

Questions

For CRT - 09

By O.P. GUPTA
INDIRA AWARD WINNER
M.+91 9650350480

Max. Marks : 40
Time : 60 Minutes
Topics : Complex Numbers

■ The O.P. Gupta Advanced MATH Classes, 1st Floor, Opp. HP Petrol Pump, Thana Road, Najafgarh

Q01. Simplify $\frac{1}{1 - \cos \theta + 2i \sin \theta}$.

Q02. Find the real value (s) of θ , such that $\frac{3 + 2i \sin \theta}{1 - 2i \sin \theta}$ is purely real.

Q03. Find the square roots of the complex number : $5 - 12i$.

Q04. Find the value (s) of x and y , if $(3x - 2yi)(2 + i)^2 = 10(1 + i)$.

Q05. Find the additive inverse, multiplicative inverse, conjugate and polar form of $\frac{-16}{1 + \sqrt{3}i}$.

Q06. Find the polar form of $\frac{1 - i}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$.

Q07. If $a + ib = \frac{c + i}{c - i}$ then, prove that $a^2 + b^2 = 1$ and $\frac{b}{a} = \frac{2c}{c^2 - 1}$.

Q08. Write the polar form of $\sqrt{\frac{1 + i}{1 - i}}$.

Q09. Solve : $2x^2 - (3 + 7i)x + (9i - 3) = 0$.

OR Evaluate $2x^4 + 5x^3 + 7x^2 - x + 41$ when $x = -2 - i\sqrt{3}$.

Q10. If $z_1 = 1 - i$, $z_2 = -2 + 4i$, find $\operatorname{Re}\left(\frac{z_1 z_2}{z_1}\right)$ and $\operatorname{Im}\left(\frac{z_1 z_2}{z_1}\right)$.

[4 × 10 = 40]

SUMMARY OF RESULTS

CBSE CLASS XII (2019)

- 9 STUDENTS GOT 95%
- 1 STUDENT WITH 94%
- 1 STUDENT WITH 92%
- 2 STUDENTS WITH 90%
- 7 STUDENTS WITH SCOREB BETWEEN 80% - 89%

SUMMARY OF RESULTS

CBSE CLASS XII (2018)

- ONE CENTURION STUDENT (100%)
- 1 STUDENT WITH 98%
- 2 STUDENTS GOT 96%
- 7 STUDENTS WITH 95%
- 1 STUDENT GOT 94% & 93% EACH
- 3 STUDENTS SCORED 92%

SUMMARY OF RESULTS

CBSE CLASS XII (2017)

- 3 STUDENTS WITH 98%
- 1 STUDENT GOT 97%
- 8 STUDENTS WITH 95%
- 1 STUDENT GOT 93%
- 1 STUDENT GOT 90%

For CBSE RESULTS Of PREVIOUS YEARS, Visit @ <http://bit.Ly/xiiResults>

Hints & Answers

Q01. See **Mathematica Vol. 1 (Example 01)**. Ans. $\left(\frac{1 - \cos \theta}{2 - 2 \cos \theta + 3 \sin^2 \theta}\right) - i \left(\frac{2 \sin \theta}{2 - 2 \cos \theta + 3 \sin^2 \theta}\right)$.

Q02. See **Mathematica Vol. 1 (Type C)**.

Q03. $\pm(3 - 2i)$.

Q04. $14/15, 1/5$.

Q05. $4 - i4\sqrt{3}, -\frac{1}{16} - i\frac{\sqrt{3}}{16}, -4 - i4\sqrt{3}, 8\left(\cos\frac{2\pi}{3} + i\sin\frac{2\pi}{3}\right)$.

Q06. $\sqrt{2}\left(\cos\left(-\frac{5\pi}{12}\right) + i\sin\left(-\frac{5\pi}{12}\right)\right)$.

Q07. See **Mathematica Vol. 1**.

Q08. See **Mathematica Vol. 1**.

Q09. See **Mathematica Vol. 1**.

OR See **Mathematica Vol. 1 (Example 06)**. Ans. 6.

Q10. See **Mathematica Vol. 1 (type C)**.

■ Buy our Books, Test Papers and Sample Papers at **iMathematica.com**