

VidyaVikasMandal's
RamacrisnaMadevaSalgaocar Higher Secondary School
Margao Goa

Std: XI VOC – CT

Mid Term Exam August, 2023

Duraton: 1 hr.

Date: 10/08/23

Subject : Mathematics (voc)

Marks:20

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

Question numbers from 1 to 2 carry 1 mark each.

1. Find the product of the following complex number.

$$(1+2i)(2-i)$$

2. Find the roots of the following quadratic equation

$$x^2 + x + 1 = 0$$

Question numbers from 3 to 4 carry 2 marks each.

3. Express the following in $a+bi$ where $a, b \in \mathbb{R}$ and $i = \sqrt{-1}$

$$\frac{2+i}{5+5i}$$

4. If one root of $kx^2 + 5x - 6 = 0$ is 1, find the value of k and also the other root.

Question numbers from 5 to 6 carry 3 marks each.

5. Represent the following complex number in polar form.

$$\sqrt{3} + i$$

6. If one root of the equation $kx^2 - 16x + 3 = 0$ is three times the other, find the value of k .

Question numbers from 7 to 8 carry 4 marks each.

7. Find the square root of the following complex number

$$24 - 10i$$

8. If α and β are the roots of equation $x^2 - 2x + 3 = 0$, find the value of

i) $\alpha^2 + \beta^2$ ii) $\frac{1}{\alpha} + \frac{1}{\beta}$
