

6. What is the value of steady state error in closed loop control systems? CO1- U
 (a) Zero (b)Unity (c) Infinity (d) Unpredictable
7. For a stable closed loop system, the gain at phase crossover frequency should always be: CO1- U
 (a) < 20 dB (b) < 6 dB (c) > 6 dB (d) > 0 dB
8. For Nyquist contour, the size of radius is _____ CO1- U
 (a) 25 (b) 0 (c) 1 (d) ∞
9. In a control system the output of the controller is given to CO1- U
 (a) Amplifier (b)Sensor (c)Final control element (d) Comparator
10. Regenerative feed forward implies feedback with CO1- U
 (a) Oscillations (b)Step input (c)Negative sign (d) Positive sign

PART – B (5x 2= 10 Marks)

11. What are the Four steps of the mathematical modeling process? CO1- U
12. What is lead lag control system? CO1- R
13. What are the principles of electronic controller? CO1- U
14. What is the importance of frequency response? CO1- R
15. What is the importance of control system? CO1- U

PART C - (5 x 16 = 80 Marks)

16. (a) Discuss briefly about the Formulating Process Models. CO1 -U (16)
 Or
 (b) Transform the following equation and obtain the ratio of output to input, $Y(s)/X(s)$: CO2- App (16)
 $4 \frac{d^2y}{dt^2} + 2 \frac{dy}{dt} + 3y = 5x$
17. (a) Elaborate about the linearization and its application in process control. CO1 -U (16)
 Or
 (b) A Proportional controller having gain k_c is used to control two non-interacting liquid level tanks having time constants $T=1$ & $T=0.5$.for unity feedback control system. Determine stability of system using routh criterion. CO2 -App (16)

18. (a) Describe briefly about the Closed loop control systems CO1- U (16)
 Or
 (b) The transfer function of a negative feedback control system is given as: CO2- App (16)
- $$G(s) = Kce^{-0.4s}/(s+1)(s+0.5)$$
- Find the root locus.
19. (a) Describe briefly about the control system design by frequency response techniques. CO1 -U (16)
 Or
 (b) Derive briefly about the Nyquist Stability Criterion with her CO1 -U (16)
 expression.
20. (a) Explain briefly about the introduction to computer control of chemical processes. CO1- U (16)
 Or
 (b) Describe about the Inverse response of smith predictor controller. CO1- U (16)

