CHAPTER : STRAIGHT LINES

Q1. Find the equations of the lines passing through the point $(3, -2)$ and inclined at an angle of 60^0 to line $\sqrt{3}x + y = 1$.

Q2. Find the equation of the lines passing through the point $(-3, 5)$ and perpendicular to the line through the points $(2, 5)$ and $(-3, 6)$.

Q3. Find the value of k, if the straight line $2x + 3y + 4 + k(6x - y + 12) = 0$ is perpendicular to the line $7x + 5y - 4 = 0$.

Q4. Find the vertices of the triangle formed by the lines $y - x = 0$, $y + x = 0$, which two lines are perpendicular to each other?

Q5. If $P(a, b)$ is the mid-point of a line segment between axes. Show that equation of the line is $\frac{x}{a} + \frac{y}{b} = 2$.

Q6. The vertices of the triangle are $A(2, 3)$, $B(4, -1)$ and $B(1, 2)$. Find the length and equation of the perpendicular drawn from the point A on side BC.

Q7. Find the equation of the line passing through the point $(2, 2)$, such that the sum of the intercepts on the axes is 9.

Q8. Find image of the point $P(-8, 12)$ with respect to the line mirror $4x + 7y + 13 = 0$.

Q9. Find the equation of the line through the point $(3, 2)$ which makes an angle of 45^0 with the line Find the equation of the lines passing through the point $x - 2y = 3$.

Q10. If p is the length of perpendicular from origin to the line which makes intercepts a, b on the axes, prove that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$.

Q11. Find the length of perpendicular from origin to the line joining two points whose coordinates are $(\cos\theta, \sin\theta)$ and $(\cos\Phi, \sin\Phi)$.

Q12. Line through the point $(-2, 6)$ and $(4, 8)$ is perpendicular to the line through the points $(8, 12)$ and $(x, 24)$, find the value of x.

Q13. Find the equation of the line whose perpendicular distance from the origin is 4 and the angle which the normal makes with positive directions of x-axis is 15^0.

Q14. A line is such that its segment between the lines $5x - y + 4 = 0$ and $3x + 4y - 4 = 0$ is bisected at the point $(1, 5)$. Obtain its equation.

Q15. Two lines passing through the point $(2, 3)$ intersects each other at an angle of 60^0. If slope of one line is 2, find equation of the other line.

Q16. In what ratio, the line joining the points A $(-1, 1)$ and B $(5, 7)$ is divided by the line $x + y = 4$?

Q17. Find the equation of the lines, which are parallel to the line $3x = 4y + 5$ and are at a distance of one unit from it.

Q18. A ray of light passing through the point A $(1, 2)$ reflects in x-axis at a point P and the reflected ray passes through the point B $(5, 3)$. Find the coordinates of point P.

Q19. Find the equation of the line equidistant from the lines $x = -2$ and $x = 10$.

Q20. Show that the straight line given by x $(p + 2q) + y$ $(p + 3q) = p + q$, passes through a fixed point for different values of p and q.

Q21. A straight line cuts intercepts on the axes such that sum of the reciprocals of intercepts is a constant. Show that the line always passes through a fixed point.

Q22. makes an angle with the positive direction of x-axis such that its cosine is $\frac{4}{5}$.

Find the equation of the line which passing through the point $(1, 2)$ and

Q23. Orthocenter of a given triangle is at origin. If two vertices of a triangle are $(3, -1)$ and $(-2, 3)$. Find its third vertex.

Q24. Vertices of a quadrilateral ABCD are A $(-4, 2), B$ $(2, 6), C$ $(8, 5)$ and D $(9, -7)$. Show that mid points of the sides of a quadrilateral form a parallelogram.

Q25. Find the points on x-axis whose distance from the line $4x + 3y - 12 = 0$ is 8 units.