

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

Std: XII VOC - CT  
Date: 10/08/2023

Mid Term Test August, 2023  
Subject : Mathematics (voc)

Duraton: 1 hr.  
Marks:20

- Instructions : 1) All questions are compulsory.  
2) Figures to the right indicate full marks.  
3) Write the number of questions and sub-questions clearly.

Section A

Question numbers from 1 to 2 carry 1 mark each.

1.  $\begin{pmatrix} x & 4 \\ 3 & 2 \end{pmatrix}$  is a singular matrix find  $x$  (1)
2. If  $A = \begin{pmatrix} 1 & 2 \\ -3 & 4 \end{pmatrix}$  and  $2A + 3B = 0$ , find matrix B (1)

Section B

Question numbers from 3 to 5 carry 2 marks each.

3. Construct the forward difference table for the following data. (2)
- |   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| X | 11 | 12 | 13 | 14 | 15 | 16 |
| Y | 10 | 13 | 18 | 25 | 37 | 67 |
- Hence identify  $\Delta^3 Y_{15}$ ,  $\Delta^2 Y_{13}$

4. If  $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ , show that  $A^2 - 5A - 2I$  is a zero matrix. (2)

5. Two perfect cubic dice are thrown. Find the probability that sum of the numbers on their upper faces is atleast 7 (2)

Section C

Question numbers from 6 to 8 carry 4 marks each.

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

X	8	6	4	2	0
Y	2	4	6	8	10

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

$$\begin{pmatrix} 2 & -1 & 0 \\ 1 & 0 & 4 \\ 1 & -1 & 1 \end{pmatrix}$$

8. Using Lagrange's Interpolation formula find  $f(6)$  given that

$$f(1) = 4, f(2) = 5, f(7) = 8$$

(4)