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

REG.NO.:

NAME OF THE SCHOOL
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: E1+TE1

Programme Name & Branch	**: B.Tech**
Course Code and Course Name	**: BMAT101L & Calculus**
Class Number(s)	**: Common to all E1+TE1 slot**
Date of Examination	**: 17/10/2024**
Exam Duration	**: 90 minutes**

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- Students are permitted to bring any number of text books, printouts of e-books(complete/chapters) and hand written note books (class notes)

Q. No	Question	Marks
1.	Expand the following using Taylor's series expansion around the point (0,1) and upto third order: $F(x,y) = \sin(x+y)$. What about the Taylors expansion of the above function around $(0,0)$? → $x+y-\frac{(x+y)^3}{3}$	10
2.	What will be the shortest and the longest distances from the point (1,2,5) to the sphere $x^2+y^2+z^2=36$. $1, \sqrt{51}6$	10
3.	Evaluate by changing the order of the integration $\int_0^2 \int_0^{4-x^2} \frac{xe^{2y}}{4-y} dydx.$ $e^8/4$ Can you evaluate the above without changing the order of the integration?	10
4.	Using the cylindrical coordinate system, evaluate the following $\int_{-1}^{1} \int_0^{\sqrt{1-y}} \int_0^x 5(x^2+y^2)\, dzdxdy$	10
5.	a) Evaluate $\Gamma(9)$ and $\Gamma\left(\frac{9}{2}\right)$ $40320, \frac{105}{16}\sqrt{\pi}$	5
	b) Evaluate the following integral $\int_0^1 x^2\sqrt{1-x^4}dx$ $\sqrt{\pi}$	5

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