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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022  
 B. Tech Degree Examinations, December – 2020  
 (Seventh Semester)  
**BEIPC 7010 – INDUSTRIAL AUTOMATION**  
**(AE & IE)**

Time: 2 hrs

Maximum: 50 Marks

**The figures in the right hand margin indicate marks.**

**PART – A: (Multiple Choice Questions)**

**(1 x 10 = 10 Marks)**

Q.1. Answer ALL questions

- 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 than to feedback path parameter changes (iv) Equally sensitive to forward feedback path parameter changes
- 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
- 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
- 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
- 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
- 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
- g. DCS is a computerised control system for a process in which \_\_\_\_\_ controllers are used
- (i) Autonomous (ii) Supervisory
- (iii) Hybrid (iv) Central
- h. Which one of the following is a real time operating system?
- (i) RTLinux (ii) VxWorks
- (iii) Windows CE (iv) All of the mentioned
- i. How is feedwater flow is measured in power plant?
- (i) Pressure difference method (ii) Displacement method
- (iii) Inferential Method (iv) All of the above
- j. A safety guard refers to
- (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

- a. How tuning is done in process control?
- b. Why derivative mode of control is not recommended for a noisy process?
- c. What are the differences between Feed Forward and Feedback controllers?
- d. What is the function of the spring in a control valve?
- e. What are the different programming languages used in PLC?

**PART – C: (Long Answer Questions)**

**(6 x 5 = 30 Marks)**

Answer ANY FIVE questions

Marks

3. Differentiate servo and regulatory operation with the help of suitable example. (6)
4. Explain with suitable examples, the differences between the interacting and non-interacting processes. (6)
5. Draw a neat sketch of pneumatic actuated control valve with positioned and explain its working. (6)
6. Define PLC? Explain all the functional blocks of PLC With a neat sketch? (6)
7. Recall the purpose of Task management in Real time operating system. (6)
8. Compile on the measuring equipment required for steam pressure measurement? (6)
9. Describe in detail about the flue gas oxygen analyser. (6)
10. How disaster can be prevented through intrinsic Safety? (6)

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