

VERY SHORT ANSWER TYPE QUESTIONS

1. Evaluate the following:

(i) $\sqrt{-4} \sqrt{9}$

(ii) $\sqrt{-25} \sqrt{27}$

(iii) $\sqrt{-16} \sqrt{-49}$

(iv) $\sqrt{-2} \sqrt{-7}$.

2. Evaluate the following:

(i) i^{28}

(ii) i^{37}

(iii) i^{42}

(iv) i^{91} .

3. Evaluate the following:

(i) i^{-36}

(ii) i^{-39}

(iii) i^{-14}

(iv) i^{-35} .

4. Find the real and imaginary parts of the following complex numbers:

(i) $12 + 3i$

(ii) $18i^9$

(iii) $\sqrt{37} + \sqrt{-19}$

(iv) $5 - i^{20}$.

5. Find the values of the real numbers x and y if :

(i) $2x + iy = 4 + 5i$

(ii) $7 - xi = y + 3i$

(iii) $x + 5yi = 7$

(iv) $2 - 3i^2 = x - yi$.

VERY SHORT ANSWER TYPE QUESTIONS

1. Express the following in the form $x + iy$; $x, y \in \mathbf{R}$:

(i) $(4 - 3i) + (1 + 2i)$

(ii) $\left(\frac{1}{5} + \frac{2}{5}i\right) - \left(4 + \frac{5}{2}i\right)$

(iii) $(2 - i^3) + (4i^2 - i^5)$

(iv) $(3i^2 + i) - (i^4 - i^5)$

2. Express the following in the form $x + iy$; $x, y \in \mathbf{R}$:

(i) $(6 - 7i) - (8 + 2i) + (5 + 6i)$

(ii) $-(5 - 6i) + (1 + i) - (3 - i)$

(iii) $i^9 + i^{19}$

(iv) $\left(\frac{1}{3} + \frac{7}{3}i\right) + \left(4 + \frac{1}{3}i\right) - \left(-\frac{4}{3} + i\right)$

LONG ANSWER-1 TYPE QUESTIONS

3. Express the following in the form $x + iy$; $x, y \in \mathbf{R}$:

(i) $1 + i^{22} + i^{220} - i^{1000}$

(ii) $2i^2 + 6i^3 + 3i^{16} - 6i^{19} + 4i^{25} + 4$

4. If $z_1 = 12 + 7i$, $z_2 = 9 - 3i$, $z_3 = 17 + 4i$, then verify that:

(i) $z_1 + z_2 = z_2 + z_1$

(ii) $(z_1 + z_2) + z_3 = z_1 + (z_2 + z_3)$

VERY SHORT ANSWER TYPE QUESTIONS

1. Express the following in the form $x + iy$; $x, y \in \mathbf{R}$:

(i) $(-5i) \left(\frac{1}{8}i \right)$

(ii) $(5i) \left(-\frac{3}{5}i \right)$

(iii) $(3 + 5i)(7 - 6i)$

(iv) $(1 + i)^6 + (1 - i)^3$

(v) $\left(\sqrt{2} + \frac{3i}{2} \right)^2$

(vi) $\left(-2 - \frac{1}{3}i \right)^3$

(vii) $(5 - 3i)^3$

(viii) $(1 - i)^4$.