# V.P. and R.P.T.P. Science College <br> B. Sc. (Instrumentation), Semester -V <br> Internal Examination - 2013 <br> Control System Components (US05CINV03) 

Date: 03-10-2013
Time: 90 Minutes

## Multiple Choice Questions-

(i) Which of the following is not a type of timing relay
A. ON-delay relay
B. OfF-delay relay
C. Period ON-OFF
D. Latching
(ii) Which of the following is not an advantage of solid state relay?
A. They have finite on and off state resistance
B. They offer faster switching time
C. They are mechanically strong
D. None of the above
(iii) Which of the following is true for position servo
A. Controls displacement
B. Uses no transducer
C. It is an open loop system
D. Rate generators are sensors
(iv) Accelerometer is used for measurement of
A. Position
B. Velocity
C. Acceleration
D. Torque
(v)

For which of the valves the flow expression $Q=Q_{\min } R^{\frac{s}{S_{\text {max }}}}$ is true?
A. Quick opening
B. Linear
C. Equal percentage
D. None
(vi) Which of the valves is used for large flows with low pressure drops?
A. Globe Valve
B. Butterfly Valve
C. Diaphragm Valve
D. All

Q-2. Answer the following questions in short. (attempt any 3)
(i) Explain in brief construction of AND gate using relay logic.
(ii) Write in brief about latching relay.
(iii) Write a short description AC rate generator.
(iv) Enlist applications of synchros.
(v) Explain rangeability and turndown.
(vi) Describe in brief butterfly valves.

Q-3. Write a detailed note on solid state relays.
OR
Q-3. With help of neat diagrams explain timing relays.


Q-4. a. Write a note on the construction of permanent magnet stepper motor.
b. Explain the synchro torque transmitter.

Q-4. a. Explain the velocity servo functional loop.
b. Explain stepping modes for stepper motor

Q-5. Write a detailed note on construction of single and double port globe valve. 6
OR

Q-5. a. Explain flow rate V s flow characteristics.
b. Explain any three flow characteristics of control valve.

## Best of Luck

