**CONTROL SYSTEM**

**1. Signal flow graph is used to find**

(a) Stability of the system (b) Controllability of the system

(c) Transfer function of the system (d) Poles of the system

**Ans**: **C**

**2. The transfer function of a tachometer is of the form**

(a)Ks (b) K/s

(c)K/(s+1) (d) K/s(s+1)

**Ans**: **A**

**3. Consider a feedback control system with loop transfer function**

G(s) H(s) =K (1+0.5s)/s(1+s)(1+2s). The type of the closed loop System is

(a) Zero (b) One

(c) Two (d) Three

**Ans**: **B**

**4. If the characteristic equation of a closed-loop system is s2+2s+2=0, then the system is**

(a) Over damped (b) Critically damped

(c) Under damped (d) Undamped

**Ans**: **C**

**5. The transfer function of a system is the Laplace transform of its**

(a) Ramp response (b) Impulse response

(c) Square wave response (d) Step response

**Ans: B**

**6. A unit step function on integration results in a**

(a) Unit parabolic function (b) Unit doubled

(c) Unit step function (d) Unit ramp function

**Ans**: **D**

**7. The system response can be tested better with\_\_\_\_\_\_\_\_\_\_signal**

(a) Exponential decaying (b) Unit impulse input

(c) Sinusoidal input (d) Ramp input

**Ans**: **B**

**8. As compared to closed loop system, an open loop is**

(a) More stable as well as more accurate (b) Less stable as well as less accurate

(c) More stable but less accurate (d) Less stable but more accurate

**Ans**: **C**

**9. Physically the damping ratio represents the**

(a) Energy available for transfer (b) Energy available for exchange

(c) Ratio of energy available for exchange to that available for transfer

(d) Ratio of energy lost to the energy available for exchange

**Ans**: **D**

**10. The time domain specification which is dependent only on, the damping factor is**

(a) Rise time (b) Peak time

(c) Settling time (d) Peak overshoot

**Ans:D**

**11. Control system are normally designed with damping factor**

(a) More than unity (b) Of zero

(c) Less than unity (d) Of unity

**Ans**: **C**

**12. The position and velocity error of a type 2 system are**

(a) zero, constant (b) constant, constant

(c) zero, zero (d) constant, infinity

**Ans**: **C**

**13. As the system type becomes higher steady state error**

(a) Remains constant (b) Increases

(c) Is eliminated (d) None of the above

**Ans: C**

**14. The transient response of the system depends on**

(a) Input (b) Output

(c) System (d) None

**Ans: C**

**15. The steady-state response of the system depends on**

(a) Input (b) Output

(c) System (d) Input & Output **Ans**: **A**

**16. The transient response of a system is mainly due to**

(a) Internal forces (b) Stored energy

(c) Friction (d) Interia forces

**Ans: B**

**17. The unit impulse response of a system is given by c (t)=0.5e-t/2.Its transfer function is**

(a) 1/(s+2) (b) 1/ (1+2s)

(c) 2/ (1+2s) (d) 1/(s+2)

**Ans**: **B**

**18. Root locus diagram can be used to determine**

(a) Conditional stability (b) Absolute stability

(c) Relative stability (d) None

**Ans**: **C**

**19. A root locus is symmetrical about**

(a) Imaginary axis (b) Real axis

(c) Both real & imaginary axis (d) None

**Ans**: **B**

**20. The characteristics equation of a system is given by 3s4+10s3+5s2+2=0.This system** is

(a) Stable (b) Marginal stable

(c) Unstable (d) Data is insufficient

**Ans**: **C**

**21. Which one of the following techniques is utilized to determine the actual point at which the root locus crosses the imaginary axis?**

(a) Nyquist technique (b) Routh-Hurwitz criterion

(c) Nichol’s criterion (d) Bode technique

**Ans**: **B**

**22. By substituting s=jw, the frequency response plot gives**

(a) Transient response of the system

(b) Steady-state response of the system

(c) Initially transient and then steady state response

(d) None of the above **Ans: B**

**23. Nyquist plot can be used**

(a) Only to find the closed-loop poles in the right half plane

(b) As certain in the stability only

(c) To find the open-loop poles in the right half plane

(d) To find the number of closed-loop poles in the left half plane **Ans: D**

**24. Large bandwidth corresponds to**

(a) Small rise time and suppresses noise (b) Small rise time and increases noise

(c) High rise time and suppresses noise (d) High rise time and increases noise

**Ans**: **B**

**25. The bode plot is applicable to network**

(a) All phase (b) Maximum phase

(c) Minimum phase (d) None

**Ans**: **C**

**26. Nyquist criterion is used to find which of the following**

(a) Relative stability (b) Absolute stability

(c)Both A & B (d) None

**Ans**: **C**

**27.\_\_\_\_\_\_\_\_ can be extended to systems which are time – varying**

(a) Root locus design (b) Bode-Nyquist stability methods

(c) State model representatives (d) Transfer function

**Ans**: **A**

**28. If the Nyquist plot cuts the negative real axis at a distance of 0.4.The gain margin of the system is**

(a)0.4 (b) -0.4

(c) 4 (d) 2.5

**Ans**: **D**

**29. Nichol’s chart is useful for detailed study and analysis of**

(a) Closed loop frequency response (b) Open loop frequency response

(c) Close loop and open loop frequency response (d) None of the above

**Ans**: **A**

**30. A system with gain margin close to unity or a phase margin close to zero is**

(a) Relatively stable (b) Highly stable

(c) Oscillatory (d) None

**Ans**:**C**

**31. For the transfer function G(s).H(s) =1/s(s+1)(s+0.5). The phase crossover frequency is**

(a)0.5 rad/ sec (b) 0.707 rad/ sec

(c)1.732 rad/ sec (d) 2 rad /sec

**Ans**:**A**

**32. If the gain margin (in dB) of a system is doubled, the gain margin of the system is**

(a)Not affected (b) Doubled

(c) Halved (d) One fourth of original value

**Ans**:**B**

**33. The polar plot of a transfer function passes through the critical point (-1, 0).Gain margin** **is**

(a)Zero (b) -1 dB

(c) 1 dB (d) Infinity

**Ans**: **B**

**34. The lead compensator introduces**

(a) Phase lead in the system (b) Attenuation in the system

(c) Amplification in the system (d) Initially phase lead and then phase lag in the system

**Ans**: **A**

**35. The lead compensator mainly use for**

(a) Improves the steady state error (b) Improves the transient response

(c) Improves the both steady state and transients response

(d) None of the above

**Ans**:**B**

**36. The lag compensator is used for**

(a) Improve both steady state and transient response

(b)Improves steady state only

(c) Improves transients only

(d) Improves steady state and reduces speed of transient response

**Ans** :**D**

**37. The transfer function is (1+0.5s)/(1+s). It represents a**

(a) Lead network (b) Lag network

(c) Lag-Lead network (d) Proportional controller

**Ans**:**B**

**38. Lead compensator in a feedback system**

(a) increase the system error constant to some extent

(b) Speed up the transient response

(c) Increase the margin of stability

(d) All the above

**Ans**: **D**

**39. Which of the following increase the steady-state accuracy?**

(a) Phase-lead compensator (b) Phase-lag compensator

(c) Differentiator (d) Integrator

**Ans**:**D**

**40. A phase lag compensating will**

(a) Improves the speed of response (b) Increase overshoot

(c) Increase relative stability (d) Increase band width

**Ans**: **A**

**41. The band width of a control system can be increased by**

(a) Phase lead compensator (b) Phase lag compensator

(c) Phase lag-lead compensator (d) All the above

**Ans**: **A**

**42. Which one of the following compensation is adopted for improving transient response of a negative unity feedback system**

(a) Phase lead compensator (b) Phase lag compensator

(c) Gain compensation (d) Both a & b

**Ans**:**D**

**43. If stability error for step input and speed of response be the criteria for design what controller would you recommend?**

(a) P controller (b) PD controller

(c) PI controller (d) PID controller

**Ans**: **D**

**44. An ON-OFF controller is a**

(a) P controller (b) Integral controller

(c) Non-linear controller (d) PID controller

**Ans**: **C**

**45. The term ‘reset control’ refers to**

(a) Proportional control (b) Integral control

(c) Derivative control (d) PID controller

**Ans**: **B**

**46. The use of PI controller**

(a) Reduces oscillations (b) Lower peak overshoot

(c) Results in zero steady-state error for step input (d) Improves relative stability

**Ans**: **C**

**47. Derivative feedback control**

(a) Increase feedback time (b) Increase over shoot

(c) Decrease steady state error (d) Does not affect the steady state error

**Ans**: **A**

**48. A PD controller is used to compensate a system, compared to the uncompensated system, the compensated system has**

(a) A higher type number (b) Reduced damping

(c) Higher noise amplification (d) Large transient over shoot

**Ans**: **C**

**49. The number of roots of s3+5s2+7s+3=0 in the left half of the s-plane is**

(a) Zero (b) One

(c) Two (d) Three

**Ans**: **D**

**50. Consider a characteristic equation given by s4+3s3+5s2+6s+K+10=0. The condition for stability is**

(a) K>5 (b) -10<K

(c) K>-4 (d)-10<K<-4

**Ans**: **D**