

The Open University of Sri Lanka

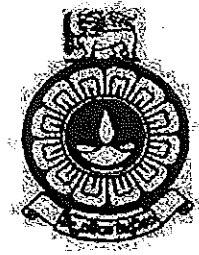
B.Sc. Degree Programme

Department of Computer Science

CSU 5304 – Mathematics for computing

Continuous Assessment Test-02 (CAT-02) 2023/24

Duration: One Hour Only (1 Hour)



Date: 18.08.2023

Time: 1.00 p.m. – 2.00 p.m.

Answer All Questions.

(01) (i) Write down the conditions to be satisfied in order to perform the following matrix operations.

- (a) Additions of two matrices.
- (b) Multiplication of two matrices.
- (c) Finding the determinant of a matrix.

(ii) Given that $A = \begin{bmatrix} 0 & 1 & -1 \\ 4 & 3 & -4 \\ 3 & 3 & -4 \end{bmatrix}$ verify that $A^2 = I$
 3×3

Where I is the Identity matrix of the same size. Hence find A^{-1} .

(iii) Find the determinant of $\begin{bmatrix} 2 & -3 & 5 \\ -3 & 6 & 2 \\ 1 & -2 & 5 \end{bmatrix}$
 3×3

(02) (i) Describe the principle of Mathematical Induction for a statement $P(n)$, where $n \in \mathbb{N}$.

(ii) Use Mathematical Induction to prove: $1^2 + 2^2 + 3^2 + \dots + n^2 = n(n+1)(2n+1)/6$