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J.C. Bose University of Science and Technology, YMCA Faridabad
Department of Mathematics
First Sessional Test Paper (Dec.- 2022)
Subject: Calculus and Linear Algebra (BSC-103D)

Course: B.Tech(ECE)

Time Allowed: 90 Minutes

Note: Attempt all the questions.

Semester: 1ˢᵗ

Max. Marks: 15

Q.1Using property of Beta function, Evaluate $\int_0^1 x^{11}(1-x)^5\,dx$

(4)(CO-1)

Q.2Using Rolle's theorem, Prove that there is no real 'a' for which the equation $x^2-3x+a=0$ has two different roots in [-1,1].

(4)(CO-2)

Q.3Diagonalize the given matrix A = $\begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$.

(4)(CO-5)

Q.4Find the inverse of the given matrix A = $\begin{bmatrix} 1 & 6 & 2 \\ 0 & -2 & 4 \\ 3 & 1 & 2 \end{bmatrix}$.

(3)(CO-5)