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SEAT No. _____

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SARDAR PATEL UNIVERSITY
B.Sc. (Vth SEM.) INSTRUMENTATION (Voc.)
OCTOBER - 2018 EXAMINATION
CONTROL SYSTEM COMPONENTS
SUB.CODE-US05CINV03

DATE:-26/10/2018, Friday **TIME:- 10:00 am to 1:00 pm** **MARKS-70**

Q-1 Choose correct answer [10]

1. Three pipeline connections provide installation of _____.
 (A) three way valve (C) balance port valve
 (B) single port valve (D) none of above
2. Accelerometer is used for measurement of _____.
 (A) velocity (C) acceleration
 (B) angular movement (D) none of above
3. Contactors are proffered in application involving _____.
 (A) Relay logic circuit (C) logic power application
 (B) High switching frequency (D) none of above
4. Which of the valve is used for large flows with low pressure drops?
 (A) Diaphragm valve (C) Butterfly valve
 (B) Globe valve (D) none of above
5. Which of the following is a disadvantage of stepper motor?
 (A) High accuracy (C) Full torque at standstill
 (B) Open loop control possible (D) none of above
6. _____ Valve is proffered in controlling gas flow.
 (A) Butterfly (C) Diaphragm
 (B) Needle (D) none of above
7. Diaphragm and spring type actuators are example of _____ actuators.
 (A) Hydraulic (C) Electro mechanical
 (B) Pneumatic (D) none of above
8. The dropped level of current after the relay is energized is called _____.
 (A) sealed current (C) Drop out current
 (B) saturation current (D) none of above
9. In velocity servos _____ is used in feedback line.
 (A) Position sensor (C) Accelerometer.
 (B) Tachometer (D) none of above
10. Servo mechanism are generally used to control _____ from its source of control
 (A) proximity (C) feedback
 (B) opposite (D) remotely

Q-2 Short answer type question. (any ten)

[20]

1. What is working principle of Solenoid? List different solenoid types.
2. Briefly explain diaphragm valve.
3. State necessary features of Contactors.
4. State and draw relay logic with computer and NEMA standard.
5. Briefly explain Linear output actuator.
6. List features of single port valve.
7. Explain in brief velocity servo loop.
8. Explain SYNCHRO torque transmitter in brief.
9. Give the classification of Control Valves.
10. What is factor Cv ? Show it relation between flow rate, pressure drop and specific gravity of fluid.
11. Enlist advantage and limitations of solid state relay.
12. State advantages and disadvantages of Stepper motor.

(1)

(PTO)

- Q.3(A) Write a detailed note on electromechanical relay. [05]
Q.3(B) Explain working of magnetic motor starter with necessary diagram. [05]
OR
Q.3(A) Write a detailed note on solid state relay. [05]
Q.3(B) Explain working of magnetic motor starter with necessary diagram. [05]
Q.4(A) Explain the operation of synchro with necessary diagram. [05]
Q.4(B) What is rate generator? Explain AC rate generator in detail. [05]
OR
Q.4(A) Explain the working of basic servo system. [05]
Q.4(B) Discuss variable reluctance type stepper motor. [05]
Q.5 Explain different types of characteristics of control valves. [10]
OR
Q.5(A) Write note on variable Reluctance Stepper motor. [05]
Q.5(B) Explain torque -angle and torque- speed characteristic of Stepper motor. [05]
Q.6 Write note on Diaphragm control valve with respective diagram. [10]
OR
Q.6 Explain Rotary valve Actuators with its different type in details. [10]

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