

B.Sc.(IT) Semester - 2 (CBCS) Examination
March/April – 2024 (As Per Syllabus Year-2018)
Foundation of Mathematics and Statistics (CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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Que.1(A) Answer the following question. (03)

- (1) $\begin{vmatrix} 8 & -2 \\ -9 & -2 \end{vmatrix}$ find determinant.
- (2) Define determinant.
- (3) $\begin{vmatrix} 3 & 2 \\ -5 & 4 \end{vmatrix}$ find determinant.

Que.1(B) Answer the following question. (Any Two) (06)

(1) Find the determinant of $A = \begin{vmatrix} 2 & -2 & 5 \\ -6 & 4 & -1 \\ 3 & 7 & -5 \end{vmatrix}$

(2) Find the determinant of $A = \begin{vmatrix} 6 & -10 & 5 \\ 2 & 2 & 6 \\ -4 & -4 & 3 \end{vmatrix}$

(3) $5x - 2y = 10$ and $15x - 20y = 12$ Find Determinant using Cramer's Rule.

(4) $8x + 4y = 36$ and $9x - 3y = 9$ Find Determinant using Cramer's Rule.

Que.1(C) Answer the following question. (Any one) (05)

- (1) Explain Properties of Determinants.
- (2) $2x + 3y + 4z = 10$, $x + y + z = 5$ and $2x + y + z = 7$ Find Determinant using Cramer's Rule.

Que.2(A) Answer the following question. (03)

- (1) Define Diagonal matrix.
- (2) Define Row matrix.
- (3) Define Unit matrix.

Que.2(B) Answer the following question. (Any Two) (06)

- (1) If $A = \begin{bmatrix} -2 & 3 \\ -4 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -1 \\ 4 & -5 \end{bmatrix}$ then find $5A+4B$.
- (2) If $A = \begin{bmatrix} 5 & 8 \\ 6 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 10 & -7 \\ 2 & 2 \end{bmatrix}$ then find $4A-3B$.
- (3) Properties of Matrix Addition.
- (4) Find AB if $A = \begin{bmatrix} 7 & 6 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 3 \\ 5 & 7 \end{bmatrix}$

Que.2(C) Answer the following question. (Any one) (05)

- (1) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 \\ 4 & 5 \end{bmatrix}$ then find $7A+4B$, $5A-2B$.
- (2) Explain properties of Inverse Matrix.

Que.3(A) Answer the following question. (03)

- (1) Write down formula of distance $(d) = \underline{\hspace{2cm}}$.
- (2) Define parallel line.
- (3) Define Equivalent set.

- Que.3(B) Answer the following question. (Any Two) (06)
- (1) $P=(25, 30)$, $Q=(5, 15)$ find difference between two points..
 - (2) $A=\{1, 2, 3, 4, 5, 6, 7\}$ $B=\{3, 4, 5, 6, 7, 8, 9\}$ $C=\{5, 6, 7, 8, 9, 10, 11\}$ than find out $(A \cap B) \cup (B \cap C)$.
 - (3) Write down demorgan's Law.
 - (4) $P=\{32, 64\}$ $Q=\{38, 70\}$ find the answer base on straight line formula.
- Que.3(C) Answer the following question. (Any one) (05)
- (1) Find the Area of Triangle use the vertices A (4, -3), B (3, -5) and C (2, 5).
 - (2) Explain properties of set.
- Que.4(A) Answer the following question. (03)
- (1) Define Median.
 - (2) Define Range.
 - (3) Define Mode.
- Que.4(B) Answer the following question. (Any Two) (06)
- (1) 2, 8, 10, 12, 18, 28, 29, 33, 1 Find Range and Co-Range.
 - (2) -3, -8, -5, 4, 3, 2, -3, 4 Find Range and Co-Range.
 - (3) The Observation are 10, 12, 8, 5, 5, 2, 3, 4 Find out mean and mode.
 - (4) The Observation are 8, 8, 8, 6, 5, 4, 3, 2, 1 Find out mean and median.
- Que.4(C) Answer the following question. (Any one) (05)
- (1) The Observation are 18, 28, 28, 28, 29, 33, 34, 38, 42, 46, 48, 28, 29, 27 Find out mean, median and mode.
 - (2) Observation are 3, 5, 8, 12, 14, 16, Then find the standard deviation for the given observation.
- Que.5(A) Answer the following question. (03)
- (1) Full form of AP and GP.
 - (2) Define AP.
 - (3) Define GP.
- Que.5(B) Answer the following question. (Any Two) (06)
- (1) 8, 36, 54, 72,..... Find the 38th term.
 - (2) 2, 4, 6, 8,..... Find the 28th term.
 - (3) $T_8 = 64$, $T_{12} = 96$ then find out the $T_{30} = ?$.
 - (4) 0.5, 1, 1.5, 2, 2.5, 3,...Find sum of 20th term.
- Que.5(C) Answer the following question. (Any one) (05)
- (1) If the first term of an AP is 67 and the common difference is -13, find the sum of the first 20 terms.
 - (2) Three numbers are in G.P. their sum and product are 28 and 512 respectively find the numbers.
