Chettinad College of Engineering & Technology
Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department of Electrical and Electronics Engineering

Subject & Subject Code: Control Systems & IC8451

UNIT I- MCQ Bank

SYSTEMS AND REPRESENTATION

1. In an open loop control system

(a) Output is independent of control input
(b) Output is dependent on control input
(c) Only system parameters have effect on the control output
(d) None of the above

Ans: a

2. For open control system which of the following statements is incorrect ?

(a) Less expensive
(b) Recalibration is not required for maintaining the required quality of the output
(c) Construction is simple and maintenance easy
(d) Errors are caused by disturbances

Ans: b

3. A control system in which the control action is somehow dependent on the output is known as

(a) Closed loop system
(b) Semiclosed loop system
(c) Open system
(d) None of the above

Ans: a

4. In closed loop control system, with positive value of feedback gain the overall gain of the system will

(a) decrease

(b) increase

(c) be unaffected

(d) any of the above

Ans: a

5. Which of the following is an open loop control system ?

(a) Field controlled D.C. motor

(b) Ward leonard control

(c) Metadyne

(d) Stroboscope

Ans: a

6. Which of the following statements is not necessarily correct for open control system ?

(a) Input command is the sole factor responsible for providing the control action

(b) Presence of non-linearities causes malfunctioning

(c) Less expensive

(d) Generally free from problems of non-linearities

Ans: b

7. In open loop system

(a) the control action depends on the size of the system

(b) the control action depends on system variables

(c) the control action depends on the input signal

(d) the control action is independent of the output

Ans: d

8 . ___has tendency to oscillate.

(a) Open loop system

(b) Closed loop system

(c) Both (a) and (b)

(d) Neither (a) nor (b)

Ans: b

9. A good control system has all the following features except

(a) good stability

(b) slow response

(c) good accuracy

(d) sufficient power handling capacity

Ans: b

10. A car is moving at a constant speed of 50 km/h, which of the following is the feedback element for the driver ?

(a) Clutch

(b) Eyes

(c) Needle of the speedometer

(d) Steering wheel

(e) None of the above

Ans: c

11. The initial response when tune output is not equal to input is called

(a) Transient response

(b) Error response

(c) Dynamic response

(d) Either of the above

Ans: a

12. A control system working under unknown random actions is called

(a) computer control system

(b) digital data system

(c) stochastic control system

(d) adaptive control system

Ans: c

13. An automatic toaster is a _____ loop control system.

(a) open

(b) closed

(c) partially closed

(d) any of the above

Ans: a

14. Any externally introduced signal affecting the controlled output is called a

(a) feedback

(b) stimulus

(c) signal

(d) gain control

Ans: b

15. A closed loop system is distinguished from open loop system by which of the following ?

(a) Servomechanism

(b) Feedback

(c) Output pattern

(d) Input pattern

Ans: b

16. ___ is a part of the human temperature control system.

(a) Digestive system

(b) Perspiration system

(c) Ear

(d) Leg movement

Ans: b

17. By which of the following the control action is determined when a man walks along a path ?

(a) Brain

(b) Hands

(c) Legs

(d) Eyes

Ans: d

18. ___ is a closed loop system.

(a) Auto-pilot for an aircraft

(6) Direct current generator

(c) Car starter

(d) Electric switch

Ans: a

19. Which of the following devices are commonly used as error detectors in instruments ?

(a) Vernistats

(b) Microsyns

(c) Resolvers

(d) Any of the above

Ans: d

20. Which of the following should be done to make an unstable system stable ?

(a) The gain of the system should be decreased

(b) The gain of the system should be increased

(c) The number of poles to the loop transfer function should be increased

(d) The number of zeros to the loop transfer function should be increased

Ans: b

21. ___ increases the steady state accuracy.

(a) Integrator

(b) Differentiator

(c) Phase lead compensator

(d) Phase lag compensator

Ans: a

22. A.C. servomotor resembles

(a) two phase induction motor

(b) Three phase induction motor

(c) direct current series motor

(d) universal motor

Ans: a

23. As a result of introduction of negative feedback which of the following will not decrease ?

(a) Band width

(b) Overall gain

(c) Distortion

(d) Instability

Ans: a

24. Regenerative feedback implies feedback with

(a) oscillations

(b) step input

(c) negative sign

(d) positive sign

Ans: d

25. The output of a feedback control system must be a function of

(a) reference and output

(b) reference and input

(e) input and feedback signal

(d) output and feedback signal

Ans: a

26. The voltage, in force-current analogy, is analogous to

(A) momentum

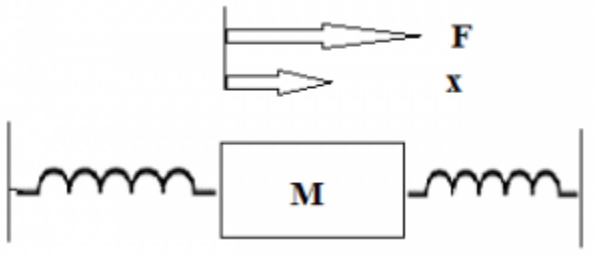
(B) velocity

(C) displacement

(D) mass

Answer: velocity

27. Consider a simple mass spring friction system as given in the figure K1, K2 are spring constants f-friction, M-Mass, F-Force, x-Displacement. The transfer function X(s)/F(s) of the given system will be



a)1/(Ms^2+fs+K1.K2)

b) 1/(Ms^2+fs+K1+K2)

c) 1/(Ms^2+fs+K1.K2/K1+K2)

d) K2/(Ms^2+fs+K1)

Answer: b

28. In regenerating the feedback, the transfer function is given by

a) C(s)/R(s)=G(s)/1+G(s)H(s)

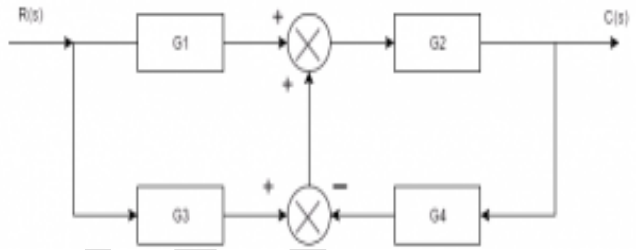
b) C(s)/R(s)=G(s)H(s)/1-G(s)H(s)

c) C(s)/R(s)=G(s)/1+G(s)H(s)

d) C(s)/R(s)=G(s)/1-G(s)H(s)

Answer: d

29. Consider the block diagram shown below:



If the transfer function of the system is given by T(s)=G1G2+G2G3/1+X. Then X is:

a) G2G3G4

b) G2G4

c) G1G2G4

d) G3G4

Answer: b

30. For the block diagram given in the following figure, the expression of C/R is:

a)G1G2G3/1-G2G1

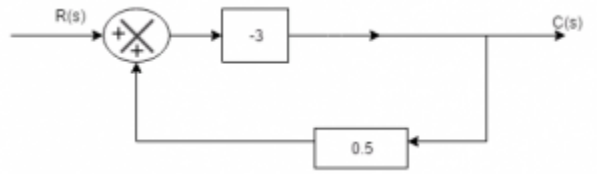
b) G1G2/1-G1G2G3

c) G1G2G3/1-G1G2G3

d) G1G2/G3(1-G1G2)

Answer: a

31. The closed loop gain of the system shown in the given figure is :



a)-9/5

b) -6/5

c) 6/5

d) 9/5

Answer: b

Explanation: C(s)/R(s)=-3/1+3/2=-6/5.

32. Transfer function of the system is defined as the ratio of Laplace output to Laplace input considering initial conditions_____

a) 1

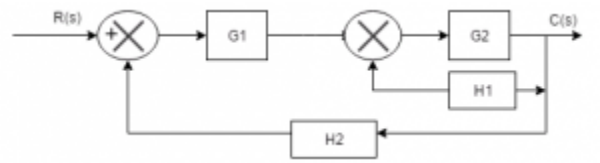
b) 2

c) 0

d) infinite

Answer: c

33. In the following block diagram, G1=10/s G2=10/s+1 H1=s+3, H2=1. The overall transfer function is given by :



a) $10/11s^2+31s+10$

b) $100/11s^2+31s+100$

c) $100/11s^2+31s+10$

d) $100/11s^2+31s$

Answer: b

Explanation: C/R=G2G1/1+G2H2+G1G2H2

C/R=$100/11s^2+31s+100$.

34. Loop which do not possess any common node are said to be _____ loops.

a) Forward gain

b) Touching loops

c) Non touching loops

d) Feedback gain

Answer: c

35. Signal flow graphs:

a) They apply to linear systems

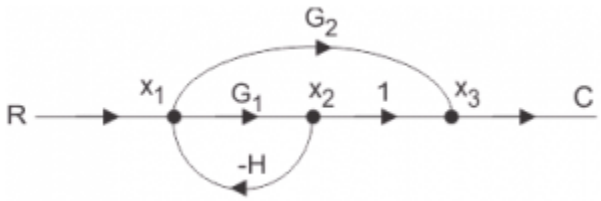
b) The equation obtained may or may not be in the form of cause or effect

c) Arrows are not important in the graph

d) They cannot be converted back to block diagram

Answer: a

36. Use mason's gain formula to calculate the transfer function of given figure:



a) G1/1+G2H

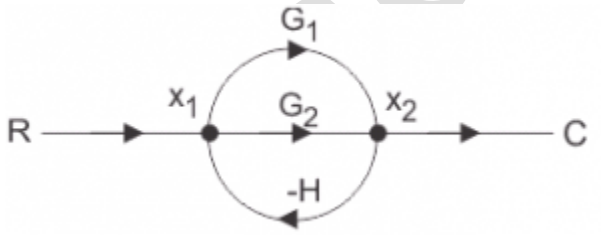
b) G1+G2/1+G1H

c) G2/1+G1H

d) None of the mentioned

Answer: b

37. Use mason's gain formula to find the transfer function of the given figure:



a) G1+G2

b) G1+G1/1-G1H+G2H

c) G1+G2/1+G1H+G2H

d) G1-G2

Answer: c