



VIT

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

REG.NC

SCHOOL OF SOCIAL SCIENCES AND LANGUAGES CONTINUOUS ASSESSMENT TEST - II FALL SEMESTER 2025-2026

SLOT:A1+TA1+TAA1

Programme Name & Branch : B.Tech.,
 Course Code and Course Name : BMAT201L and Complex Variables and Linear Algebra
 Faculty Name(s) : Common question paper
 Class Number(s) : Common question paper
 Date of Examination : 05.10.2025
 Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)

CO3: Evaluate real integrals using techniques of contour integration

CO4: Use the power of inner product and norm for analysis

CO5: Use matrices and transformations for solving engineering problems

Q. No	Question	M	CO	BL
1.	a) If $f(z) = \frac{1-e^z}{1+e^z}$, then find the location of singularities and also discuss the nature of singularity when $z \rightarrow \infty$. b) Using Cauchy Integral formula, evaluate $\int_C \frac{3z^3}{(z-1)(z^2+9)} dz$, where C is the circle given by $ z-2 =2$.	3+7	CO3	2
2.	Using contour integration, evaluate $\int_{-\infty}^{\infty} \frac{\sin x}{x^2+x+1} dx$.	10	CO3	3
3.	Using Cayley Hamilton theorem, find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 0 \\ 2 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$. Also find the eigen values of A , A^T and A^{-1} .	10	CO5	3
4.	Find the solution of the following system of equations given by $x + 2y - 3z + 4w = 12$ $2x + 2y - 2z + 3w = 10$ $y + z = -1$ $x - y + z - 2w = -4$ using Gauss Jordan elimination method.	10	CO5	3
5.	a) Check whether $w = \{(x, y, z) / \frac{y}{x} = \sqrt{2}\}$ is a subspace of R^3 . b) Check whether the set of vectors given by $\{(-1, 0, -1), (3, 1, 6), (8, 3, 17)\}$ form a basis of R^3 or not.	5+5	CO4	2