

B.C.A Semester - 2 (CBCS) Examination**March/April- 2019 (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.

Question: 1 (A) Answer the following questions.**04**

- (1) Type of matrix determinant in which computation involves cross multiplication of elements is classified as determinant of _____
- (2) Rule which provides method of solving determinants is classified as _____
- (3) $(AB)^{-1} =$ _____.
- (4) Every element of a matrix is zero, it is called _____ matrix.

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

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

- (2) Find the determinant of matrix $A = \begin{vmatrix} 6 & 8 \\ 1 & 2 \end{vmatrix}$

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

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

- (2) Find the determinant of matrix $A = \begin{vmatrix} 5 & 4 & 1 \\ 8 & 9 & 6 \\ 3 & 7 & 2 \end{vmatrix}$

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

- (1) Solve below linear equation using Cramer's Rule.
 $4x_1 - 2x_2 + x_3 = 3$
 $x_1 + 2x_2 - x_3 = 5$
 $3x_1 - 5x_2 + 2x_3 = 12$
- (2) Explain Properties of Determinants.

Question: 2 (A) Answer the following questions.**04**

- (1) If $A = \begin{bmatrix} 2 \\ 3 \\ -5 \end{bmatrix}$ then A' is = _____.

- (2) Define null matrix.
- (3) Define row matrix.
- (4) Write down formula for inverse of matrix.

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

- (1) Properties of Matrix Addition.
- (2) Explain: Adjoint of Matrix.

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

- (1) If $A = \begin{bmatrix} 2 & 5 \\ -3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 1 \\ -2 & -5 \end{bmatrix}$ then find $A' + B'$, BA

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

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

- (1) if $2A - B = \begin{bmatrix} 8 & 9 \\ -5 & 5 \end{bmatrix}$ and $3A - B = \begin{bmatrix} 5 & 7 \\ 8 & -4 \end{bmatrix}$ then find $4A - 3B = ?$

- (2) Explain properties of Inverse Matrix.

Question: 3 (A) Answer the following questions. **04**

- (1) Write down formula of distance (d) = _____.
- (2) Define parallel line.
- (3) Define Equivalent set.
- (4) Define Singleton set.

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

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

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

- (1) Write down demorgan's Law.
- (2) The distance between two points $(K, -5)$ and $(2, K)$ is 13. Find the value of K.

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

- (1) In a group of 50 people, 35 speak Gujarati, 25 speak both and all the people speak at least one or more language. Find the number of people who speak only Gujarati and not English.
- (2) Show that the quadrilateral with vertices $(2, -1)$, $(3, 4)$, $(-2, 3)$ & $(-3, -2)$ is a rhombus.

Question: 4 (A) Answer the following questions. **04**

- (1) The median of observation 10, 7, 5, 3, 8, 6, 9 = _____.
- (2) If there are two groups containing 30 and 20 values & having 50 and 60 as A.M. then the combined mean is _____.
- (3) Define Mode.
- (4) Define Median.

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

- (1) Find out Q_1 and Q_3 of 4, 24, 45, 25, 45, 35.
- (2) Define range.

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

- (1) Explain Merits of Mean.
- (2) Explain Demerits of Range.

Question: 4 (D) Answer the following question. (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) Calculate mean, median and mode from following data.

Class	110 -120	120 -130	130 -140	140 -150	150 -160
Frequency	2	5	5	3	1

Question: 5 (A) Answer the following questions. **04**

- (1) Define sequence.
- (2) Write the formula for T_n in A.P
- (3) 10.0, 10.5, 11.0, 11.5 Find 11th term in A.P.
- (4) 0.1, 0.5, 0.8 Find 21th term in A.P.

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

- (1) The 10th term of an A.P. is $\frac{5}{2}$ and first term is $\frac{19}{4}$. Find the common difference.
- (2) Obtain the formula of finding n th term of 3, 5, 7, 9 & hence find $T_{199} = ?$

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

- (1) Which term will be 124 in A.P. 4, 9, 14, 19
- (2) Which term will be $\frac{1}{1536}$ in A.P. $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{12}$

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

- (1) Three numbers are in G.P. their sum and product are 28 and 512 respectively find the numbers.
- (2) Find three numbers are in A.P whose sum is 27 and product is 693.
