



INDIAN SCHOOL AL WADI AL KABIR

Dept. of Mathematics 2021-2022, Class – XI, TERM - 1

Work Sheet – Complex Numbers – 1

Date : 25-08-2021

MCQ

1.	A real value of x satisfies the equation $\left(\frac{3-4ix}{3+4ix}\right) = \alpha - i\beta (a, \beta \in \mathbb{R})$ if $\alpha^2 + \beta^2 =$ (A) 1 (B) -1 (C) 2 (D) -2
3.	Let $x, y \in \mathbb{R}$, then $x + iy$ is a non real complex number if: (A) $x = 0$ (B) $y = 0$ (C) $x \neq 0$ (D) $y \neq 0$
5.	The real value of θ for which the expression $\frac{1+i\cos\theta}{1-2i\cos\theta}$ is a real number is: (A) $n\pi + \frac{\pi}{4}$ (B) $n\pi + (-1)^n \frac{\pi}{4}$ (C) $2n\pi \pm \frac{\pi}{2}$ (D) none of these.

	TERM – 1 AND MID TERM EXAM
4.	If $a + ib = c + id$, then (A) $a^2 + c^2 = 0$ (B) $b^2 + c^2 = 0$ (C) $b^2 + d^2 = 0$ (D) $a^2 + b^2 = c^2 + d^2$

Short Answer Type Questions (1mark and 2 marks)

7.	Write the value of $i + i^{10} + i^{20} + i^{30}$
9.	Write the additive inverse of $6i - i\sqrt{-49}$
11.	Write the conjugate of $\frac{2-i}{(1-2i)^2}$
15.	$i\sqrt{-16} + i\sqrt{-25} + \sqrt{49} - i\sqrt{-49} + 14$
17.	Find x and y if $(x + iy)(2 - 3i) = 4 + i$

8.	Write the value of $i + i^{10} + i^{20} + i^{30}$
10.	Write the multiplicative inverse of $(2 + i\sqrt{3})^2$
12.	Write in the form of $a + ib$; $\frac{1}{-2 + \sqrt{-3}}$
14.	Evaluate: $\sqrt{-16} + 3\sqrt{-25} + \sqrt{-36} - \sqrt{-625}$
16.	Evaluate: $(i^{77} + i^{70} + i^{87} + i^{414})^3$
18.	Find the real value of a for which $3i^3 - 2ai^2 + (1-a)i + 5$ is real.

Answers

Q1		Q3	Q4	Q5		Q7	Q8	Q9
A		D	D	C		0	$i - 1$	$-6i - 7$

Q10	Q11	Q12		Q14	Q15	Q16	Q17	Q18
$\frac{1}{49} - \frac{4\sqrt{3}}{49}i$	$-\frac{2}{25} - i\left(\frac{11}{25}\right)$	$\frac{-2}{7} - \frac{\sqrt{3}}{7}i$		0	19	-8	$x = \frac{5}{13}$ and $y = \frac{14}{13}$	$a = -2$