



MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
DEPARTMENT OF ELECTRONIC & TELECOMMUNICATION &
BIOMEDICAL ENGINEERING SECOND TERM THIRD YEAR (03BM
BATCH) B.E REGULAR PRACTICAL EXAMINATION, 2005

SUBJECT: **Feedback Control Systems**

ID.NO.

DATE:

TIME ALLOWED: 30 MIN

MAX.MARKS: 10

MARKS OBTAINED:

Signature

1. Internal Examiner.....

2. External Examiner.....

IN WORDS:

SECTION#01 (MULTIPLE CHICE QUESTIONS)

1. The sensitivity of the system is _____ by applying a feedback.
(a) increased (b) decreased
(c) maximized (d) Minimized
2. Feedback systems are _____ immune to noises as compare to open loop systems.
(a) Less (b) more (c) slightly less (d) slightly more
3. Improving the settling time always increases the _____.
(a) Overshoot (b) speed (c) bandwidth (d) All of these
4. A Routh-Herwitz criterion is used to check the _____.
(a) Absolute stability of the system
(b) Relative stability of the closed loop system
(c) Number of open loop poles
(d) Number of unstable zeros
5. In Nyquist plot the point at which the curve intersects negative real axis is called _____.
(a) Gain cross-over point (b) Phase cross-over point
(c) gain margin (d) at phase margin
6. If all the zeros lie in L.H.P the system is said to be
(a) Stable (b) unstable (c) marginally stable
(d) none of these
7. The point in the magnitude plot at which the magnitude curve cuts the 0db axis is called _____.
(a) Critical point (b) gain cross over point

- (c) Phase cross-over point (d) gain margin
8. To establish positive feedback it is necessary that the net phase shift around the loop must be _____.
- (a) 0° (b) 300° (c) 90° (d) unity
9. Which of the following signals are used as typical test signal in control systems (choose all that apply).
- (a) step signal (b) Impulse signal (c) Ramp signal (d) Parabolic signal
10. Bode plot analysis of control systems is only applicable to (choose all that apply).
- (a) Linear systems (b) Non-linear systems (c) time variant
(d) Time invariant (e) minimum phase

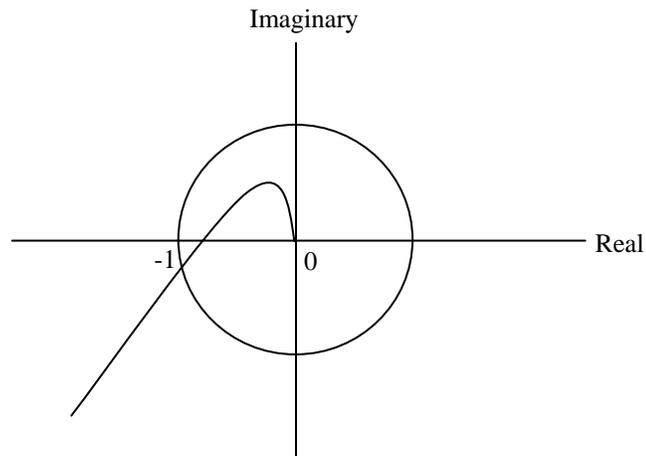
SECTION#02 (TRUE/FALSE)

- i. Phase cross-over point is that point at which phase curve crosses -180° line. ()
- ii. To improve the stability of the system a feedback is introduced. ()
- iii. Infinite steady state error is observed if unit ramp signal is applied to a type zero system. ()
- iv. Human body temperature control system is a type of natural feedback control system. ()
- v. Pole is a critical frequency at which transfer function becomes infinite. ()
- vi. Transfer function is said to be improper if number zeros are greater than the number of poles. ()
- vii. If $\zeta = 0$ an oscillatory response is observed. ()
- viii. At gain cross-over frequency the magnitude of the transfer function becomes equal to the 1 or 0db. ()
- ix. If a system has three poles at origin its type number is three. ()
- x. System having large bandwidth is faster as compare to the system having smaller bandwidth. ()

SECTION#03

Q: - for the Nyquist plot shown below

- i) Locate the gain cross-over point
- ii) Locate the phase cross-over point
- iii) Show gain margin
- iv) Show phase margin
- v) Determine the stability of the system



SECTION#4 (Match the following)

- | | |
|-------------------------------|-----------------------------|
| (1) Frequency domain analysis | (A) Routh-Herwitz criterion |
| (2) Absolute stability | (B) Mechanical systems |
| (3) Modern Control | (C) Feedback system |
| (4) Automatic control | (D) Nyquist plot |
| (5) Dampers | (E) state space model |

THE END