MATHS COMPLEX NUMBERS AND QUADRATIC EQUATIONS

14. The number $z = r(\cos \theta + i\sin \theta)$ is the polar form of the complex number z = a + ib.

Here $r = \sqrt{a^2 + b^2}$ is called the modulus of z and $\theta = \tan^{-1}\left(\frac{b}{a}\right)$ is called the argument or amplitude of z, which is denoted by arg z.

- 15. The value of θ such that $-\pi < \theta \le \pi$ called principal argument of z.
- 16. The Eulerian form of z is $z = re^{i\theta}$, where $e^{i\theta} = \cos\theta + i\sin\theta$
- 17. The plane having a complex number assigned to each of its points is called the Complex plane or Argand plane.
- 18. Let a_0, a_1, a_2, \dots be real numbers and x is a real variable. Then, the real polynomial of a real variable with real coefficients is given as

 $f(x) = a_0 + a_1x + a_2x^2 + ... + a_nx^n$

19. Let a_0, a_1, a_2, \dots be complex numbers and x be a complex variable. Then, the control of Notesale.co.u complex variable with complex coefficients is given as $f(x) = a_0 + a_1x + a_2x^2 + ... + a_nx^n$.

- 20. A polynomial $f(x) = a_0 + a_1 x + a_2 x + a_3 x + a_4 x + a_4 x + a_5 x$ $\mathbf{h} + \mathbf{a}_n \mathbf{x}^n$ is a polynomial of degree n.
- 21. A polynomial of second degree is called dratic polynomial.
- 22. Polynomials of degree 3 and 4 are known as cubic and biguadratic polynomials.
- 23. If f(x) is a polynomial, then f(x) = 0 is called a polynomial equation.
- 24. If f(x) is a quadratic polynomial, then f(x) = 0 is called a quadratic equation.
- 25. The general form of a guadratic equation is $ax^2 + bx + c = 0$, $a \neq 0$.
- 26. The values of the variable satisfying a given equation are called its roots.
- 27. A quadratic equation cannot have more than two roots.
- 28. Fundamental Theorem of Algebra states that 'A polynomial equation of degree n has n roots.'