

B.C.A Semester - 2 (CBCS) Examination**June/July-2022 [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) Create any matrix which represents 3×3 determinants.

(2) Find determinant

$$D = \begin{vmatrix} -6 & 8 \\ -7 & 9 \end{vmatrix}$$

(3) Find the determinant

$$D = \begin{vmatrix} 6 & -8 \\ -4 & -7 \end{vmatrix}$$

(4) Find the determinant

$$D = \begin{vmatrix} 7 & 3 \\ 2 & 1 \end{vmatrix}$$

Q.1(B) **Answer the following question. (Any one)** (02)

(1) Find the determinant of matrix $A = \begin{vmatrix} 5 & 3 & 6 \\ 6 & 2 & 7 \\ -2 & 1 & -9 \end{vmatrix}$

(2) Find the determinant of matrix $A = \begin{vmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{vmatrix}$

Q.1(C) **Answer the following question. (Any one)** (03)

(1) Find the determinant of matrix $A = \begin{vmatrix} 1 & 0 & 4 \\ 0 & -4 & 3 \\ 2 & -3 & 0 \end{vmatrix}$

(2) Solve below linear equation using Cramer's Rule.

$$3x + 4y + 5z = 8$$

$$x + 3y + 2z = 9$$

$$2x + 6y + 4z = 10$$

Q.1(D) **Answer the following question. (Any one)** (05)

(1) Solve below linear equation using Cramer's Rule.

$$5x + 4z = 14$$

$$2X + y = 6$$

$$Y + 2z = 8$$

(2) Find the determinant of matrix $A = \begin{vmatrix} -8 & 4 & 5 \\ 8 & 6 & -3 \\ 5 & -2 & 6 \end{vmatrix}$

Q.2(A) **Answer the following questions.** (04)

(1) Define column matrix.

(2) Define unit matrix.

(3) Define row matrix.

(4) Define Null matrix.

Q.2(B) **Answer the following question. (Any one)** (02)

(1) Give example for Matrix Subtraction.

(2) Explain Addition of Matrix.

Q.2(C) **Answer the following question. (Any one)** (03)

(1) If $A = \begin{bmatrix} 2 & -6 \\ 3 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} -5 & 1 \\ -4 & 3 \end{bmatrix}$ then find AB and $3A-B$

(2) If $A = \begin{bmatrix} 2 & 8 \\ 6 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} -4 & 6 \\ -5 & 8 \end{bmatrix}$ then find $6B-4A$ and $2B+A$

Q.2(D) **Answer the following question. (Any one)** (05)

(1) Find the Adjoint of matrix $A = \begin{vmatrix} 2 & 3 & 2 \\ 4 & 7 & 1 \\ 6 & 8 & 5 \end{vmatrix}$

(2) Find the Inverse of matrix $A = \begin{vmatrix} 1 & 7 & 6 \\ 3 & 9 & 2 \\ 5 & 11 & 5 \end{vmatrix}$

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

- (1) How many quadrants are there?
- (2) Define Universal Set.
- (3) Define Sub Set set.
- (4) Define intersection.

Q.3(B) **Answer the following question. (Any one)** (02)

- (1) Explain the Associative Law in brief with example.
- (2) If $A = \{1, 2, 3, 4\}$ and $B = \{2, 3\}$ then find out $A \times B$.

Q.3(C) **Answer the following question. (Any one)** (03)

- (1) Find the Area Of Triangle use the vertices $A(-18, 50), B(12, -42)$ and $C(-8, 30)$.
- (2) If $A(4, 8)$, $B(6, 12)$ and Slope $M_1 = 2$ and $M_2 = 3$ then find the Internal Deviation using the Section Formula.

Q.3(D) **Answer the following question. (Any one)** (05)

- (1) If $A(18, 24)$, $B(28, 40)$ and Slope $M_1 = 12$ and $M_2 = 22$ then find the External Deviation using the Section Formula.
- (2) Explain the Commutative Law in brief with example.

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

- (1) The median of observation 4, 1, 3, 5, 3, 2, 3 = _____.
- (2) The Mode of observation 1, 2, 4, 4, 5, 4, 4, 8, 6, 5, 1 = _____.
- (3) Define Mean
- (4) $Z(\text{MODE}) = \text{_____}$.

Q.4(B) **Answer the following question. (Any one)** (02)

- (1) Find the Mean for the following data

Mark	16-20	21-25	26-30	31-35	36-40	41-45
Frequency	2	7	14	8	8	1

- (2) Write down the formula for the range and give one example also for range.

Q.4(C) **Answer the following question. (Any one)** (03)

- (1) Find the median for the following.

X	10-12	13-15	16-18	19-21	22-24	Total
Y	4	8	7	6	5	F=30

- (2) Write down the formula for the Mode for ungrouped data.

Q.4(D) **Answer the following question. (Any one)** (05)

- (1) Explain the Median with group and ungrouped data also define formula for it.
- (2) Calculate mean, median and mode from following data.

Class	40-49	50-59	60-69	70-79	80-89	90-100
Frequency	3	5	6	9	8	7

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

- (1) Define Sequence.
- (2) Define Series.
- (3) Full form of HM.
- (4) Define GP.

Q.5(B) **Answer the following question. (Any one)** (02)

- (1) Find out the 10th term of 5, 10, 15,
- (2) Find out the 20th term of 2, 4, 8, 16,

Q.5(C) **Answer the following question. (Any one)** (03)

- (1) Write down the formula for nth term in AP.
- (2) Write down the formula for nth term in GP.

Q.5(D) **Answer the following question. (Any one)** (05)

- (1) Find S_{10} for the series $3 - 6 + 12 - 24 + \dots$ In GP.
- (2) Find the sum of the first 40 terms of the arithmetic sequence
