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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2026

B.Tech-VI Semester (Backlogs)

COURSE CODE (CREDITS): 18B11MA111

MAX. MARKS: 25

COURSE NAME: ENGINEERING MATHEMATICS-I

COURSE INSTRUCTORS: RKB

MAX. TIME: 1 Hour 30 Min

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	Using Chain rule, evaluate $\frac{\partial w}{\partial u}$ and $\frac{\partial w}{\partial v}$ at the given point (u, v) , where $w = xy + yz + xz$, $x = u + v$, $y = u - v$ and $z = uv$, $(u, v) = (\frac{1}{2}, 1)$.	CO-1	3
Q2	Evaluate $\lim_{(x,y) \rightarrow (0,0)} \frac{2y^4x}{y^6+6x^2}$	CO-1	2
Q3	A surface is given by $F(x, y, z) = xe^{yz} + y - 4 = 0$. At the point $(1,0,4)$ find: (i) The unit normal vector to the surface. (ii) The tangent plane in vector form.	CO-3	3
Q4	Find the work done by the vector field $\vec{F}(x, y, z) = x\hat{i} + 3xy\hat{j} - (x + z)\hat{k}$, on a particle moving along the line segment that goes from $(1,4,2)$ to $(0,5,1)$.	CO-3	3
Q5	Change the order of integration in $\int_0^1 \int_{x^3}^{2-x} xy \, dy \, dx$ and hence evaluate it.	CO-2	3
Q6	Find by double integration the area lying between the parabola $y = 4x - x^2$ and the line $y = x$.	CO-2	4
Q7	Using the Beta/Gamma function evaluate $\int_0^{\pi/2} \sin^{11}x \cos^{12}x \, dx$.	CO-2	3
Q8	Using Gamma function evaluate $\int_0^1 (x \ln(1/x))^{1/3} \, dx$.	CO-2	4