REG.NO.:

SLOT: D1+TD1

VIT®

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ELECTRICAL ENGINEERING
WINTER SEMESTER 2025-2026
CONTINUOUS ASSESSMENT TEST - II

Programme Name & Branch	**: B. Tech, EEE, EIE, ECS**
Course Code and Course Name	**: BEEE303L – Control Systems**
Faculty Name(s)	**: Dr M Janaki**
Class Number(s)	**: VL2025260502293**
Date of Examination	**: 18/03/2026**
Exam Duration	**: 90 minutes**

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- Rough work should not be done on question paper. It will be treated as malpractice.
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcomes Statements:

CO. 2: Analyze the system performance in time and frequency domains.

CO. 3: Determine the stability of linear time invariant system in time and frequency domains.

Q. No	Question	M	CO	BL
1.	Consider a system whose closed loop transfer function $M(s) = \frac{(s+5)}{s^5+7s^4+6s^3+42s^2+8s+56}$. Comment on the stability and frequency of sustained oscillations if it exists.	10	2	3
2	The open loop transfer function of a unity feedback system is $G(s) = \frac{K}{s(s+1)(s+10)}$. Draw the root locus to determine the range of K for stability of the system.	10	2	3
3.	The open loop transfer function of a unity feedback system is $G(s) = \frac{K(s^2+4s+10)(s+5)}{s(s+1)(s^2+8s+10)}$. Calculate angle of departures and angle of arrivals at all poles and zeros.	10	3	3
4.	The open loop transfer function of a unity feedback system is $G(s) = \frac{K}{s(s+1)(s+10)}$. Find the gain margin and phase margin by numerical calculation. Write the advantage of a graphical method than numerical calculation.	10	3	3
5.	The open loop transfer function of a unity feedback system is $G(s) = \frac{Ks}{(s^2+5s+25)}$. Draw the Bode plot to determine the gain margin and phase.	10	3	3

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