SLOT C
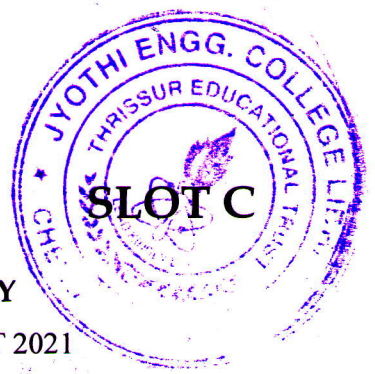
# APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M. TECH DEGREE EXAMINATION, OCT 2021

*Electrical and Electronics Engineering*

*Stream(s):*

1. **Control systems**
2. **Guidance and navigation control**
3. **Power control and drives**

*01EE6112 PROCESS CONTROL AND INDUSTRIAL AUTOMATION*

Answer *any two full* questions from *each* part

Limit answers to the required points.

Max. Marks: 60                                                    Duration: 3 hours

## PART A

1.  a.    Enumerate the industrial process control system with block diagram. (3)

    b.    Illustrate the transportation lag in process control.                    (3)

    c.    Illustrate the dynamic behavior of first order system.                  (3)

2.  a.    Describe the dynamic behavior of second order system?                (5)

    b.    Describe the criteria for good control                                        (4)

3.  a.    Explain the need for tuning Explain any one tuning method          (5)

    b.    Compare servo and regulator problem in control system              (4)

## PART B

4.  a.    Identify the control technique use in feedforward and ratio control. (3)

    b.    Illustrate the sampling in digital control system.                          (3)

    c.    Explain any one control structure used in system with time delay.  (3)

5.  a.    Enumerate advantages of cascade control system                        (5)

    b.    Compare MPC and MRAC Control scheme                                   (4)

6.  a.    Illustrate statistical process control                                            (5)

b. Enumerate the advantages and disadvantages of internal mode control (4)

## PART C

7.  a. Explain the architecture of SCADA (8)

    b. List the different objectives of SCADA (4)

8.  a. Implement basic gates and universal gates using ladder diagram (10)

    b. Name the different types of SCADA system? (2)

9.  a. With block diagram explain the conventional PLC architecture (8)

    b. Give any four advantages of ladder diagram (4)