DEPARTMENT OF ELECTRONIC & TELECOMMUNICATION ENGINEERING
MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
Control Engineering-I

Q#1: - Tick the most accurate answer.

I. When step signal is applied to the input of an integrator, the signal produced at the output is
(a) Impulse (b) Ramp (c) Parabolic (d) zero

II. If all the poles of the system lie in L.H.P the system is said to be
(a) Linear (b) Stable (c) Non-linear (d) Un-stable

III. Stability of a control system depends on the location of the
(a) Poles (b) Zeros (c) Both (a) & (b) (d) Neither

IV. If gain margin of a system is negative the system is said to be
(a) Minimum phase (b) non-minimum phase (c) Stable
(d) Unstable

V. A D.C motor is type of
(a) Mechanical system (b) Electrical system (c) Electromechanical system
(d) Hydraulic system

VI. The part of the time response when time reaches to infinity is called
(a) Transient response (b) Steady state response (c) Finite response
(d) Critical response

VII. In critically damped system
(a) $\zeta > 1$ (b) $\zeta < 1$ (c) $\zeta = 1$ (d) $\zeta = 0$

VIII. What is the type number of the system having the transfer function

$$G(S) = \frac{(S+1)}{S(S^2+3S+1)}$$

(a) One (b) Two (c) Three (d) Four

IX. The part of the time response before the steady state is called
(a) Transient response (b) Steady state response (c) Zero state response
(d) Finite response

X. The phase angle of a zero at origin is
(a) -180° (b) -90° (c) 180° (d) 90°

Q#2: - Determine whether the following sentences are true or false.

I. Closed loop control system is usually more accurate then open loop system. ( )

II. If any of the zeros lie in R.H.P the system is said to unstable. ( )

III. Infinite steady state error is observed if unit ramp signal is applied to a type zero system. ( )

IV. Transfer function is the ratio of the Laplace Transform of the output to the Laplace transform of the input. ( )

V. Pole is a critical frequency at which transfer function becomes infinite. ( )

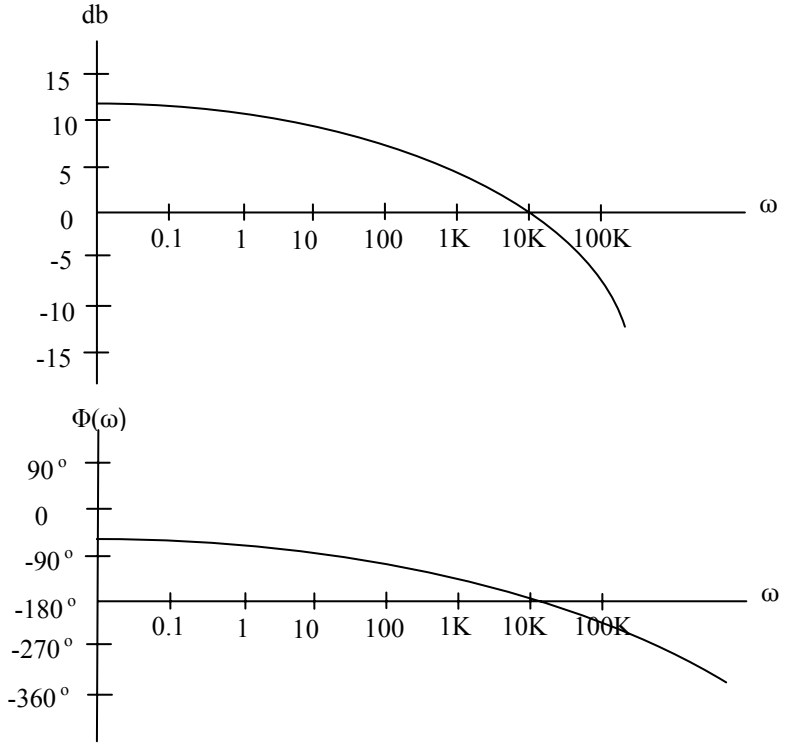
VI. Zero is the frequency at which the transfer function becomes zero. ( )

VII. If $\zeta > 1$ over damping is observed. ( )

VIII. If $\zeta < 1$ under damping is observed. ( )

IX. If a system has three poles at origin its type number is three. ( )

X. The point at which the phase crosses -180° is called phase cross over point. ( )

Q#3: - List the advantages and disadvantages of open loop control system. [1 mark]

Q#4: - Locate the gain cross-over & phase cross over points on the following plots and determine the gain margin and phase margin. [1 mark]