Kandi Raj College – Department of Mathematics – Internal QP – 2021 – 5th Semester – PROGRAMME STREAM

Full marks: 10 [DSE]; 05 [SEC]

	DSE	**10**
1.	Answer any TWO questions	2 × 5

(a) Express A = $\begin{pmatrix} 2 & 0 & 1 \\ 3 & 3 & 0 \\ 6 & 2 & 3 \end{pmatrix}$ as a product of elementary matrices.

(b) Determine the values of 'a' and 'b' such that the system of equations

$$x + y + z = 1$$
$$x + 2y - z = b$$
$$5x + 7y + az = b^2$$

has (i) unique solution; (ii) no solution (iii) many solutions.

(c) Find the inverse of the following matrix by elementary row operations:

$$\begin{pmatrix} -3 & -3 & 2 \\ -4 & -3 & 2 \\ 2 & 2 & -1 \end{pmatrix}$$

END OF QUESTION FOR DSE

	SEC [ONLY FOR STUDENTS OPTING FOR MATHEMATICS AS SEC SUBJECT]	**05**
1.	Answer any ONE question	1 × 5

(a) Evaluate $\int \frac{x^2+5x+41}{(x+3)(x-1)(2x-1)}\,dx$

(b) Obtain a reduction formula for $\int x^m \sin nx \; dx$

END OF QUESTION FOR SEC