CLASS –XI **SUBJECT – MATHEMATICS**
ASSIGNMENT- 12 **TOPIC – STRAIGHT LINES**

Q1. Prove that lines $3x + y – 14 = 0$, $x – 2y = 0$ & $3x – 8y + y = 0$ are concurrent. Also find co-ordinates of pt of concurrence.

Q2. Find eq of line which passes through pt. (3, 2) if the portion of line intercepted between the axes is bisected at the point.

Q3. Find the equation of two straight line passing through (4, -2) and making an angle of 45^0 with the line $8x + 7y -1 = 0$. Show that those two lines are at right angles to one another.

Q4. The mid points of the sides of a triangle are (2, 1), (-5, 7) and (-5, -5). Find the equations of the sides.

Q5. Prove that the perpendicular drawn from the point (4, 1) on the join of (2, -1) and (6, 5) divides it in the ratio 5:13.

Q6. Find eq of straight line which passes through pt (22, -6) & is such that intercept on x-axis exceeds intercept on y axis by 5.

Q7. Find the angle between the lines which have intercept 3, 4 and 1, 8 on the axis respectively.

Q8. Find eq of the straight line which cuts off intercept on x axis twice that on y-axis and is at a unit distance from origin.

Q9. Find the equation of a line parallel to $2x + 3y + 11 = 0$ and the sum of its intercepts on the axis is 15.

Q10. Find the image of the point (-8, 12) with respect to the line mirror $4x + 7y + 13 = 0$

Q11. Find the equation of a line which divides the join of (1, 0) and (3, 0) in the ratio 2:1 and perpendicular to it.

Q12. A line through the points (a, 2a) and (-2, 3) is perpendicular to the line $4x + 3y + 5 = 0$, find the value of ‘a’.

Q13. If lines $ax + 2y + 1 = 0$, $bx + 3y + 1 = 0$ and $cx + 4y + 1 = 0$ are concurrent, show that a, b, c are in A.P.

Q14. Prove that the points (1, 3), (3, 5) and (5, 7) are collinear. Also find the equation of the line.

Q15. Transform the equation of the line $x + y + 4 = 0$ to (i) slope intercept form and find its slope and y intercept (ii) intercept from and find intercepts on the coordinate axes (iii) normal form and find the inclination of the perpendicular segment from the origin on the line with x=axis and also find its length.

Q16. Find equation of line passing through interaction of lines $x + y + 3 = 0$ & $x – y + 2 = 0$ and having y – intercept equal to 4.

Q17. One side of a rectangle is along line $4x + 7y + 5 = 0$. Two of its vertices are (-3, 1) & (1, 1). Find eqs of other three sides.

Q18. The vertices of a triangle are A (-2, 1), B(6, -2) and C (4, 3). Find the lengths of the altitudes of the triangle.

Q19. Find the equations of the lines which are at a distance of ½ from the origin and pass through the point (0, 1).

Q20. Find the equation of the line joining the points (3, -1) and (2, 3). Also find equation of line perpendicular to this line and passing through point (5, 2).

Q21 Find the new co-ordinates of the point in each of the following cases if the origin is shifted to the point (-1, -2) by translation of axes.

a) (2,3)
b) (-5, -4)
c) (-1, 4)

Q22 Find what the following equation becomes when the origin is shifted to (2,3)

a) $x^2 = 4ay$
b) $x^2 - y^2 = 4$
c) $x+2y = 7$