Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ECE) (Sem.–5)

CONTROL SYSTEMS

Subject Code : UC-BTEC-504-18

M.Code : 78760

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

1. Differentiate between open loop and closed loop control systems.
2. What do you mean by Linear Variable Differential Transformer (LVDT)?
3. How do servomotors contribute in Control Systems?
4. Write the impact of Insensitivity on Control Systems.
5. How polar plot is different from Nyquist plot?
6. What is the difference between Absolute and Relative stability?
7. Write the importance of comparators in control systems.
8. What do you mean by state space?
9. Why is it important to remove the disturbance for the stability of the control systems?
10. Define the significance of time constant in first order systems.

SECTION-B

11. Discuss the mathematical modelling of Electrical systems.

12. Discuss the time response of the first order control system subjected to unit impulse input function.

13. The open loop transfer function of a unity feedback control system is given by

$$G(s) = \frac{K}{s(sT_1+1)(sT_2+1)}$$

Apply routh criteria to determine the value of K in term of T_1 and T_2 for system to be stable.

14. Determine the transfer matrix from the data given below :

$$A = \begin{bmatrix} -3 & 1 \\ 0 & -1 \end{bmatrix} B = \begin{bmatrix} 1 \\ 1 \end{bmatrix} C = \begin{bmatrix} 1 & 1 \end{bmatrix} \text{ and } D = 0$$

15. Discuss about digital implementation of comparators.

SECTION-C

16. Sketch the Bode plot for the open loop transfer function for the system given below and comment upon the stability of the system.

$$G(s)H(s) = \frac{50}{(s+1)(s+2)}$$

17. a) What do you mean by Industrial control system. Discuss any two examples.

    b) Discuss the importance of steady state accuracy in control systems.

18. Discuss about the followings

    a) Pneumatic Valves

    b) Proportional Control Systems

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.