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: d**

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: b**

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 running 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 the 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
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
(b) Direct current generator
(c) Car starter
(d) Electric switch
Ans: a

19. 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

20. A.C. servomotor resembles
(a) two phase induction motor
(b) Three phase induction motor
(c) direct current series motor
(d) universal motor
Ans: a

21. 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

22. Regenerative feedback implies feedback with
(a) oscillations
(b) step input
(c) negative sign
(d) positive sign
Ans: d

23. 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

24. is an open loop control system.
(a) Ward Leonard control
(b) Field controlled D.C. motor
(c) Stroboscope
(d) Metadyne
Ans: b

25. Zero initial condition for a system means
(a) input reference signal is zero
(b) zero stored energy
(c) ne initial movement of moving parts
(d) system is at rest and no energy is stored in any of its components
Ans: d

26. Transfer function of a system is used to calculate which of the following ?
(a) The order of the system
(b) The time constant
(c) The output for any given input
(d) The steady state gain
Ans: c

27. The band width, in a feedback amplifier.
(a) remains unaffected
(b) decreases by the same amount as the gain increase
(c) increases by the same amount as the gain decrease
(d) decreases by the same amount as the gain decrease
Ans: c

28. On which of the following factors does the sensitivity of a closed loop system to gain changes and load disturbances depend ?
(a) Frequency
(b) Loop gain
(c) Forward gain
(d) All of the above
Ans: d

29. The transient response, with feedback system,
(a) rises slowly
(b) rises quickly
(c) decays slowly
(d) decays quickly
Ans: d

30. The second derivative input signals modify which of the following?
(a) The time constant of the system
(b) Damping of the system
(c) The gain of the system
(d) The time constant and suppress the oscillations
(e) None of the above
Ans: d

31. Which of the following statements is correct for any closed loop system?
(a) All the co-efficients can have zero value
(b) All the co-efficients are always non-zero
(c) Only one of the static error co-efficients has a finite non-zero value
(d) None of the above
Ans: c

32. Which of the following statements is correct for a system with gain margin close to unity or a phase margin close to zero?
(a) The system is relatively stable
(b) The system is highly stable
(c) The system is highly oscillatory
(d) None of the above
Ans: c

33. In an automatic control system which of the following elements is not used?
(a) Error detector
(b) Final control element
(c) Sensor
(d) Oscillator
Ans: d

34. In a control system the output of the controller is given to
(a) final control element
(b) amplifier
(c) comparator
(d) sensor
(e) none of the above
Ans: a

35. A controller, essentially, is a
(a) sensor          
(b) clipper         
(c) comparator      
(d) amplifier       
Ans: c

36. Which of the following is the input to a controller? 
(a) Servo signal   
(b) Desired variable value  
(c) Error signal  
(d) Sensed signal  
Ans: 

37. The capacitance, in force-current analogy, is analogous to  
(a) momentum      
(b) velocity       
(c) displacement  
(d) mass          
Ans: d  

38. The temperature, under thermal and electrical system analogy, is considered analogous to   
(a) voltage       
(b) current       
(c) capacitance  
(d) charge        
(e) none of the above 
Ans: a  

39. In electrical-pneumatic system analogy the current is considered analogous to  
(a) velocity       
(b) pressure       
(c) air flow       
(d) air flow rate  
Ans: d  

40. In liquid level and electrical system analogy, voltage is considered analogous to  
(a) head           
(b) liquid flow    
(c) liquid flow rate  
(d) none of the above  
Ans: a  

41. The viscous friction co-efficient, in force-voltage analogy, is analogous to  
(a) charge         
(b) resistance     
(c) reciprocal of inductance  
(d) reciprocal of conductance  
(e) none of the above  
Ans: b
42. In force-voltage analogy, velocity is analogous to
   (a) current 
   (b) charge 
   (c) inductance 
   (d) capacitance 
   Ans: a

43. In thermal-electrical analogy charge is considered analogous to
   (a) heat flow 
   (b) reciprocal of heat flow 
   (c) reciprocal of temperature 
   (d) temperature 
   (e) none of the above 
   Ans: d

44. Mass, in force-voltage analogy, is analogous to
   (a) charge 
   (b) current 
   (c) inductance 
   (d) resistance 
   Ans: c

45. The transient response of a system is mainly due to
   (a) inertia forces 
   (b) internal forces 
   (c) stored energy 
   (d) friction 
   Ans: c

46. Signal will become zero when the feedback signal and reference signs are equal.
   (a) Input 
   (b) Actuating 
   (c) Feedback 
   (d) Reference 
   Ans: b

47. A signal other than the reference input that tends to affect the value of controlled 
    variable is known as
   (a) disturbance 
   (b) command 
   (c) control element 
   (d) reference input 
   Ans: a

48. The transfer function is applicable to which of the following?
   (a) Linear and time-invariant systems 
   (b) Linear and time-variant systems 
   (c) Linear systems 
   (d) Non-linear systems 
   (e) None of the above
49. From which of the following transfer function can be obtained?
   (a) Signal flow graph
   (b) Analogous table
   (c) Output-input ratio
   (d) Standard block system
   (e) None of the above
   Ans: a

50. is the reference input minus the primary feedback.
   (a) Manipulated variable
   (b) Zero sequence
   (c) Actuating signal
   (d) Primary feedback
   Ans: c

51. With feedback _____ increases.
   (a) system stability
   (b) sensitivity
   (c) gain
   (d) effects of disturbing signals
   Ans: a

52. By which of the following the system response can be tested better?
   (a) Ramp input signal
   (b) Sinusoidal input signal
   (c) Unit impulse input signal
   (d) Exponentially decaying signal
   Ans: c

53. In a system zero initial condition means that
   (a) The system is at rest and no energy is stored in any of its components
   (b) The system is working with zero stored energy
   (c) The system is working with zero reference signal
   Ans: a

54. In a system low friction co-efficient facilitates
   (a) reduced velocity lag error
   (b) increased velocity lag error
   (c) increased speed of response
   (d) reduced time constant of the system
   Ans: a

55. Spring constant in force-voltage analogy is analogous to
   (a) capacitance
   (b) reciprocal of capacitance
   (c) current
   (d) resistance
   Ans: b

56. Static error co-efficients are used as a measure of the effectiveness of closed loop systems for specified ________ input signal.
(a) acceleration
(b) velocity
(c) position
(d) all of the above
Ans: d

57. A conditionally stable system exhibits poor stability at
(a) low frequencies
(b) reduced values of open loop gain
(c) increased values of open loop gain
(d) none of the above
Ans: b

58. The type 0 system has ______ at the origin.
(a) no pole
(b) net pole
(c) simple pole
(d) two poles
(e) none of the above
Ans: a

59. The type 1 system has ______ at the origin.
(a) no pole
(b) net pole
(c) simple pole
(d) two poles
Ans: c

60. The type 2 system has ______ at the origin.
(a) no net pole
(b) net pole
(c) simple pole
(d) two poles
Ans: d

61. The position and velocity errors of a type-2 system are
(a) constant, constant
(b) constant, infinity
(c) zero, constant
(d) zero, zero
Ans: c

62. Velocity error constant of a system is measured when the input to the system is unit ______ function.
(a) parabolic
(b) ramp
(c) impulse
(d) step
Ans: b
63. In case of type-1 system steady state acceleration is
(a) unity
(b) infinity
(c) zero
(d) 10
Ans: b
64. If a step function is applied to the input of a system and the output remains below a
certain level for all the time, the system is
(a) not necessarily stable
(b) stable
(c) unstable
(d) always unstable
(e) any of the above
Ans: a
65. If the gain of the critical damped system is increased it will behave as
(a) oscillatory
(b) critically damped
(c) overdamped
(d) underdamped
(e) none of the above
Ans: d
66. The transfer function technique is considered as inadequate under which of the
following conditions?
(a) Systems having complexities and non-linearities
(b) Systems having stability problems
(c) Systems having multiple input disturbances
(d) All of the above
Ans: d
67. A.C. servomotor is basically a
(a) universal motor
(b) single phase induction motor
(c) two phase induction motor
(d) three phase induction motor
Ans: c
68. The Transfer function of the system is used to determine:
a) The output for a given input
b) The type of the system
c) The input for a given output
d) The steady state gain

A

69. The transfer function of a system is defined as:
a) The laplace transform of the impulse response
b) Laplace transform of the step response
c) Laplace transform of the ramp response
d) Laplace transform of the sinusoidal input

A
70. The transfer function has the main application in the study of __ behavior of the system
a) Steady
b) Transient
c) Both steady and transient
d) None of the above

A

71. Transfer function of the control system depends on
a) Initial conditions of input and output
b) System parameters alone
c) Nature of the input
d) Nature of the output

B

72. The ON-OFF controller is a __ system
a) Linear
b) Non linear
c) Discontinuous
d) Digital

B

73. The impulse function is a derivative of __ function:
  a) Parabolic
  b) Step
  c) Ramp
d) Linear

B

74. Control Systems are normally designed with damping factor:
  a) Less than unity
d) More than unity
  c) Zero
d) Unity

A

75. Error Constants of a system are measure of:
  a) Relative stability
  b) Transient state response
c) Steady state response
d) Steady state as well as transient state response

C