

- ### SECTION-D
- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)
- Q.36 What is stepper motor? What is the working principle of it? Explain all types of stepper motor. Write any 3 applications of it.
- Q.37 Define under damped, over damped and critically damped system with example. What is delay time and settling time of a system? Write all the standard test signals in control system.
- Q.38 What is first order system? Find the time response of first order system when subjected to impulse input. Write any one example of it.

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Subject:- Basics of Control System / Const. Sys.

SECTION-A

Q.1 Which one of the following is the correct for the open loop control system?

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- Q.5 Which of the following statement is correct about the impulse input signal?
- The magnitude is 1 for time less than 0 and zero otherwise
 - The area is 1 for time greater than 0 and zero otherwise
 - The magnitude is 1 for time equal to 0 and zero otherwise
 - The magnitude does not defined at time equal to 0.
- Q.6 From the Bode plot, we can find
- Stability of the system
 - Transfer function of the system
 - Frequency response of the system
 - All of the above
- Q.7 The system is said to be linear if
- It follows the principle of superposition and homogeneity
 - It is time invariant
 - It does not follows the principle of superposition and homogeneity
 - None of the above
- Q.8 The synchro-pair transformers
- The electric signal into angular speed
 - The linear speed into electric signal
 - Works as electromechanical switch
 - The angular position of shaft into electrical signal
- Q.9 A potentiometer works on the
- Principle of inductance change
 - Principle of resistance change
 - Principle of capacitance change
 - Principle of electric flux change

- Q.10 The time taken by the system response to reach to the final value is known as
- Rise time
 - Peak time
 - Settling time
 - Delay time

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Open loop system is more complex than closed loop system. (True/False)
- Q.12 Laplace transforms of the unit impulse function is _____.
- Q.13 Define the rise time.
- Q.14 Define stepper motor.
- Q.15 $s^3 - 3s^2 + 5s + 1 = 0$ is a stable system. (True/False)
- Q.16 Time taken by the system response to reach from 0% to 100% of the final value is called as _____.
- Q.17 If the numerator of a system transfer function becomes 0 then the value of s is known as _____ of the system. (pole/zero)
- Q.18 Define closed loop control system.
- Q.19 Define rise time of first order system when subjected to step input.
- Q.20 Define non-linearities.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Write any 5 applications of closed loop system.
- Q.22 What are the basic elements of control system? Draw its block diagram.
- Q.23 Define pole of the system. How Mason's gain rule can be used to find the transfer function of the system.
- Q.24 What are the difference between linear and non-linear system? Give any three examples of non-linearities.