Vidya Vikas Mandal's
Ramacrisna Madeva Salgaocar Higher Secondary School
Margao Goa

Std: XII VOC – CT | Mid Term Exam July, 2025 | Duraton: 1 hr.
Date: 25/07/2025 | Subject : Mathematics (voc) | Marks:20

Instructions : 1) All questions are compulsory.
3) Write the number of questions clearly.

Section A

Question numbers from 1 to 4 carry 1 mark each.

1. Construct 2x3 matrix $A=[a_{ij}]$ such that $a_{ij} = i^2 + j$

2. If $A=\begin{bmatrix}2\\3\\4\end{bmatrix}$ and $B = [2 \quad 1 \quad 3]$, find AB

3. If $A = \begin{bmatrix}-2 & 1\\4 & 3\end{bmatrix}$ and $B = \begin{bmatrix}2 & 1\\0 & -2\end{bmatrix}$, find $A - B^t$ where B^t is transpose of B

4. Write matrix P such that $P=[P_{ij}]_{2\times2}$ if $P_{ij} = i + j$ when $i \neq j$
$= i - j$ when $i = j$

Section B

Question numbers from 5 to 8 carry 2 marks each.

5. Construct the forward difference table for the following data.

X	1	3	5	7	9
Y	-4	-2	1	4	10

Hence identify $\Delta^2 y_5$, $\Delta^3 y_7$

6. If $A = \begin{bmatrix}2 & 4\\1 & 1\end{bmatrix}$, show that A satisfies the matrix equation $A^2 = 3A+2I$

7. A card is drawn from a pack of 52 cards. Find the probability that the card drawn is a spade card.

8. A bag contains 6 red balls, 5 green balls balls and 3 black balls. Two cards are drawn at random find the probability that it is not green.

Section C

Question numbers 9 and 10 carry 4 marks each.

9. Find the coefficient of correlation for the following data. (4)

X	2	4	6	8
Y	7	5	3	1

10. Find the inverse of the following matrix. (4)

$$\begin{bmatrix}1 & 2 & 1\\2 & 2 & 4\\0 & 0 & 3\end{bmatrix}$$