CHANDIGARH ENGINEERING COLLEGE CGC LANDRAN
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CHANDIGARH ENGINEERING COLLEGE-CGC

Department of Applied Sciences

Assignment No. 2 **Max. Marks: 30**

Subject and Subject code: Engineering Mathematics – I /BTAM-101-23

Semester 1st

(CSE/IT/AI&DS/AI&ML/IOT/DS/ECE/ME/RAI/ENC)

Date on which assignment given: 4/10/2024
Date of submission of assignment: 21/10/2024

Course Outcomes:
Students will be able to:

CO1	examine the convergence and divergence of sequences and series.
CO2	apply the concept of Proper integral to find length, surface area and volume of revolution of the curves and to deal with discontinuous functions using Improper integral.
CO3	use the concepts of partial differentiation to expand, estimate and find the extreme values of Multivariable Functions
CO4	evaluate area and volume of the surfaces using the concept of double and triple integration.

Bloom's Taxonomy Levels

L1 – Remembering, L2 – Understanding, L3 – Applying, L4 – Analysing, L5 – Evaluating, L6 - Creating

	Assignment related to COs	Bloom's Taxonomy Level	Relevance to CO No.
	SECTION - A (2 Marks Each)		
Q1.	Show that: $\int_0^1 x^5(1-x^3)^{10}dx = \frac{1}{396}$	**L-2**	**CO-2**
Q2.	Evaluate the integral, if exists $\int_0^3 \frac{dx}{(x-1)^{2/3}}$	**L-3**	**CO-2**
Q3.	Find the value of $\Gamma\left(\frac{-5}{2}\right)$.	**L-1**	**CO-2**

Q4.	In polar coordinates, $x = r\,cos\theta$ and $y = r\,sin\theta$, show that $\frac{\partial(x,y)}{\partial(r,\theta)} = r$	**L-2**	**CO-4**
Q5.	Evaluate $\int_0^1 \int_0^x e^{\frac{x}{y}}\,dy\,dx$.	**L-3**	**CO-4**
	SECTION – B (4 Marks Each)		
Q6.	Prove that: $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$, where $m > 0, n > 0$	**L-5**	**CO-2**
Q7.	Find the volume of the solid generated by revolving the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ about the x-axis.	**L-4**	**CO-2**
Q8.	Evaluate $\int_0^a \int_0^{\sqrt{a^2-y^2}} (x^2 + y^2)\,dxdy$ after changing into polar coordinates.	**L-3**	**CO-4**
Q9.	Solve $\int_0^1 \int_{x^2}^{2-x} xy\,dydx$ by changing the order of integration.	**L-6**	**CO-4**
Q10	Using triple integration find the volume of the tetrahedron bounded by the coordinate planes and the plane $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$	**L-5**	**CO-4**