Time : 3.00 Hrs.

STANDARD - XII
MATHEMATICS

Reg. No. | | | | | | |

Marks : 200

Section - A

I. Choose the best answer : **40 × 1 = 40**

1. The non-parametric vector equation of a plane passing through three non collinear points whose Pvs are $\vec{a}$, $\vec{b}$, $\vec{c}$ is

   a) $[\vec{r} - \vec{a}\ \vec{b} - \vec{a}\ \vec{c} - \vec{a}] = 0$ b) $[\vec{r}\ \vec{a}\ \vec{b}] = 0$

   c) $[\vec{r}\ \vec{b}\ \vec{c}] = 0$ d) $[\vec{a}\ \vec{b}\ \vec{c}] = 0$

2. The point of intersection of the line $\vec{r} = (\vec{i} - \vec{k}) + t(3\vec{i} + 2\vec{j} + 7\vec{k})$ and the plane $\vec{r} \cdot (\vec{i} + \vec{j} - \vec{k}) = 8$ is

   a) (8,6,22) b) (–8,–6,–22) c) (4,3,11) d) (–4,–3,–11)

3. $\vec{a}$ and $\vec{b}$ are two unit vectors and θ is the angle between them, then $(\vec{a} + \vec{b})$ is a unit vector if a) $\theta = \frac{\pi}{3}$ b) $\theta = \frac{\pi}{4}$ c) $\theta = \frac{\pi}{2}$ d) $\theta = \frac{2\pi}{3}$

4. The centre and radius of the sphere $|\vec{r} - (2\vec{i} - \vec{j} + 4\vec{k})| = 5$ are

   a) (2,–1,4) and 5 b) (2,1,4) and 5 c) (–2,1,4) and 6 d) (2,1,–4) and 5

5. If $[\vec{a} \times \vec{b}, \vec{b} \times \vec{c}, \vec{c} \times \vec{a}] = 64$ then $[\vec{a}, \vec{b}, \vec{c}]$ is

   a) 32 b) 8 c) 128 d) 0

6. The workdone in moving a particle from the point A with position vector $2\vec{i} - 6\vec{j} + 7\vec{k}$ to the point B, with position vector $3\vec{i} - \vec{j} - 5\vec{k}$ by a force $\vec{F} = \vec{i} + 3\vec{j} - \vec{k}$ is

   a) 25 b) 26 c) 27 d) 28

7. The d.c.s. of a vector whose direction ratios are 2, 3, – 6 are

   a) $\left(\frac{2}{7}, \frac{3}{7}, -\frac{6}{7}\right)$ b) $\left(\frac{2}{49}, \frac{3}{49}, -\frac{6}{49}\right)$ c) $\left(\frac{\sqrt{2}}{7}, \frac{\sqrt{3}}{7}, -\frac{\sqrt{6}}{7}\right)$ d) $\left(\frac{2}{7}, \frac{3}{7}, \frac{6}{7}\right)$

8. The values of $\bar{\bar{z}} + \bar{z}$ is a) 2Re(z) b) Re(z) c) Imz d) 2Imz

9. If $|z - z_1| = |z - z_2|$ then the locus of z is

   a) a circle with centre at the origin b) a circle with centre at z_1

   c) a straight line passing through the origin

   d) is a perpendicular bisector of the line joining z_1 and z_2

10. The arguments of nth roots of a complex number differ by

    a) $\frac{2\pi}{n}$ b) $\frac{\pi}{n}$ c) $\frac{3\pi}{n}$ d) $\frac{4\pi}{n}$

11. Which of the following is incorrect

    a) $\bar{z}$ is the mirror image of z on the real axis b) The polar form of $\bar{z}$ is $(r - \theta)$

    c) –z is the point symmetrical to z about the origin

    d) The polar form of –z is $(-r, -\theta)$

12. The number of values of $(\cos\theta + i\sin\theta)^{p/q}$ where p and q are non-zero integers prime to each other is a) p b) q c) p + q d) p – q

13. Polynomial equation P(x) = 0 admits conjucate pairs of imajinary roots only if the coefficients are

    a) imaginary b) complex c) real d) either real or complx

14. If a = 3 + i and z = 2 – 3i then the points on the Argand diagram representing az, 3az, and –az are

    a) vertices of right angled triangle b) vertices of an equilateral triangle

    c) vertices of an isosceles triangle d) collinear