Number Systems

Multiple Choice Questions (MCQs)

❖ *Four possible answers to each statement are given below. Tick (✓) mark the correct/best one.*

1. **Around "5000 B.C." the Egyptians had a number system based on**

   (a) 5 (b) 50

   (c) 10 (d) 100

2. **If n is a Prime number, then $\sqrt{n}$ is**

   (a) Complex number (b) Rational number

   (c) Irrational number (d) None of these

3. **A recurring decimal represents**

   (a) Real number (b) Natural number

   (c) Rational number (d) None of these

4. **π is**

   (a) Complex number (b) An integer

   (c) An irrational number (d) Natural number

5. **0 is**

   (a) Positive number (b) Negative number

   (c) Natural number (d) Non-negative

6. **A Prime number can be a factor of a square only if it occurs in the square at least**

   (a) Twice (b) Once

   (c) Thrice (d) None of these

7. **{1, −1} possess closure property w.r.t.**

(a) Addition (b) Multiplication

(c) Division (d) Subtraction

8. $(-1)^{\frac{21}{2}}$ **is equal to**

(a) i (b) $-i$

(c) 1 (d) -1

9. $\sqrt{-1}$ is

(a) Real number (b) Natural number

(c) Rational number (d) Imaginary number

10. **The additive identity is the set of complex numbers is**

(a) (1, 1) (b) (0, 1)

(c) (1, 0) (d) (0, 0)

11. **The multiplicative identity in set of complex numbers is**

(a) (1, 1) (b) (0, 1)

(c) (1, 0) (d) (0, 0)

12. **The additive inverse of a complex number (x, y) is**

(a) $(-x, -y)$ (b) $(-x, y)$

(c) $(x, -y)$ (d) $(-y, -x)$

13. **The multiplicative inverse of a complex number (x, y) is**

(a) $\left(\frac{x}{x^2+y^2}, \frac{y}{x^2+y^2}\right)$ (b) $\left(\frac{x}{x^2+y^2}, \frac{-y}{x^2+y^2}\right)$

(c) $\left(\frac{-x}{x^2+y^2}, \frac{y}{x^2+y^2}\right)$ (d) $\left(\frac{-x}{x^2+y^2}, \frac{-y}{x^2+y^2}\right)$

14. **Every real number is a**

(a) Rational number (b) Natural number

(c) Prime number (d) Complex number

15. **The Cartesian Product of two non-empty sets A and B dented by**

(a) AB (b) BA

(c) $A \times B$ (d) None of these

16. **The members of a Cartesian Product, are called**

(a) Real numbers (b) Ordered pairs

(c) Elements (d) None of these

17. **Conjugate of a complex number $x + iy$ is**

(a) $-x+iy$ (b) $-x-iy$

(c) $x+y$ (d) $x-iy$

18. **The modulus of a complex number $x + iy$**

(a) $\sqrt{x+y}$ (b) $\sqrt{x^2-y^2}$

(c) $\sqrt{x^2+y^2}$ (d) None of these

19. **Polar form of a complex number $x + iy$ is**

(a) $\cos\theta + i\sin\theta$ (b) $r\cos\theta - ir\sin\theta$

(c) $r\cos\theta + ir\sin\theta$ (d) None of these

20. **If $Z = x + iy$ then $|\bar{Z}|$ is**

(a) $\sqrt{x^2-y^2}$ (b) $\sqrt{x^2+y^2}$

(c) $\sqrt{2xy}$ (d) None of these

21. **If $-x - iy$ is a complex number then modulus of the complex number is**

(a) $\sqrt{x^2-y^2}$ (b) $\sqrt{x^2+y^2}$

(c) $\sqrt{2xy}$ (d) None of these

22. **If Z_1 & Z_2 are two complex numbers then $\overline{Z_1+Z_2}$ is**

(a) Z_1+Z_2 (b) $\bar{Z}_1-\bar{Z}_2$

(c) $\bar{Z}_1+\bar{Z}_2$ (d) None of these

23. **If Z_1 & Z_2 are two complex numbers then $\overline{Z_1-Z_2}$ is**

(a) Z_1+Z_2 (b) $\bar{Z}_1-\bar{Z}_2$

(c) $\bar{Z}_1 + \bar{Z}_2$ (d) None of these

24. If Z_1 & Z_2 are two complex numbers then $\overline{Z_1 Z_2}$ is

(a) $Z_1 Z_2$ (b) $\dfrac{Z_1}{Z_2}$

(c) $\bar{Z}_1 . \bar{Z}_2$ (d) None of these

25. If Z_1 & Z_2 are two complex numbers then $\overline{\left(\dfrac{Z_1}{Z_2}\right)}$ is

(a) $\dfrac{Z_1}{Z_2}$ (b) $Z_1 Z_2$

(c) $\dfrac{\bar{Z}_1}{\bar{Z}_2}$ (d) None of these

26. If Z_1 & Z_2 are two complex numbers then $|Z_1 Z_2|$ is

(a) $Z_1 Z_2$ (b) $\dfrac{|Z_1|}{|Z_2|}$

(c) $|Z_1||Z_2|$ (d) None of these

27. If Z is a complex number and $\bar{Z}$ is a conjugate then $Z\bar{Z}$ is equal to

(a) $|Z||\bar{Z}|$ (b) $|Z|^2$

(c) $\dfrac{|Z|}{|\bar{Z}|}$ (d) None of these

28. If $Z = -3 - 5i$ then $Z^{-1} =$ _____

(a) $\dfrac{-3}{34} + \dfrac{5}{34}i$ (b) $\dfrac{3}{34} - \dfrac{5}{34}i$

(c) $\dfrac{3}{34} + \dfrac{5}{34}i$ (d) None of these

29. $(x + iy)^2 =$ _____

(a) $x^2 + y^2 + 2xyi$ (b) $x^2 - y^2 - 2xyi$

(c) $x^2 - y^2 + 2xyi$ (d) None of these

30. $(x - iy)^2$

(a) $x^2 + y^2 + 2xyi$ (b) $x^2 - y^2 - 2xyi$

(c) $x^2 + y^2 - 2xyi$ (d) None of these

31. $Z^2 + \bar{Z}^2$ is a

(a) Complex number (b) Real number

(c) Both (a) & (b) (d) None of these

32. $(Z - \bar{Z})^2$ is a

(a) Real number (b) Complex number

(c) Both (a) & (b) (d) None of these

33. $(Z + \bar{Z})^2$ is a

(a) Complex number (b) Real number

(c) Both (a) & (b) (d) None of these

34. i can be written in form of an ordered pair as

(a) (1, 0) (b) (1, 1)

(c) (0, 1) (d) None of these

35. If $Z = 3 - 4i$ then $|\bar{Z}|$ is

(a) 4 (b) 3

(c) 5 (d) None of these

36. $\forall\ a, b, c \in \Re, a = b \wedge b = c \Rightarrow a = c$ is called

(a) Reflexive property (b) Symmetric property

(c) Transitive property (d) None of these

37. $\forall\ a, b, c \in \Re, a + c = b + c \Rightarrow a = b$

(a) Additive property

(b) Cancellation property w.r.t. addition

(c) Cancellation property w.r.t. multiplication

(d) None of these

38. $\forall\ a, b, c \in \Re, ac = bc \Rightarrow a = b, c \neq 0$

(a) Cancellation property w.r.t. addition

(b) Cancellation property w.r.t. multiplication

(c) symmetric property

(d) None of these

39. **$-(-a)$ should be read as**

(a) Negative of negative (b) Minus minus a

(c) Both (a) & (b) (d) None of these

40. **If a point A of the coordinate plane correspond to the order pair (a, b) then b is called**

(a) Abscissa (b) x-coordinate

(c) Ordinate (d) None of these

ANSWERS

1.	(a)	2.	(c)	3.	(c)	4.	(c)
5.	(d)	6.	(a)	7.	(b)	8.	(b)
9.	(d)	10.	(d)	11.	(c)	12.	(a)
13.	(b)	14.	(d)	15.	(c)	16.	(b)
17.	(d)	18.	(c)	19.	(c)	20.	(b)
21.	(b)	22.	(c)	23.	(c)	24.	(c)
25.	(c)	26.	(c)	27.	(b)	28.	(a)
29.	(c)	30.	(b)	31.	(b)	32.	(a)
33.	(b)	34.	(c)	35.	(c)	36.	(c)
37.	(b)	38.	(b)	39.	(a)	40.	(c)

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