

Total No. of Questions:8]

SEAT No. :

P424

[6003]-521

[Total No. of Pages :4

**T.E. (Robotics & Automation Engg.)
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) *Figure 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 a simple sketch and ISO symbol of a pressure relief valve, and explain its working. State its importance in hydraulic systems. **[8]**

b) Draw ISO symbols for the following Hydraulic and Pneumatic Components: **[9]**

- i) 4×2 pneumatically Pilot operated spring offset DCV
- ii) Spring loaded accumulator
- iii) Quick Exhaust Valve

OR

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

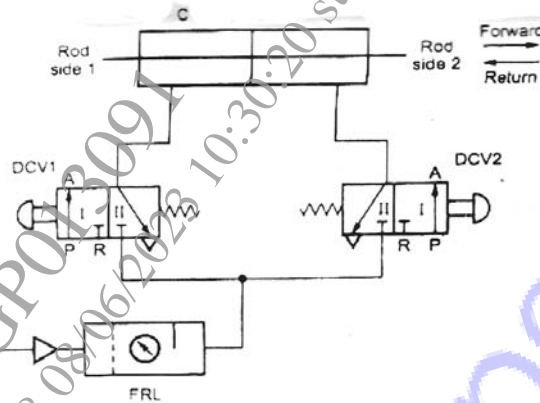
- i) Three Way, Three Position Direction Control Valve
- ii) Four Way, Three Position Direction Control Valve (Closed Centre).

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

Q3) a) Explain with neat sketch, meter-out speed control methods in hydraulics System and also mention 3 differences between meter-in & meter-out circuit? **[9]**

P.T.O.

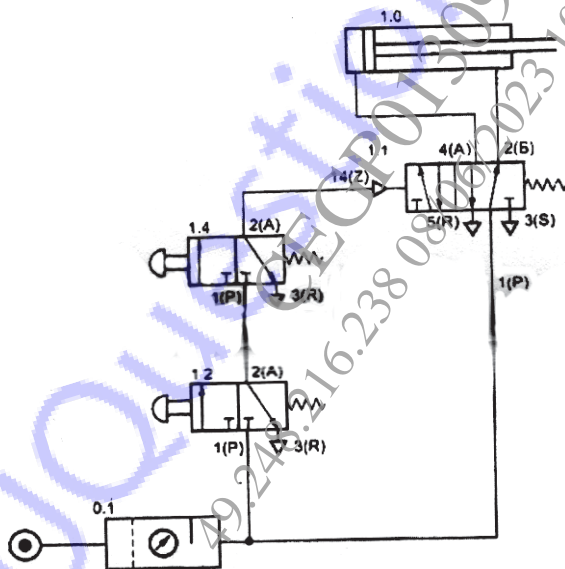
b) Analyse the circuit [9]



OR

Q4) a) Explain with neat sketch bleed off circuit. [9]

b) Analyse the circuit: [9]



Q5) a) Draw a typical symbol of FRL unit and explain the working principle of lubricator. [9]

b) Draw circuit for [9]

i) Pneumatic motor actuation circuit

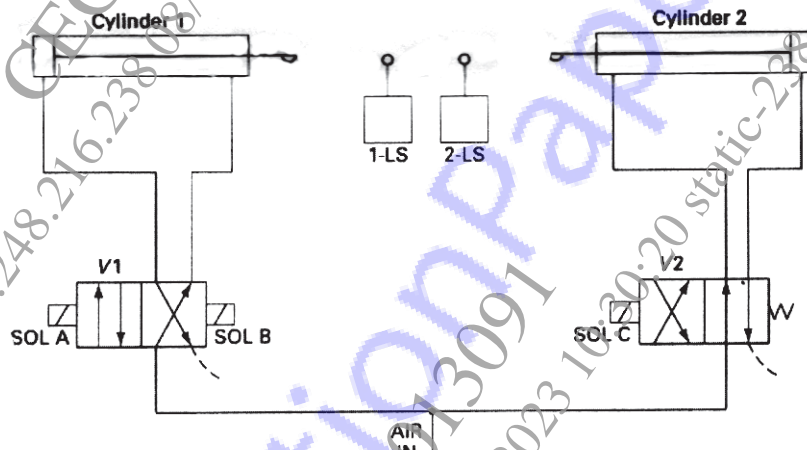
ii) Pneumatic circuit equivalent to AND gate.

OR

Q6) 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) Explain with neat sketch typical compressed air generation and distribution system. [9]

Q7) a) Explain the complete operation of the system shown in fig. [8]



b) Explain in short: [9]

- i) How does a limit switch differ from a push-button switch
- ii) What is an electrical relay? How does it work.

OR

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

- i) CPU
- ii) Programmer/monitor
- iii) I/O module

b) Draw the PLC Ladder logic Diagram for the given figure. [9]

