2005N563

Candidate's Seat No : _____

IMSc IT (GDD) Sem.-6 Examination

BSCGDD-34

Discret Math

Time : 1-00 Hour] **May-2025** **[Max. Marks : 35**

Instructions:

- **Figures to the right indicate Full Marks.**
- **Do not write anything on the question paper.**

Question | Marks

Q.1 Solve the problems given below: [15]

$$A = \begin{bmatrix} 2 & 0 & 3 \\ 4 & 1 & -2 \\ 1 & 2 & 2 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 3 & 2 \\ 1 & 5 & 1 \\ -1 & 5 & -3 \end{bmatrix}$$

$$C = \begin{bmatrix} 2 & -3 & 1 \\ 1 & 4 & 2 \\ -2 & 5 & 5 \end{bmatrix} \qquad D = \begin{bmatrix} 0 & -1 & 2 \\ 3 & 6 & 0 \\ -2 & -5 & 1 \end{bmatrix}$$

1) Find solution from given matrix (any five)
   a) A . C
   b) C . B
   c) A - 2B + 5C – 3D
   d) (A . D) . C
   e) 5A – 3D
   f) A . 3B
   g) (2A . 3C) . B

OR

Q.1 Solve the problem given below: (any five) [15]

$\vec{v} = < 2, -2, 1 >$
$\vec{u} = < 1, 3, 4 >$
$\vec{w} = < 5, 2, -1 >$

1) Find magnitude of $\vec{w}$ *and* $\vec{u}$.
2) Find angle between $\vec{u}$ *and* $\vec{w}$
3) Find length of $\vec{w}$.
4) Find $3\vec{v} - 2\vec{w}$
5) Find $\vec{u} \cdot \vec{v}$
6) Find $2\vec{v} + 4\vec{u} - 2\vec{w}$
7) Find angle between $\vec{v}$ *and* $\vec{u}$

(P.T.O)

Q.2 Draw a graph with vertex set = {A , B , C , D , E, F} [15]
And Edge set = {AB,AC,AD,AE,BC,BD,BE,CD,DE,EF}
Make a matrix representation of graph.

Q.3 Choose the correct answer: [05]

[01] What is a square matrix?
(a) A matrix with all elements equal
(b) A matrix with an equal number of rows and columns
(c) A matrix with all diagonal elements zero
(d) A matrix with unequal rows and columns

[02] A matrix that is both upper triangular and lower triangular is called?
(a) Symmetric matrix (b) Diagonal matrix
(c) Null matrix (d) Skew – symmetric matrix

[03] a matrix with 5 rows and 5 columns is called?
(a) Square matrix (b) Row matrix
(c) Column matrix (d) Null matrix

[04] a matrix with 5 rows and 3 columns is called?
(a) rectangular matrix (b) row matrix
(c) square matrix (d) column matrix

[05] a matrix which satisfies A = $-A^T$ *is callled*:
(a) idempotent matrix (b) nilpotent matrix
(c) involutory matrix (d) Skew - symmetric matrix