

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-I Semester (Backlog)

COURSE CODE (CREDITS): 24B11MA111 (04)

MAX. MARKS: 15

COURSE NAME: Engineering Mathematics I

COURSE INSTRUCTOR: PKP

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculators is not allowed

Q.No	Question	Marks
Q1	If $u = e^{xyz}$, then find $\frac{\partial^3 u}{\partial x \partial y \partial z}$	3
Q2	If $f(x, y) = \frac{1}{\sqrt{y}} e^{-\frac{(x-a)^2}{4y}}$ find f_{xy}	3
Q3	Show that the function $f(x, y) = \begin{cases} \frac{x^2 - y^2}{x - y}, & (x, y) \neq (1, -1) \\ 0, & (x, y) = (1, -1) \end{cases}$ is continuous at $(1, -1)$.	3
Q4	If $u = \tan^{-1} \frac{x^3 + y^3}{x - y}$, show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \sin 2u$	3
Q5	Using Taylor series find the expansion of the function $f(x, y) = \cos x \cos y$ about the origin.	3