

Total No. of Questions : 8]

SEAT No. :

PD4438

[Total No. of Pages : 2

[6403]-243

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 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]

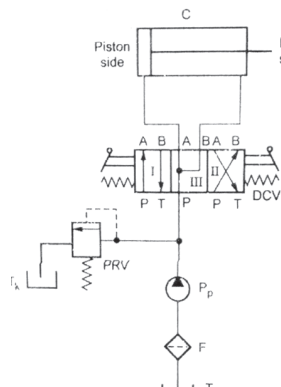
- i) 4×2 pneumatically pilot operated spring offset DCV
- ii) Spring loaded accumulator
- iii) Quick Exhaust Valve

OR

- Q2)** a) What is the purpose of providing pilot operated check valve in hydraulic circuit. Explain in short locked cylinder circuit using pilot check valves. [8]
b) Draw ISO symbols for the following Hydraulic and Pneumatic Components : [9]

- 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

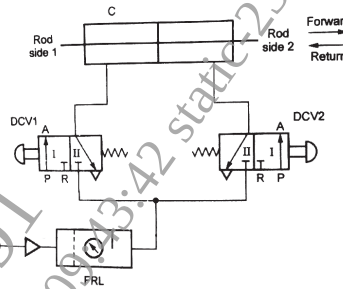
- Q3)** a) Explain with neat sketch, meter-in speed control methods in hydraulics system and also mention 3 differences between meter-in & meter-out circuit. [9]
b) Label the components and analyze the circuits : [9]



OR

P.T.O.

Q4) a) Analyze the circuits : [9]



b) Draw and explain fail-safe circuit. [9]

Q5) a) Explain with neat sketch typical compressed air generation and distribution system. [9]

b) What is the purpose of providing pressure Regulator in pneumatic circuits? Explain with the help of neat sketch construction and working of anyone type of pressure regulator. [9]

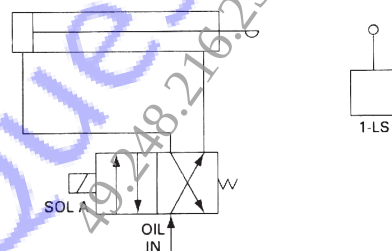
OR

Q6) Draw circuit for : [9]

- i) Pneumatic motor actuation circuit.
 - ii) Pneumatic circuit equivalent to AND gate.
- b) Draw and explain throttle-out circuit used in pneumatics. [9]

Q7) a) Explain in short : [8]

- How does a limit switch differ from a push-button switch?
 - What is an electrical relay? How does it works.
- b) Explain the complete operation of the system shown in fig. [9]



OR

Q8) Explain in short : [8]

- i) What is the difference between a normally open switch and a normally closed switch.
 - ii) What is a programmable logic controller?
- b) Explain an Electro-hydraulic servo system with neat sketch. [9]

