

Enrollment No.:

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATIONS-2022

B.Tech-I Semester (CS/IT/ECE/ECM/CE/CEC)

COURSE CODE (CREDITS): 18B11MA111 (4)

MAX. MARKS: 15

COURSE NAME: ENGINEERING MATHEMATICS-I

COURSE INSTRUCTORS: RKB, KAS, NKT, BKP, PKP*

MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets. Mobile Phones, smart watches, calculators, and any other electronic gadgets etc. during the Examination is prohibited.

Q1. For $f(x, y) = \frac{x^2y}{8x^4+y^2}$ [CO-1] [2+1]

(a) Discuss the existence of $\lim_{(x,y) \rightarrow (0,0)} f(x, y)$.

(b) Is $f(x, y)$ continuous at $(0, 0)$? Give reason to justify your answer.

Q2. Using chain rule find $\partial w / \partial r$ if $w = \frac{x+y}{2-z}$ and $x = 2rs$, $y = \sin rt$, $z = st^2$. [CO-1] [3]

Q3. Examine the function $f(x, y) = x^2 + xy + 3x + 2y + 5$ for extreme points. [CO-2] [3]

Q4. Find Taylor's expansion of $\tan^{-1} \frac{y}{x}$ about $(1, 1)$ up to terms of degree 2. [CO-1] [3]

Q5. Evaluate the improper integral $\int_0^{\infty} t^3 e^{-\frac{1}{2}t^2} dt$. [CO-3] [3]
