

Chandigarh Engineering College Landran, Mohali
Department of Applied Sciences

Assignment No 2

Subject and Subject code: Mathematics -1/ BTAM-104-18

Semester 1st (CSE/IT)

Course Outcomes

CO1: analyze various problems by using fundamental theorems.

CO2: apply differential and integral calculus to evaluate definite, improper integrals and its applications.

CO3: deal with the concept of linear dependence, independence and linear transformations.

CO4: solve the linear equations by applying the knowledge of matrix algebra.

Assignment related to COs		Relevance to CO No.
SECTION - A (2Marks Each)		
Q1.	Evaluate $\int_0^{\pi/2} (2 \log \sin x - \log \sin 2x) dx$ by using properties of definite integration	CO-2
Q2.	Evaluate the improper integral $\int_1^{\infty} \frac{1}{x\sqrt{x^2-1}} dx$	CO-2
Q3.	Define Beta function and show that it is symmetric.	CO-2
Q4.	Find basis and dimension of subspace W of $R^3(R)$ where $W = \{(r,s,t) / t = s + r, \quad s = 2r, \quad r,s,t \in R\}$	CO-3
Q5.	Show that set B= $\{(2,1,4), (1,-1,2), (3,1,-2)\}$ is a Basis of R^3 .	CO-3
SECTION – B (4 Marks Each)		
Q6.	Find the Volume of the solid formed by revolving the Astroid $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$ about y – axis.	CO-2
Q7.	Derive the relationship between Beta and Gamma function.	CO-2
Q8.	Prove that $\beta(m,n) = [(m-1)! \cdot (n-1)!] / (m+n-1)! ; m,n > 0$ and m,n belongs to \mathbb{Z}	CO-2
Q9.	Let W be a sub-space generated by the polynomials $f_1 = x^3 - 2x^2 + 4x + 1, f_2 = 2x^3 - 3x^2 + 9x - 1, f_3 = x^3 + 6x - 5, f_4 = 2x^3 - 5x^2 + 7x + 5$	CO-3
Q10.	Let W_1 and W_2 be two subspaces of $R^3(R)$ generated by $\{(1,3,-2,2,3), (1,4,-3,4,2), (1, \frac{3}{2}, \frac{-1}{2}, -1, \frac{9}{2})\}$ and $\{(1,3,0,2,1), (1,5,-6,6,3), (1, \frac{5}{2}, \frac{3}{2}, 1, \frac{1}{2})\}$ respectively. Find dimensions of (i) W_1 (ii) W_2 (iii) $W_1 + W_2$ (iv) $W_1 \cap W_2$	CO-3

