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Roll Number - Name

1) 6.if $z = x + iy$ and $\omega = (1 - iz)/(z - i)$, then $|\omega| = 1$ implies that,in the complex plane

(1983 - 1 Mark)

(a) z lies on the imaginary axis
(b) z lies on the real axis
(c) z lies on unit circle
(d) None of these

1) 7.The points z_1, z_2, z_3, z_4 in the complex plane are the vertices of a parallelogram taken in order if and only if

(1983 / 1 Mark)

(a) $z_1 + z_4 = z_2 + z_3$
(b) $z_1 + z_3 = z_2 + z_4$
(c) $z_1 + z_2 = z_3 + z_4$
(d) None of these

1) 8.if a,b,candu,v,w are complex numbers representing the vertices of two triangles such that $c = (1 - r)a + rb$ and $w = (1 - r)u + rv$,where r is a complex number,then the two triangles

(1985 - 2 Marks)

(a) have the same area
(b) are similar
(c) are congruent
(d) none of these

1) 9.If $\omega (\neq 1)$ is a cube root of unity and $(1 + \omega)^7 = A + B\omega$ then A and B are respectively

(1995S)

(a) $0, 1$
(b) $2, 1$
(c) $1, 0$
(d) $-1, 1$

1) 10.Let z and $\omega betwononzerocomplexnumberssuchthat|z| = |\omega|$ and $Argz + Arg\omega = \pi$, then z equals

(1995S)

(a) ω
(b) $-\omega$
(c) $\overline{\omega}$
(d) $-\overline{\omega}$

1) 11.let z and$\omega betwocomplexnumberssuchthat|z| \leq 1$, $|\omega| \leq 1$ and $|z + i\omega| = |z - i\overline{\omega}| = 2$ then z equals

(1995S)

(a) $1 ori$
(b) $ior - 1$
(c) $1 or - 1$
(d) $ior - 1$

1) 12.For positive numbers n_1, n_2 the value of the expression $(1 + i)_1^n + \left(1 + i^3\right)_1^n + \left(1 + i^5\right)_2^n + \left(1 + i^7\right)_2^n$, where $i = \sqrt{-1}$ is a real number if and only if

(1996 -2 Marks)

(a) $n_1 = n_2 + 1$
(b) $n_1 = n_2 - 1$
(c) $n_1 = n_2$
(d) $n_1 > 0, n_2 > 0$

1) 13.If $i = \sqrt{-1}$ then $4 + 5\left(\frac{-1}{2} + \frac{i\sqrt{3}}{2}\right)^3 34 + 3\left(\frac{-1}{2} + \frac{i\sqrt{32}}{}\right)^3 65$ is a real number if and only if

(1999 - 2 Marks)

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

1) 14.If $arg\,(z) < 0$,then $arg\,(-z) - arg\,(z) =$

(2000S)

(a) $\pi - \pi$
(b) $\frac{-\pi}{2}$
(d) $\frac{\pi}{2}$

1) 15.If $z_1, z_2 and z_3$ are complex numbers such that $|z_1| = |z_2| = |z_3| = \left|\frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3}\right| = 1$, then $|z_1 + z_2 + z_3|$ is

(2000S)

(a) equal to 1
(b) less than 1
(c) greater than 3
(d) equal to 3

1) 16.Let $z_1 and z_2$ be n^{th} roots of unity which substend a right angle at the origin.Then n must be of the form