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SARDAR PATEL UNIVERSITY, V.V.NAGAR

B.Sc.(Vth SEM.) INSTRUMENTATION (V)

Friday, 15th NOVEMBER-2019 EXAMINATION

CONTROL SYSTEM COMPONENTS

SUB.CODE-US05CINV03

TIME:- 10:00 am to 1:00 pm MARKS-70

Q-1 Choose correct answer. [10]

1. Level of voltage at which if relay coil is energized, resulting in contact switching is called_____.
   (A) Drop out voltage (C) Pick up voltage
   (B) Threshold voltage (D) none of above
2. Which is not advantage of stepper motor?
   (A) high speed limit (C) Precise monitoring
   (B) no contact brushes (D) none of above
3. Contactors are preferred in application involving _____.
   (A) Relay logic circuits (C) Low power applications
   (B) High switching Frequency (D) all of above
4. Which of the valve is used for large flows with low pressure drops?
   (A) Diaphragm valve (C) Both (A) & (B)
   (B) Globe valve (D) none of above
5. Which of the following is an advantage of stepper motor?
   (A) High accuracy (C) Full torque at standstill
   (B) Open loop control possible (D) all of above
6. Electromechanical Actuators are consists of _____.
   (A) Electric motors (C) both A & B
   (B) Mechanical Gear trains (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. For slurries, which valve is most suitable?
   (A) Needle (C) Butterfly
   (B) Diaphragm (D) none of above
9. Which actuator offers high speed and large forces?
   (A) Hydraulic (C) Electrical
   (B) Pneumatic (D) none of above
10. Which of the following is not type of globe valve?
    (A) Single port valve (C) Three way valve
    (B) Angle valve (D) none of above

Q-2 Short answer type question. (any ten) [20]

1. Briefly explain potentiometer as a position sensor.
2. Briefly explain Relay logic.
3. List features of single port valve.
4. Briefly explain acceleration servo loop.
5. Briefly explain piston type actuators.

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6. List advantage and disadvantage of stepper motor.
7. Explain in brief valve plug guiding.
8. State necessary features of Contactors.
9. Briefly explain arc suppression in contactors.
10. Briefly explain the rotary valve actuator
11. List requirements of servo amplifiers.
12. Give the classification of Control Valves.

Q.3(A)	Explain in detail solid state relay (SSR).	[06]
Q.3(B)	Explain working of Magnetic motor starter.	[04]
	OR	
Q.3	Write a note on Electromechanical relay in detail.	[10]
Q.4(A)	Write short note on various elements of servo system.	[05]
Q.4(B)	Explain the operation of synchro with necessary diagram	[05]
	OR	
Q.4(A)	Explain the working of basic servo system.	[05]
Q.4(B)	State working principle of stepper motor and explain working hybrid stepper motor.	[05]
Q.5(A)	Explain variable Reluctance Stepper motor.	[06]
Q.5(B)	Explain solenoid actuators.	[04]
	OR	
Q.5(A)	Explain single and double port globe valve with necessary diagram.	[05]
Q.5(B)	Explain various part of diaphragm valve with necessary diagram.	[05]
Q.6(A)	Explain hydraulic actuators principle, construction and working in brief.	[06]
Q.6(B)	Explain terms for control valve with justification like Rangeability, Cv and Kv flow coefficient, pressure drop, specific gravity of fluid.	[04]
	OR	
Q.6	Explain Diaphragm control valve with necessary diagram in detail.	[10]

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