Control Systems Questions and Answers Pdf

1. A plant is controlled by a proportional controller. If a time delay element is introduced in the loop, its

    a. Phase margin remains the same

    b. Phase margin increases

    c. Phase margin decreases

    d. Gain margin increases

    Ans: C

2. A proportional integral (PI) controller results in which of the following?

    a. Improves the transient response without affecting steady state response

    b. Improves the steady state response without affecting transient response

    c. Improves both transient response and steady state response

    d. Improves the steady state response while marginally affecting transient response, for well designed control parameters

    Ans: D

3. In the field controlled motor, the entire damping comes from

    a. The armature resistance

    b. The back emf

    c. The motor friction and load

    d. Field resistance

    Ans: B

4. Despite the presence of negative feedback, control systems still have problems of instability because the

    a. Components used have nonlinearities

    b. Dynamic equations of the subsystems are not known exactly

    c. Mathematical analysis involves approximations

    d. System has large negative phase angle at high frequencies

    Ns: A

5. In a control system, the

a. State variable can always be measured

b. Output variable cannot be defined as a function of state variable

c. Output is variable that can be measured

d. State variables are dependent on each other

Ans: C

6. Which of the following may result in instability problem?

a. Large error

b. High selectivity

c. High gain

d. Noise

Ans: C

7. In case of synchro error detector, the electrical zero position of control transformer is obtained when angular displacement between rotors is

a. Zero

b. 45°

c. 90°

d. 180°

Ans: C

8. An underdamped second order system with negative damping will have the two roots

a. On the negative real axis as real roots.

b. On the left hand side of complex plane as complex roots.

c. On the right hand side of complex plane as complex conjugates.

d. On the positive real axis a real roots.

Ans: C

9. A dominant pole is determined as

a. The highest frequency pole among all poles.

b. The lowest frequency pole at least two octaves lower than other poles.

c. The lowest frequency pole among all poles.

d. The highest frequency pole at least two octaves higher than other poles

Ans: B

10. The Laplace transformation method enables one to find the response of a network in

   a. The transient state only

   b. The steady state only

   c. Both transient and steady states

   d. The transient state provided sinusoidal forcing functions do not exist

   Ans: C