2022 XI 18 0230 Seat No. | | | | | |

Time : 1 Hour

FIRST-TERM MATHEMATICS (VOC.)

Subject Code

V	4	3	1	1

Total No. of Questions : 20 **(Printed Pages : 8)** **Maximum Marks : 20**

INSTRUCTIONS : (*i*) Every question has four choices (A), (B), (C) and (D) and only one of them is the correct answer.

(*ii*) On the OMR sheet darken completely with a ball point pen ONLY ONE bubble you consider as the most appropriate answer.

(*iii*) Multiple markings are invalid.

(*iv*) Use Blue or Black ball point pen only.

(*v*) Do not fold the OMR sheet or use white ink.

(*vi*) For each question, you will be awarded ONE mark, if you have darkened only the bubble corresponding to the correct answer. In all other cases, you will get zero mark. There is no negative mark.

(*vii*) Once the bubble is filled, it is not possible to change the answer.

(*viii*) Only one OMR sheet will be provided.

Hence sufficient care must be taken while darkening the bubble.

1. If 'r' is the correlation coefficient between two variables, then .....

(A) $0 < r < 1$

(B) $-1 \leq r \leq 1$

(C) $r \geq 0$

(D) $r \leq 0$

2. Given the following data, Σxy is .....

x :	6	5	4	3
y :	1	3	5	7

(A) 82

(B) 86

(C) 62

(D) 84

3. From the following data, y is .....

x :	1	3	5	7
y :	2	4	6	8

(A) 5

(B) 4

(C) 20

(D) 16

4. Given the following data, Σx is .....

x :	11	10	9	8	7
y :	14	13	12	11	10

(A) 60

(B) 105

(C) 9

(D) 45

5. Inverse of matrix A = ...

(A) $|A|.(\text{Adj.A})$

(B) $\frac{|A|}{(\text{Adj.A})}$

(C) $\frac{(\text{Adj.A})}{|A|}$

(D) $\frac{(\text{Adj.A})}{A}$

6. The order of matrix A is .....

where $A = \begin{bmatrix} 2 & 7 & 6 \\ 5 & 4 & 3 \end{bmatrix}$

(A) 2×3

(B) 3×2

(C) 1×3

(D) 3×1

7. If $B = \begin{bmatrix} 3 & 5 \\ 4 & -6 \end{bmatrix}$, then B^T = ...

(A) $\begin{bmatrix} 3 & 5 \\ 4 & 6 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 4 \\ 5 & -6 \end{bmatrix}$

(C) $\begin{bmatrix} 3 & -6 \\ 5 & 4 \end{bmatrix}$

(D) $\begin{bmatrix} 3 & -6 \\ 5 & -4 \end{bmatrix}$

8. If $\begin{bmatrix} 2 & 0 \\ 0 & 4 \end{bmatrix} \begin{bmatrix} 3 \\ 4 \end{bmatrix} = \begin{bmatrix} x \\ y \end{bmatrix}$, then the value of x and y are .....

(A) $x = 8$ and $y = 6$

(B) $x = 6$ and $y = 16$

(C) $x = 2$ and $y = 4$

(D) $x = 6$ and $y = 2$

9. If $A = \begin{bmatrix} 1 & 2 & 3 \\ -3 & 2 & 1 \\ 2 & -4 & 3 \end{bmatrix}$, then the cofactor C_{31} = ...

(A) -4

(B) 4

(C) 8

(D) -8

10. If $A = \begin{bmatrix} 3 & 1 & 2 \\ 11 & -9 & 10 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 5 & 1 \\ 3 & 4 & -2 \end{bmatrix}$ then A + B = ...

(A) $\begin{bmatrix} 3 & 6 & 3 \\ 14 & 5 & 8 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 6 & 3 \\ 11 & 5 & -8 \end{bmatrix}$

(C) $\begin{bmatrix} 3 & 6 & 3 \\ 14 & -5 & 8 \end{bmatrix}$

(D) $\begin{bmatrix} 3 & 6 & 3 \\ 14 & -13 & -12 \end{bmatrix}$

11. The matrix $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is a .....

(A) Unit matrix

(B) Zero matrix

(C) Rectangular matrix

(D) Singular matrix

12. If $A = [a_{ij}]_{2\times2}$ where $a_{ij} = \begin{cases} i+j & \text{when} \quad i >= j \\ i \times j & \text{when} \quad i < j \end{cases}$, then matrix A = ...

(A) $\begin{bmatrix} 2 & 3 \\ 2 & 4 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 4 \\ 2 & 2 \end{bmatrix}$

(C) $\begin{bmatrix} 2 & 2 \\ 4 & 3 \end{bmatrix}$

(D) $\begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix}$

13. If a coin is tossed three times, then $n(s)$ = ...

(A) 3

(B) 6

(C) 8

(D) 2

14. A box contains 6 red, 11 white and 7 black balls, then number of elements in sample space S is .....

(A) 24

(B) 18

(C) 17

(D) 21

15. The probability of getting an odd number, if a single die is thrown is .....

(A) $\frac{1}{2}$

(B) $\frac{1}{3}$

(C) 2

(D) 3

16. A card is drawn from a well shuffled pack of 52 cards; then the probability of getting a face card is .....

(A) $\frac{4}{13}$

(B) $\frac{1}{12}$

(C) $\frac{1}{26}$

(D) $\frac{3}{13}$

17. The region represented by $x \geq 0, y \leq 0$ is .....

(A) First quadrant

(B) Second quadrant

(C) Third quadrant

(D) Fourth quadrant

18. To draw the graph of the equation $4x + 5y = 20$, we can take the points .....

(A) (4, 0) and (0, 5)

(B) (4, 0) and (5, 0)

(C) (5, 0) and (0, 4)

(D) (5, 0) and (4, 0)

19. The objective function for a L.P.P. is $z = 3x + 2y$, If $x = 5$ and $y = 4$, the value of the objective function will we .....

(A) 23

(B) 22

(C) 19

(D) 16

20. The point at which the maximum value of $z = 5x + 4y$, subject to the constraints $x + y \leq 3$ and $x, y \geq 0$ is obtained at .....

(A) (3, 0)

(B) (0, 0)

(C) (0, 3)

(D) (3, 3)