JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-I Semester (CSE/IT/ECE/CE)

COURSE CODE (CREDITS): 18B11MA111 (4) MAX. MARKS: 25

COURSE NAME: ENGINEERING MATHEMATICS-I

COURSE INSTRUCTORS: MDS, PKP*, NKT, RKB

MAX. TIME: 1 Hour 30 Minutes

Note: *(a) All questions are compulsory.*

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

Q. No.	Question	CO	Marks
Q1	Check whether the following matrix is orthogonal or not $A=\frac{1}{9}\begin{bmatrix}-8 & 4 & 1\\ 1 & 4 & -8\\ 4 & 7 & 4\end{bmatrix}$ Also, compute A^{-1}.	CO-1	3
Q2	Using row echelon form find the rank of following matrix: $\begin{bmatrix}1 & -5 & 2 & 0\\ 4 & -1 & 0 & 12\\ 0 & -2 & 4 & -8\end{bmatrix}$	CO-1	3
Q3	If $u=e^{xyz}$, find $\frac{\partial^3 u}{\partial x\partial y\partial z}$.	CO-2	3
Q4	Show that $\lim_{(x,y)\to(0,0)}\frac{y^2-x^2}{y^2+x^2}$ does not exists.	CO-2	3
Q5	Using chain rule compute $\partial f/\partial t$ given that $f(x,y,z)=xyz$, where $x=st, y=s+t, z=t$.	CO-2	3
Q6	Find the critical points of $f(x,y)=x^2+y^2-xy-2x+y$ and obtain local maxima and minima.	CO-2	3.5
Q7	Using double integrals compute the volume of a sphere of radius "a" units.	CO-2	3.5
Q8	Find the equation of the line passing through the points (1,2,3) and (4,0,1).	CO-3	3

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