Roll No	

Tatyasaheb Kore Institute of Engineering & Technology, Warananagar
(An Autonomous Institute)
F.Y. B. Tech (Sem-I), In Semester Examination –II, Oct 2023

ENGINEERING MATHEMATICS-I

Day and Date: Tuesday, 01 November 2023   **Marks: 30**

Time : 9:15 am to 10:15 am

Instructions: i) Use of non programmable calculator is allowed.
ii) Figures to the right indicate full marks.

Q.1 Attempt any Three from the following questions.

		Unit No	CO	

a) Simplify

$$\frac{(cos5\theta - isin5\theta)^2(cos7\theta + isin7\theta)^{-3}}{(cos4\theta - isin4\theta)^9(cos\theta + isin\theta)^5}$$

             3   3   **5**

b) Express $sin5\theta$ in terms of powers of $sin\theta$ and $cos\theta$ 3   3   **5**

c) Find all the Roots of $x^5 = 1 + i$ 3   3   **5**

d) Find All the values of $\left(1 - i\sqrt{3}\right)^{\frac{1}{4}}$ 3   3   **5**

Q.2 Attempt any Three from the following questions.

a) Find the values of y at x = 43 for the following data   4   4   **5**

X:	40	50	60	70	80
Y:	184	204	226	250	276

b) Find $f(38)$ from the following data using Newton's backward formulae   4   4   **5**

X:	20	25	30	35	40
Y:	354	332	291	260	231

c) From the following table find y when $x = 1.75$ by using Newton's interpolation formula   4   4   **5**

X:	1.7	1.8	1.9	2.0	2.1
Y:	5.475	6.050	6.686	7.389	8.166

d) Use Lagrange's interpolation formula to find the value of y when x = 10 , if the following values of x and y are given :   4   4   **5**

X:	5	6	9	11
Y:	12	13	14	16