**ANNA UNIVERSITY – COIMBATORE**

**B.E.\B.TECH.DEGREE-EXAMINATION-DECEMBER 2009**

**FIFTH SEMESTER-ELECTRONICS & COMMUNICATION ENGG.**

**CONTROL SYSTEMS**

PART A-(2\*20=40)

1. What is the use of mason’s gain formula.

2. Give two examples for open loop and closed loop systems.

3. What do you meant by analogous systems.

4. What are the frequency domain specifications.

5. What are the advantages and disadvantages of feedback control systems.

6. How can we classify second order system based on damping ratio.

7. Define gain margin.

8. Define resonant frequency.

9. State Routh stability criterion.

10. Define Nyquist stability criterion.

11. What are the difference between state space analysis and Transfer function analysis.

12. What are root loci.

13. What is servomechanism.

14. What are the different types of controller.

15. What is synchro.

16. Name the test signals used in control systems.

17. What is polar plot.

18. Give examples for frequency response plot.

19. Write down state mode and output model of state space systems.

20. What do you mean by decomposition of transfer function.

PART B-(5\*12=60)

21. A) A unity feedback system has an open loop transfer function G(s)=k/s(s+10). If the damping ratio is 0.5 determine (i) the value of k, (ii) peak overshoot, (iii) time to peak overshoot, (iv) settling time. (8) B) For a unity feedback whose G(s)=1/s(s+1) the input signal is r(t)= 4+6t+2t3. Find the generalized error coefficients. (4)

22. For the given block diagram find corresponding signal flow graph and evaluate closed loop transfer function relating to output and input.

23. Determine the value of k for a unity feedback control system have open loop transfer function G(s)H(s)=k/s(s+2)(s+4) such that (i)gain margin =20db (ii) phase margin =600.

24. Investigate the F(s) for stability using RH criterion (i) F(s) =s4+ks2+(k+1)s+2 (ii) F(s)=s4+s3+3s2+s+6 (iii) F(s)=s5+s4+2s3+2s2+6s+6

25. Obtain the state space model of the system with transfer function C(s)=s2+3s+2

in phase Variable form. R(s) s2+7s+12

26. A system characterized by the following state equation

Find (i) Transfer function of the system (ii) State transition matrix.

27. Sketch the root locus for the system with characteristic equation 1+G(s)H(s)=K(s+2)(s+3)

(s+1)(s-1)

28. Find transfer function of field controlled DC servo motor.