neat sketch? [8]
- b)** Explain the complete operation of the system shown in fig. [9]



OR

- Q8) a)** What is a programmable logic controller? State the main function of each of the following elements of a PLC: [8]

- CPU
- Programmer/monitor
- I/O module

- b)** Explain the complete operation of the system shown in fig [9]

