

B.C.A Semester - 2 (CBCS) Examination

March/April - 2023 (OLD COURSE)

CS-10 MATH. & STAT. FOUND. OF COMP. SCIENCE (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1(A) Answer the following questions.

(04)

1. $\begin{vmatrix} 8 & 6 \\ 3 & -4 \end{vmatrix}$ find determinat.
2. $\begin{vmatrix} 9 & 6 \\ 8 & 7 \end{vmatrix}$ find determinant.
3. Define determinant.
4. $\begin{vmatrix} X & 1 \\ 2 & 2 \end{vmatrix} = 0$ find x.

Q.1(B) Answer the following questions. (Any One)

(02)

1. Find the determinant of $\begin{vmatrix} 5 & 7 & 8 \\ -4 & 2 & 6 \\ 1 & 3 & -5 \end{vmatrix}$
2. Find the determinant of $\begin{vmatrix} -9 & 1 & -2 \\ 4 & 4 & 2 \\ 1 & 3 & 1 \end{vmatrix}$

Q.1(C) Answer the following questions. (Any One)

(03)

1. $4x + 2y = 10$ and $3x + 2y = 12$ Find Determinant using Cramer's Rule.
2. $5x + 4y = 20$ and $3x + 5y = 25$ Find Determinant using Cramer's Rule.

Q.1(D) Answer the following questions. (Any One)

(05)

1. $2x - y + 9z = 2$, $-8y + 3z = 7$ and $3x + y + z = 0$ Find Determinant using Cramer's Rule.
2. $8x - 2y + 34z = 1$, $x + 56y - 9z = 18$ and $4x + y - 7z = 2$ Find Determinant using Cramer's Rule.

Q.2(A) Answer the following questions.

(04)

1. Define square matrix.
2. Define unit matrix.
3. If $A = \begin{bmatrix} 1 & 2 \\ -8 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 8 \\ 9 & 12 \end{bmatrix}$ then find $A - B$.
4. Define column matrix.

Q.2(B) Answer the following questions. (Any One)

(02)

1. If $A = \begin{bmatrix} -2 & 2 \\ 1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & 1 \\ 3 & 2 \end{bmatrix}$ then find $3A + 5B$.
2. If $A = \begin{bmatrix} 5 & 4 \\ -3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & 1 \\ 3 & 5 \end{bmatrix}$ then find $4A - 2B$.

Q.2(C) Answer the following questions. (Any One)

(03)

1. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 \\ 4 & 5 \end{bmatrix}$ then find $2A + 3B$, $4A + 3B$.
2. Find $(AB)^{-1}$ if $A^{-1} = \begin{bmatrix} 7 & 6 \\ 1 & 1 \end{bmatrix}$ and $B^{-1} = \begin{bmatrix} 4 & 3 \\ 1 & 1 \end{bmatrix}$

Q.2(D) Answer the following questions. (Any One) (05)

1. Explain ad joint of Matrix with example.
2. Explain Addition & multiplication of two matrices.

Q.3(A) Answer the following questions. (04)

1. Define parallel line.
2. Define Equivalent set.
3. Define intersection operation in set.
4. Define Universal set.

Q.3(B) Answer the following questions. (Any One) (02)

1. Write down demorgan's Law.
2. Explain inverse law of set.

Q.3(C) Answer the following questions. (Any One) (03)

1. If $A = \{ 2, -3 \}$ and $B = \{ 4, 5 \}$ then find $2A \times 3B$.
2. Find the distance between the points $A(-7, -2)$ and $B(5, 6)$.

Q.3(D) Answer the following questions. (Any One) (05)

1. Find the Area of Triangle use the vertices $A(6, -2)$, $B(4, -5)$ and $C(5, 3)$.
2. Explain Associative law and distributive law of set.

Q.4(A) Answer the following questions. (04)

1. What is the median of the following data 4,1,3,5,3,2,3 = _____.
2. Define Median.
3. Define Range.
4. What is the median of the following data 10,12,8,5,5,2,3,4 = _____.

Q.4(B) Answer the following questions. (Any One) (02)

1. 15,-10,-12,-22,22,16,28 Find Range and Co-Range.
2. 4,6,8,10,12,14,16,18,20 find mean and mode.

Q.4(C) Answer the following questions. (Any One) (03)

1. Explain advantages of Mean.
2. Find out mean and median.

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
F	6	4	8	2	9	7	6	5

Q.4(D) Answer the following questions. (Any One) (05)

1. Mean and S.D. of five value are 4.4 and 2.87 respectively, if three values are 6, 2, 1 then find remaining two values.
2. The Observation are 18,22,26,28,32,38,28 Find out mean, median and mode.

Q.5(A) Answer the following questions. (04)

1. Define Series.
2. Full form of AP.
3. Define GP.
4. Write the formula for n^{th} term in A.P.

Q.5(B) Answer the following questions. (Any One) (02)

1. Find out the 12th term of 6,12,18,.....
2. Find out the 18th term of 2,6,10,14,.....

Q.5(C) Answer the following questions. (Any One) (03)

1. Which term will be 124 in A.P. 4, 9, 14, 19
2. Three numbers are in G.P. their sum and product are 28 and 512 respectively find the numbers.

Q.5(D) Answer the following questions. (Any One) (05)

1. Find the sum of the first 40 terms of the arithmetic sequence.
2. Find three numbers are in A.P whose sum is 27 and product is 693.
