



ASSIGNMENT NO: 2

SUBJECT: MATHEMATICS

CLASS-XI

JULY,2026

Chapter : Complex numbers

Ques 1. If $8x + i(2x - y) = 3 - 8i$ and $x, y \in \mathbb{R}$, then the values of x and y are

(a) $x = \frac{3}{8}, y = \frac{35}{4}$

(b) $x = -\frac{3}{8}, y = \frac{35}{4}$

(c) $x = \frac{3}{8}, y = -\frac{35}{4}$

(d) $x = -\frac{3}{8}, y = -\frac{35}{4}$

Ques 2. The value of $1 + i + i^2 + \dots + i^n$ is

(a) positive

(b) negative

(c) 0

(d) cannot be determined

Ques 3 If $a + ib = \frac{c+i}{c-i}$ Prove $a^2 + b^2 = 1$ and $\frac{b}{a} = \frac{2c}{c^2-1}$

Ques4 If $(x + iy)^{\frac{1}{3}} = a + ib$ show that $\frac{x}{a} + \frac{y}{b} = 4(a^2 - b^2)$

Ques5 Find conjugate of $\frac{(2+3i)^2}{2-i}$

Ques6 Find x and y for which complex numbers $-3 + x^2yi$ and $x^2 + y + 4i$ conjugate of each other.

Ques7 Find multiplicative inverse of $(2 + \sqrt{3}i)^2$

Ques8 If $\frac{(a+i)^2}{2a-i} = P + iq$ show that $P^2 + q^2 = \frac{(a^2+1)^2}{4a^2+1}$

Ques9 If $(1+i)(1+2i)(1+3i)\dots(1+ni) = (x + iy)$ show that $2 \times 5 \times 10 \times \dots \times (1 + n^2) = x^2 + y^2$

Ques10 If Z_1, Z_2 are complex Numbers such that $\frac{2Z_1}{3Z_2}$ is purely imaginary number, then find $\left| \frac{Z_1 - Z_2}{Z_1 + Z_2} \right|$

Ques11 If $x = -5 + 2\sqrt{-4}$ Find the value of $x^4 + 9x^3 + 35x^2 - x + 4$

Ques12. What is the value of $\frac{i^{4n+1} - i^{4n-1}}{2}$?

Ques13 What is the smallest positive integer, for which $(1 + i)^{2n} = (1 - i)^{2n}$?

Ques14. If $\left(\frac{1+i}{1-i}\right)^3 - \left(\frac{1-i}{1+i}\right)^3 = x + iy$, then find (x, y) .

Chapter- Linear inequality

Ques1. Solve the Following inequations :

(i) $\frac{1}{x-2} < 0$ (ii) $\frac{x-3}{x-5} > 0$ (iii) $\frac{2x+4}{x-1} \geq 5$

Ques2. Solve the Following system of inequations

(i) $2(2x+3) - 10 < 6(x-2), \quad \frac{2x-3}{4} + 6 \geq 2 + \frac{4x}{3}$

Ques3. Solve $-5 \leq \frac{2-3x}{4} \leq 9$

Ques4. Solve $|x - 2| \geq 5$

Ques5. The cost and Revenue Functions of a Product are given by $c(x) = 2x + 400$ and $R(x) = 6x + 20$ resp. Where x is the number of items produced by manufacturer. How many items the manufacturer must sell to realize some profits?

Ques6. The marks scored by salman in two tests were 65 & 70. Find the minimum marks he should score in third test to have an average of atleast 65 marks.

CHAPTER PERMUTATIONS AND COMBINATIONS

Ques 1. How many three digit even numbers are there with 3 digits such that if 5 is one of the digits, 7 is the next digits.

Ques2. A code word is to consists of two distinct English alphabets followed by two distinct numbers from 1 to 9 e.g. CA23. How many such code words are there. How many of them ended with even digits

Ques3. The principal wants to arrange 5 students on the platform such that the boy "SALIM" occupies the second position such that the girl "SITA" is always adjacent to the girl "RITA". How many such arrangements are possible.

Ques 4. How many four digits numbers divisible by 4 can be made with the digits 1,2,3,4,5 if the repetition of the digits is not allowed.

Ques 5. In how many ways three girls and nine boys can be seated in two vans, each having numbered seats, 3 in the front and 4 at back? How many seating arrangements are possible if 3 girls sit together in a back row on adjacent seats

Ques 6. A tea party is arranged for 16 persons along two sides of a long table with 8 chairs on each side. Four persons wish to sit on one particular and two on the other sides. In how many ways can they be seated.

Ques 7. The letters of the word "RANDOM" are written in all possible orders and these words are written out as in a dictionary. Find the rank of the word "RANDOM".

Ques 8. A committee of 5 is to be formed out of 6 gents and 4 ladies. In how many ways this can be done when

- (i) Atleast two ladies are included. (ii) Atmost two ladies are included.

Ques 9. Four persons enter a bus and they find seven seats vacant. In how many ways can they be seated.