

- c) Data is continuous at the inputs and output parts of the system but not necessarily during intermediate processing of the data
- d) Only the reference signal is continuous function of time
- (vii) In an automatic control system which of the following elements is not used?
- a) Error detector
b) Final control element
c) Sensor
d) Oscillator
- (viii) Consider the following statement regarding Routh Hurwitz criterion:
- a) It gives absolute stability
b) It gives gain and phase margin
c) It gives the number of roots lying in RHS of the s-plane
d) It gives gain, phase margin and number of roots lying in RHS of the s-plane
- (ix) Select which of the following is not the feature of modern control system?
- a) Quick response
b) Accuracy
c) Correct power level
d) No oscillation
- (x) Select the necessary condition of stability are:
- a) Coefficient of characteristic equation must be real and have the same sign
b) Coefficient of characteristic equation must be non-zero
c) Both of the mentioned
d) Coefficient of characteristic equation must be zero
- (xi) Which of the following transfer function will have the greatest maximum overshoot?
- a) $9/(s^2+2s+9)$
b) $16/(s^2+2s+16)$
c) $25/(s^2+2s+25)$
d) $36/(s^2+2s+36)$
- (xii) Which one of the following is the most likely reason for large overshoot in a control system?
- a) High gain in a system
b) Presence of dead time delay in a system
c) High positive correcting torque
d) High retarding torque
- (xiii) What is the effect of feedback in the overall gain of the system?
- a) Increases
b) Decreases
c) Zero
d) No change
- (xiv) Explain principle of homogeneity and superposition are applied to:
- a) Linear time invariant systems
b) Nonlinear time invariant systems
c) Linear time variant systems
d) Nonlinear time invariant systems
- (xv) The characteristic equation of a system is given by $3s^4+10s^3+5s^2+2=0$. This system is:
- a) Stable
b) Unstable
c) Marginally stable
d) Linear

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Determine the Poles and Characteristics Equation of the given Transfer Function (3)

$$T.F. = \frac{K(s+6)}{s(s+2)(s+5)(s^2+7s+12)}$$

3. Define transfer function with example. (3)
4. Explain mason's gain formula with suitable diagram. (3)
5. Define steady state error. (3)
6. Explain the applications of servomotors. (3)

OR

- Explain the use of synchros. (3)

Group-C
(Long Answer Type Questions)

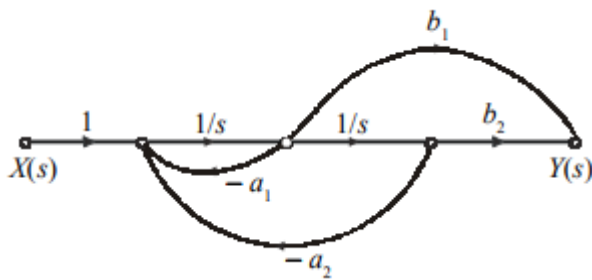
5 x 6=30

- 7. Compare ac servomotor with dc servomotor. (5)
- 8. Explain the principle operation of synchro error detector. (5)
- 9. What is damping factor? Explain the effects of damping factor. (5)

- 10. Define path, non-touching loop, path gain, loop gain of SFG. (5)
- 11. Applying R-H criterion comment on the stability of the system (5)

$$s^6 + 3s^5 + 4s^4 + 6s^3 + 5s^2 + 3s^2 = 0$$

- 12. Derive the transfer function of the system. (5)



OR

- Derive the transfer function of the SFG (5)

