

## University of Mumbai

### Sample Question paper

Program: **Electronics Engineering**

Curriculum Scheme: Rev2016

Examination: BE SemesterVII

Course Code: ELX701 and Course Name: Instrumentation System Design

Time: 2:30 hour

Max. Marks: 80

<b>Q1.</b> <b>(20 Marks)</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	Poor flow control is the major disadvantage of -----valve
Option A:	Gate
Option B:	Globe
Option C:	Needle
Option D:	Check
2.	Fail safe operation is an important advantage of
Option A:	Electrical actuators
Option B:	Electronic actuators
Option C:	Hydraulic actuators
Option D:	Pneumatic actuators.
3.	A disc attached to the shaft is used in the construction of
Option A:	Butterfly valve
Option B:	Ball valve
Option C:	Gate valve
Option D:	Needle valve
4.	Data transmission format in telemetry is
Option A:	4-20 mA
Option B:	4-30 mA
Option C:	4-20 A
Option D:	4-20 micro A
5.	By addition of LVDT assembly to flapper nozzle, complete system can act as
Option A:	Pressure to current converter
Option B:	Pressure to power converter.
Option C:	Pressure to voltage converter
Option D:	Pressure to displacement converter.
6.	Which type of system belongs to ON-OFF CONTROLLER?
Option A:	Continuous
Option B:	Discontinuous
Option C:	Digital
Option D:	Composite

7.	Which refers to the time for the process control loop to make necessary adjustments to the final control element?
Option A:	Control lag
Option B:	Process lag
Option C:	Dead Time
Option D:	Error
8.	The deviation of controlled variable from the setpoint is called _____.
Option A:	Error
Option B:	Dead Time
Option C:	Process Lag
Option D:	Control Lag
9.	Which of the following cannot be an input that is given to the PLC?
Option A:	Push button
Option B:	Encoder
Option C:	Sensor
Option D:	Control relay
10.	A proportional band setting of 175% is equivalent to a gain setting of.
Option A:	175
Option B:	0.756
Option C:	0.571
Option D:	1.32

<b>Q2.</b> <b>(20 Marks )</b>	<b>Solve any Two out of Three.10 marks each</b>
A	Draw basic pneumatic system and describe its components.
B	What is Transmitter? Give the classification details of transmitter? Draw and explain the process loop with transmitter.
C	List any five SAMA symbols. Draw clear symbol with brief description.

<b>Q3.</b> <b>(20 Marks )</b>	<b>Solve any Two out of Three.10 marks each</b>
A	Draw the basic structure of PLC and describe its components in detail.
B	What is the need of composite controller? Explain PI Controller in detail.
C	What is a Data Acquisition System (DAS)? Describe, with clear diagram, working of a typical DAS.

<b>Q4.</b> <b>(20 Marks )</b>	<b>Solve any Two out of Three.10 marks each</b>
A	A process control system specifies that temperature should never exceed 160°C if the pressure also exceeds 10 kPa . Design an alarm system to detect this condition using temperature and pressure transducers with transfer functions of 2.2 mV/°C and 0.2 V/kPa respectively.

B	Explain V to I converter.
C	Explain construction, working and characteristics of Flapper Nozzel System.