CBSE

COMPLEX NUMBERS AND QUADRATIC EQUATIONS TP 1

Class 11 - Mathematics

Time Allowed: 1 hour **Maximum Marks: 30**

Section A

1. Which of the following is correct ? **[1]**

   a) $3 - 4\text{i} < 2 - 3\text{i}$ b) $1 + \text{i} < 1 - \text{i}$

   c) none of these d) $2 + 3\text{i} < 3 + 4\text{i}$

2. Let $x, y \in R$, then x + iy is a non real complex number if **[1]**

   a) y = 0 b) x $\neq$ 0

   c) x = 0 d) y $\neq$ 0

3. If (a + b) - i(3a + 2b) = 5 + 2i, find a and b. **[1]**

4. If z_1 = 2 - iy and z_2 = x + 3i are equal, find x and y. **[1]**

5. Which of following statements is correct? **[1]**

   a) (2+ 3i) > (2 - 3i) b) (5 + 4i) > (-5 - 4i)

   c) (3 + 2i) > (-3 + 2i) d) None of these

6. Which of the following statements is correct? **[1]**

   a) (5+7i) > (3 + 4i) b) None of these

   c) (3 + 5i) > (4 + 3i) d) (5 + 7i) < (3 + 4i)

Section B

7. Match the following: **[2]**

(a) z = 3 + i5 then real part of z is	(i) Re(z)
(b) z = 3 + i5 then imaginary part of z is	(ii) 3
(c) z = a + ib then b is denoted by	(iii) 5
(d) z = a + ib then a is denoted by	(iv) Im(z)

8. Two complex numbers Z_1 = a + ib and Z_2 = c + id are said to be equal, if a = c and b = d. **[2]**

9. Evaluate: $i\sqrt{-16} + i\sqrt{-25} + \sqrt{49} - i\sqrt{-49} + 14$ **[2]**

10. Write the real and imaginary parts of the following complex number $\sqrt{37} + \sqrt{-19}$ **[2]**

11. Find the real values of x and y for which: x + 4yi = ix + y + 3 **[2]**

12. **State True or False:** **[2]**

    (a) The real and imaginary parts of the complex number $\sqrt{37}$ + $\sqrt{-19}$ are $\sqrt{37}$ and $-\sqrt{19}$ respectively. **[1]**

    (b) The square root of negative real numbers are called imaginary numbers. **[1]**

Section C

13. **Fill in the blanks:** **[3]**

(a) The _____ and imaginary parts of complex number 7 is Re(z) = 7 and Im(z) = 0. **[1]**

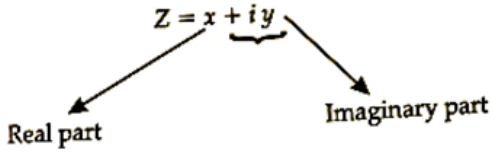
(b) A complex number z is said to be zero, if its both real and imaginary parts are _____. **[1]**

(c) If z = a + ib is a compelx number, then a is called _____ part and b is called the _____ part of z. **[1]**

Section D

Question No. 14 to 17 are based on the given text. Read the text carefully and answer the questions: **[4]**

A number of the form Z = x + iy, where x and y are real and i = $\sqrt{-1}$ is called a complex number. Consider the complex number Z_1 = 2 + 3i and Z_2 = 4 - 3i.



14. Find the imaginary part of $Z_1\overline{Z_1}$.

15. Find the real part of $\frac{z_1}{z_2}$.

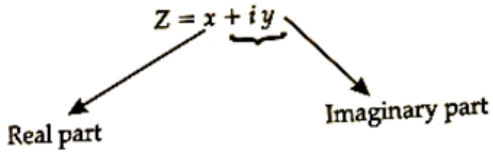
16. Find the imaginary part of Z_1 - Z_2.

17. Find the real part of Z_1.

Section E

Question No. 18 to 22 are based on the given text. Read the text carefully and answer the questions: **[5]**

A number of the form Z = x + iy, where x and y are real and i = $\sqrt{-1}$ is called a complex number. Consider the complex number Z_1 = 2 + 3i and Z_2 = 4 - 3i.



18. Imaginary part of $Z_1\overline{Z_1}$ is _____

a) -1 b) 1

c) i d) 0

19. Real Part of $\frac{z_1}{z_2}$ is _____

a) $\frac{1}{2}$ b) $\frac{18}{25}$

c) $\frac{-1}{25}$ d) 2

20. Imaginary part of Z_1 - Z_2 is _____

a) 6i b) 6

c) -2 d) -2i

21. Imaginary part of Z_2 is _____

a) -3i b) -3

c) 3i d) 3

22. Real part of Z_1 is _____.

a) 4 b) 3

c) -3

d) 2