QP Code: RJ18001125 Reg. No | | | | | | | | | | | AR 18

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, June – 2021

(Sixth Semester)

BEIPC6020 – INDUSTRIAL AUTOMATION

(AEI)

Time: 2 hrs Maximum: 50 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) (1 x 10 = 10 Marks)

Q.1. Answer ***ALL*** questions		[CO#]	[PO#]
a.	Feedback control systems are: (i) Insensitive to both forward and feedback path parameter changes (ii) Less sensitive to feedback path parameter changes than to forward path parameter changes (iii)Less sensitive to forward path parameter changes that to feedback path parameter changes (iv) Equally sensitive to forward feedback path parameter changes	CO4	PO 1
b.	In a PID controller, the offset has increased. The integral time constant has to be ___ so as to reduce offset: (i) Increased (ii) Reduced (iii) Reduced to zero (iv)None of the above	CO4	PO 1
c.	A cascade control system is to be adjusted. You should first (i) Place the primary controller on manual and adjust the secondary controller (ii) Place the secondary controller on manual and adjust the primary controller (iii) Place both controllers on automatic and go through the conventional adjustment routine (iv) Bypass the secondary controller and adjust the primary controller by the conventional method	CO2	PO 1
d.	A single seated globe valve containing a plug 1 1/2 inches in diameter is used in a line pressurized to 500 psi. What actuator force is required for tight Shutoff.? (i) 884 pounds (ii) 2,000 pounds (iii) Depends upon direction of flow through the valved (iv) None of the above	CO2	PO 1
e.	Which type of motion is transmitted by hydraulic actuators? (i) Linear motion (ii) Rotary motion (iii) both a and b (iv) None of the above	CO2	PO 1
f.	An OR function implemented in ladder logic uses: (i) Normally-closed contacts in series (ii) Normally-open contacts in series (iii) A single normally-closed contact (iii) Normally-open contacts in parallel	CO3	PO 1
g.	DCS is a computerised control system for a process in which _____ controllers are used (i) Autonomous (ii) Supervisory (iii) Hybrid (iv) Central	CO3	PO 1
h.	Which one of the following is a real time operating system? (i)RTLinux (ii) VxWorks (iii) Windows CE (iv) All of the mentioned	CO2	PO 1

i. How is feedwater flow is measured in power plant? CO1 PO 1

(i) Pressure difference method (ii) Displacement method

(iii) Inferential Method (iv) All of the above

j. A safety guard refers to CO4 PO 1

(i) something that is done in advance in order to avoid risk (ii) A device designed to prevent a mechanism from being operator unintentionally

(iii) Assessing the severity of a hazard (iv) None of the above

PART – B: (Short Answer Questions) (2 x 5 = 10 Marks)

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. How tuning is done in process control?	CO4	PO 1
b. Why derivative mode of control is not recommended for a noisy process?	CO2	PO 1
c. What are the differences between Feed Forward and Feedback controllers?	CO2	PO 1
d. What is the function of the spring in a control valve?	CO1	PO 1
e. What is the function of an actuator? What are the different types of actuators?	CO3	PO 1

PART – C: (Long Answer Questions) (6 x 5 = 30 Marks)

Answer ***ANY FIVE*** questions	Marks	[CO#]	[PO#]
3. Explain with suitable examples, the difference between the interacting and non-interacting processes.	(6)	CO2	PO 1
4. How a PID can be designed using Ziegler – Nichols method?	(6)	CO2	PO 1
5. Explain the concept of ratio control with an example.	(6)	CO2	PO 1
6. Draw a neat sketch of pneumatic actuated control valve with positioned and explain its working.	(6)	CO4	PO 1
7. Define PLC? Explain all the functional blocks of PLC With a neat sketch?	(6)	CO3	PO 1
8. Compose on the functional requirements of DCS?	(6)	CO3	PO 1
9. Compile on the measuring equipment required for steam pressure measurement?	(6)	CO1	PO 1
10. How disaster can be prevented through intrinsic Safety?	(6)	CO4	PO 1

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