

Total No. of Questions : 10]

SEAT No. :

**P2508**

[Total No. of Pages : 2

**[5253] - 534**

**T.E. (Instrumentation & Control)**

**Control System Components**

**(2015 Pattern) (Semester - I)**

*Time : 2½ Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 3) *Assume suitable data, if necessary.*

- Q1)** a) Draw the symbols and give applications of **[5]**  
i) Limit switch                      ii) Pressure Switch  
iii) Selector Switch                iv) DIP Switch  
v) Temperature Switch  
b) List the advantages gained by the use of contactors instead of manually operated control equipments **[5]**

OR

- Q2)** a) Why is arc suppression needed in contactors. **[5]**  
b) Explain opto-isolation as it applies to a solid state relay. **[5]**
- Q3)** a) Explain the purpose of motor protection. **[5]**  
b) Describe the jogging operation of a motor. **[5]**

OR

- Q4)** a) With the help of electric wiring diagram, explain Direct-On-Line starter for 3 phase induction motor. **[5]**  
b) Explain the reversing of 3 phase induction motor using push buttons. **[5]**
- Q5)** a) Compare pneumatics systems with electrical systems. **[5]**  
b) Draw symbols of special double acting cylinders and give their application. **[5]**  
c) Draw using standard symbols pneumatic circuit for reciprocating of double acting cylinder. **[6]**

**P.T.O.**

OR

- Q6)** a) Draw and explain pneumatic time delay valve. [5]  
b) Draw and explain the principle of venturi in Oil Lubricator. [5]  
c) Draw using standard symbols pneumatic circuit for sequential operation of two pneumatic cylinders. [6]
- Q7)** a) Draw and explain hydraulic power pack (hydraulic supply). [8]  
b) Draw and explain using standard symbols hydraulic circuit for meter-in-circuit. [8]

OR

- Q8)** a) List different types of hydraulic pumps and explain any one type in detail. [8]  
b) Draw and explain using standard symbols hydraulic circuit for sequencing of cylinders using hydraulic sequencing valve. [8]
- Q9)** a) Explain the need of circuit breakers, list different types of circuit breakers and explain the operating principle of any one type of circuit breaker. [8]  
b) Explain with neat diagram, how synchros are used as error detector. [10]

OR

- Q10)**a) List different types of fuses and explain the terms Fusing current, Current rating of fuse element and Fusing Factor. [8]  
b) Explain Hazardous Area Classification as per NEC standards and briefly describe protection methods. [10]

