Q1. 21 January Shift 1

Let a point A lie between the parallel lines L_1 and L_2 such that its distances from L_1 and L_2 are 6 and 3 units, respectively. Then the area (in sq. units) of the equilateral triangle ABC, where the points B and C lie on the lines L_1 and L_2, respectively, is :

(1) $15\sqrt{6}$ (2) $21\sqrt{3}$ (3) $12\sqrt{2}$ (4) 27

Q2. 22 January Shift 2

Among the statements

$(S1)$: If $A(5,-1)$ and $B(-2,3)$ are two vertices of a triangle, whose orthocentre is $(0,0)$, then its third vertex is $(-4,-7)$

and

(S2) : If positive numbers 2a, b, c are three consecutive terms of an A.P., then the lines $ax+by+c=0$ are concurrent at $(2,-2)$,

(1) both are incorrect (2) only (S2) is correct

(3) only (S1) is correct (4) both are correct

Q3. 23 January Shift 1

A rectangle is formed by the lines $x=0, y=0, x=3$ and $y=4$. Let the line L be perpendicular to $3x+y+6=0$ and divide the area of the rectangle into two equal parts. Then the distance of the point $\left(\frac{1}{2},-5\right)$ from the line L is equal to :

(1) $\sqrt{10}$ (2) $2\sqrt{5}$ (3) $2\sqrt{10}$ (4) $3\sqrt{10}$

Q4. 23 January Shift 2

Let $\mathrm{A}(1,2)$ and $\mathrm{C}(-3,-6)$ be two diagonally opposite vertices of a rhombus, whose sides AD and BC are parallel to the line $7x-y=14$. If $\mathrm{B}(\alpha,\beta)$ and $\mathrm{D}(\gamma,\delta)$ are the other two vertices, then $|\alpha+\beta+\gamma+\delta|$ is equal to

(1) 6 (2) 9 (3) 3 (4) 1

Q5. 24 January Shift 1

Let $\mathrm{A}(1,0), \mathrm{B}(2,-1)$ and $\mathrm{C}\left(\frac{7}{3},\frac{4}{3}\right)$ be three points. If the equation of the bisector of the angle ABC is $\alpha x+\beta y=5$, then the value of $\alpha^2+\beta^2$ is

(1) 13 (2) 10 (3) 5 (4) 8

Q6. 24 January Shift 2

Let the angles made with the positive x-axis by two straight lines drawn from the point $\mathrm{P}(2,3)$ and meeting the line $x+y=6$ at a distance $\sqrt{\frac{2}{3}}$ from the point P be θ_1 and θ_2. Then the value of $(\theta_1+\theta_2)$ is:

(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{6}$ (3) $\frac{\pi}{2}$ (4) $\frac{\pi}{12}$

Q7. 28 January Shift 1

Let ABC be an equilateral triangle with orthocenter at the origin and the side BC on the line $x + 2\sqrt{2}y = 4$. If the co-ordinates of the vertex A are (α, β), then the greatest integer less than or equal to $|\alpha + \sqrt{2}\beta|$ is

(1) 2 (2) 5 (3) 3 (4) 4

ANSWER KEYS

1. (2) **2.** (4) **3.** (4) **4.** (1) **5.** (2) **6.** (3) **7.** (4)