1. The transfer function for the state representation of the continuous time LTI system:
$dq(t)/dt=Aq(t)+Bx(t)$
$Y(t)=Cq(t)+Dx(t)$
is given by:
a) $C(sI-A)^{-1}B+D$
b) $B(sI-A)^{-1}B+D$
c) $C(sI-A)^{-1}B+A$
d) $D(sI-A)^{-1}B+C$
View Answer

Answer: a

2. System transformation on function H(z) for a discrete time LTI system expressed in state variable form with zero initial condition
a) $C(zI-A)^{-1}B+D$
b) $C(zI-A)^{-1}$
c) $(zI-A)^{-1}z$
d) $(zI-A)^{-1}$
View Answer

Answer: a

3. State space analysis is applicable for non-linear systems and for multiple input and output systems.
a) True
b) False
View Answer

Answer: a

4. Assertion (A): Transfer function approach has limitation that it reveals only the system output for a input and provides no information regarding the internal state of the system.
Reason (R): There may be situations where the output of a system is stable and yet some of the system elements may have a tendency to exceed their specified ratings.
a) Both A and R are true and R is correct explanation of A
b) Both A and R are true but R is not correct explanation of A
c) A is true but R is False
d) A is False but R is True
View Answer

Answer: a

5. When human being tries to approach an object, his brain acts as,
a) An error measuring device
b) A controller
c) An actuator
d) An amplifier
View Answer

Answer: b

6. For two-phase AC servomotor, if the rotor's resistance and reactance are respectively R and X, its length and diameter are respectively L and D then,
a) X/R and L/D are both small
b) X/R is large but L/D is small
c) X/R is small but L/D is large
d) X/R and L/D are both large
View Answer

Answer: c

7. Consider the following statements relating to synchro's:
1. The rotor of the control transformer is either disc shaped
2. The rotor of the transmitter is so constructed as to have a low magnetic reluctance
3. Transmitter and control transformer pair is used as an error detector
Which of these statements are correct?

a) 1,2 and3
b) 1 and 2
c) 2 and3
d) 1 and 3
View Answer

Answer: c

8. Error detector:
a) Armature controlled FHP DC motor
b) A pair of synchronous transmitter and control transformer
c) Tach generator
d) Amplidyne
View Answer

Answer: a

9. Servomotor:
a) Armature controlled FHP DC motor
b) A pair of synchronous transmitter and control transformer
c) Tach generator
d) Amplidyne
View Answer

Answer: b

10. Amplifier:
a) Armature controlled FHP DC motor
b) A pair of synchronous transmitter and control transformer
c) Tach generator
d) Amplidyne
View Answer

Answer: d

1. Routh Hurwitz criterion gives:
a) Number of roots in the right half of the s-plane
b) Value of the roots
c) Number of roots in the left half of the s-plane
d) Number of roots in the top half of the s-plane
View Answer

Answer: a

2. Routh Hurwitz criterion cannot be applied when the characteristic equation of the system containing coefficient's which is/are
a) Exponential function of s
b) Sinusoidal function of s
c) Complex
d) Exponential and sinusoidal function of s and complex
View Answer

Answer: d

3. 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
View Answer

Answer: d

4. The order of the auxiliary polynomial is always:
a) Even
b) Odd

c) May be even or odd
d) None of the mentioned
View Answer

Answer: a

5. Which of the test signals are best utilized by the stability analysis.
a) Impulse
b) Step
c) Ramp
d) Parabolic
View Answer

Answer: a

6. The characteristic equation of a system is given as3s4+10s3+5s2+2=0. This system is :
a) Stable
b) Marginally stable
c) Unstable
d) Linear
View Answer

Answer: c

7. The characteristic equation of a system is given ass3+25s2+10s+50=0. What is the number of the roots in the right half s-plane and the imaginary axis respectively?
a) 1,1
b) 0,0
c) 2,1
d) 1,2
View Answer

Answer: b

8. Consider the following statement:
a) A system is said to be stable if its output is bounded for any input
b) A system is said to be stable if all the roots of the characteristic equation lie on the left half of the s plane.
c) A system is said to be stable if all the roots of the characteristic equation have negative real parts.
d) A second order system is always stable for finite values of open loop gain
View Answer

Answer: a

9. The necessary condition for the stability of the linear system is that all the coefficients of characteristic equation 1+G(s)H(s) =0, be real and have the :
a) Positive sign
b) Negative sign
c) Same sign
d) Both positive and negative
View Answer

Answer: c

10. For making an unstable system stable:
a) Gain of the system should be increased
b) Gain of the system should be decreased
c) The number of zeroes to the loop transfer function should be increased
d) The number of poles to the loop transfer function should be increased
View Answer

Answer: b