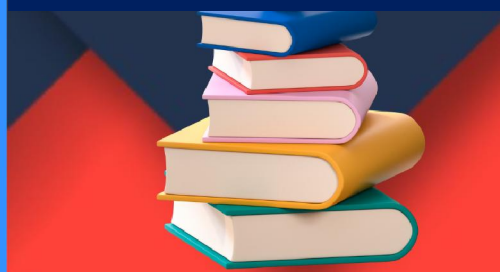
TEST - 04

CLASS XI

CBSE, CUET, JEE MAIN, NDA

MULTIPLE CHOICE Type Questions



By O.P. GUPTA (+919650350480)

Topics : Complex Numbers **Max. Marks : 30**

☑ ***Select the correct option in the followings. Each question carries 1 mark.***

01. $\sqrt{-4}\times\sqrt{-25}=$

(a) 10 (b) $-10i$ (c) $10i$ (d) -10

02. If $z=3-2i$, then $\mathrm{Re}(z)+\mathrm{Im}(z)=$

(a) 5 (b) -1 (c) 1 (d) -5

03. If $z=\sqrt{-225}$, then $\mathrm{Re}(z)=$

(a) 0 (b) 15 (c) -15 (d) $15i$

04. If $z_1=2-i$ and $z_2=1+2i$, then $z_2.\overline{z}_2=$

(a) $\frac{|z_1|}{2}$ (b) $|z_1|$ (c) $|z_1|^2$ (d) $2|z_1|$

05. The value of $(1+i)^4-(1-i)^4$ is

(a) 4 (b) 0 (c) 8 (d) -4

06. If $z=1+i$, then $|z-1+i|=$

(a) ±2 (b) -2 (c) 1 (d) 2

07. Let $n\in$ Natural numbers. Then the value of $i^{4n}+i^{4n+1}+i^{4n+2}+i^{4n+3}$ is

(a) 1 (b) 0 (c) i (d) $-i$

08. The sum of series $i+i^2+i^3+...$ up to 1000 terms is

(a) 0 (b) i (c) $-i$ (d) None of these

09. If $z_1=\sqrt{3}+i\sqrt{3}$, $z_2=\sqrt{3}+i$, then the value of $\left|\frac{z_1}{z_2}\right|$ is

(a) $\sqrt{3}$ (b) $\frac{3}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\sqrt{\frac{3}{2}}$

10. For $z=\left(\frac{1-i}{1+i}\right)$, the additive inverse of z is

(a) $-i$ (b) $1-i$ (c) i (d) $-1+i$

11. If $z=\frac{1+\sqrt{3}i}{i}$, then $|z|=$

(a) 4 (b) -2 (c) 2 (d) ±2

12. If $z=\frac{i}{1-i}$, then the conjugate of z equals

(a) $-\frac{1}{2}+\frac{i}{2}$ (b) $-\frac{1}{2}-\frac{i}{2}$ (c) $\frac{1}{2}-\frac{i}{2}$ (d) $\frac{1}{2}+\frac{i}{2}$

13. If $z=1+\sqrt{3}i$, then $\arg(z)=$

(a) $-\frac{\pi}{3}$ (b) $-\frac{2\pi}{3}$ (c) $\frac{\pi}{3}$ (d) $-\frac{5\pi}{6}$

14. The modulus of the multiplicative inverse of $z=-1+i$ is given by

(a) $\sqrt{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\frac{1}{2}$ (d) 1

15. For $z=-1-i$, $|2z|$ equals

(a) $\pm 2\sqrt{2}$ (b) 8 (c) $2\sqrt{2}$ (d) $2\sqrt{2}$

16. For a complex number z, the value of $(z+3)(\bar{z}+3)$ is equivalent to

(a) $|z-3|$ (b) $|z+3|^2$ (c) $|z|^2+9$ (d) $|z+3|$

17. If $n \in Z^+$ and $\left(\frac{1+i}{1-i}\right)^x = 1$, then

(a) $x=4n$ (b) $x=4n+1$ (c) $x=2n$ (d) $x=2n+1$

18. A real value of x satisfies the equation $\left(\frac{3-4ix}{3+4ix}\right)=\alpha-i\beta, (\alpha, \beta \in R)$, if $\alpha^2+\beta^2$ is equal to

(a) -1 (b) 1 (c) 2 (d) -2

19. For $a+ib$, the modulus is given by

(a) a^2+b^2 (b) $\pm\sqrt{a^2+b^2}$ (c) $\sqrt{a^2+b^2}$ (d) $\pm(a^2+b^2)$

20. If $z_1=1-i$ and $z_2=-1+\sqrt{3}i$, then $\arg(z_1)+\arg(z_2)$ is

(a) $\frac{\pi}{12}$ (b) $-\frac{\pi}{12}$ (c) $\frac{7\pi}{12}$ (d) $\frac{5\pi}{12}$

21. If $f(z)=1+z^2$, where $z=1+i$, then $|f(z)|=$

(a) 5 (b) $\sqrt{2}$ (c) $2\sqrt{2}$ (d) $\sqrt{5}$

22. If $|z|=4$ and $\arg(z)=\frac{\pi}{6}$, then $z=$

(a) $-2\sqrt{3}+2i$ (b) $2\sqrt{3}+2i$ (c) $2+i\sqrt{3}$ (d) $\sqrt{3}-2i$

23. Multiplicative inverse of $3i$ is

(a) $-\frac{i}{3}$ (b) $\frac{i}{3}$ (c) $1+\frac{i}{3}$ (d) $1-\frac{i}{3}$

24. $\left|(1-i)^3\right|=$

(a) $\pm 2\sqrt{2}$ (b) 2 (c) $2\sqrt{2}$ (d) 4

25. $\frac{3+2i}{2-5i}+\frac{3-2i}{2+5i}$ is

(a) purely real (b) purely imaginary
(c) both, purely real and purely imaginary (d) neither purely real nor purely imaginary

26. If $x=-2-i\sqrt{3}$, then $2x^4+5x^3+7x^2-x+41=$

(a) $6i$ (b) 0 (c) 6 (d) -6

27. If $z_1=1-i$, $z_2=-2+4i$, then $\text{Im}\left(\frac{z_1\bar{z}_2}{z_1}\right)$ is

(a) $2i$ (b) 2 (c) 4 (d) $4+2i$

*Question numbers **28** to **30** are Assertion and Reason based questions. Two statements are given, one labelled **Assertion (A)** and the other labelled **Reason (R)**. Select the correct answer from the codes (a), (b), (c) and (d) as given below.*

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is **not** the correct explanation of Assertion (A).
(c) Assertion (A) is true but Reason (R) is false.
(d) Assertion (A) is false but Reason (R) is true.

28. **Assertion (A) :** Number of non-zero integral solutions of the equation $|1-i|^x = 2^x$ is zero.

Reason (R) : For all $z = x + iy$, real and imaginary parts of z are respectively x and iy.

29. **Assertion (A) :** If $(x+iy)(2-3i) = 4+i$, then $13x+13y=19$.

Reason (R) : If $x+iy = u+iv$, then $x = u$ and $y = v$.

30. **Assertion (A) :** If $\dfrac{3+2i\sin\theta}{1-2i\sin\theta}$ is purely real, then $\theta = n\pi,\ n \in Z$.

Reason (R) : If $\sqrt[3]{a+ib} = x+iy$, then $\dfrac{a}{x}+\dfrac{b}{y} = 4(x^2-y^2)$.

This document contains MCQs for Mathematics (041) of class XI.
✪ Answers / Solutions shall be available on **YouTube channel – Mathematicia By O.P. Gupta**
You can **share this document** with other students!

✍ *With a lot of Blessings!*

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