

**Chapter: - Straight Lines and Conic Sections**

- Q1.** What point on x-axis is equidistant from the points A (1, 3) and B (2,-5)      **Ans.** (19/2, 0)
- Q2.** If the points (a, 0), (0, b) and (1, 1) are collinear, show that  $\frac{1}{a} + \frac{1}{b} = 1$
- Q3.** For what values of x, the area of the triangle formed the points (5, -1), (x, 4) and (6, 3) is 5.5 sq. units?  
**Ans.** 7/2 or 9
- Q4.** A line cut off intercepts -3 and 4 on x and y-axis respectively. Find the slope and equation of the line.  
**Ans.** 4/3, 4x -3y +12 =0
- Q5.** Find the equation of a line parallel to x-axis at a distance of 3 units above x-axis.      **Ans.** y=3
- Q6.** Find the value of c and m so that the line y = m x +c may pass through the points (-2, 3) and (4,-3)  
**Ans.** c=1, m= -1
- Q7.** Mid-points of the sides of a triangle are (2, 2), (2, 3) and (4, 6). Find the equations of the sides of a triangle.      **Ans.** 3x- 2y =2, 2x-y =1, x=4
- Q8.** Find the equations of the medians of the triangle whose vertices are (2, 0), (0, 2) and (4, 6).  
**Ans.** x=2, 5x-3y=2, x-3y +6 =0
- Q9.** Show that the points (a, 0) (0, b) and (3a, -2b) are collinear Also find the equation of the line containing them.      **Ans.** bx + ay =ab
- Q10.** Find the new coordinates of the point(3,-5) if origin is shifted to the point (2,3) by a transformation of axes. **Ans.** (1,-8)
- Q11.** Find the equation of the line such that segment intercepted by the axes is divided by the points (-5, 4) in the ratio 1:2.      **Ans.** 8 x -5y +60 =0
- Q12.** Find the equations of lines which cut off intercepts on the axes whose sum and product are 1 and-6 respectively.      **Ans.** 2x -3y =6, 3x-2y +6 =0
- Q13.** Find the angle between the lines joining the points (3,-1) and (2,3) and the points (5,2) and (9,3)  
**Ans.** 90°
- Q14.** Find the angle between the lines whose equations are ax +by +c =0 and (a +b) x = (a-b) y  
**Ans.** 45°
- Q15.** Find the equation of a line which passes through origin and making an angle 60° with the line x+ √3 y +5 =0      **Ans.** x=0,    x=√3 y
- Q16.** Find the equation of a line that passes through the intersection of 4x +3y =6, and 3x +4y =8 and whose slope is 1.      **Ans.** x-y +2 =0
- Q17.** Find the equation of the line passing through the midpoint of the line segment joining the point (1, 3) and (2,-1) and parallel to the line 3x-y =7      **Ans.** 6x-2y =7,
- Q18.** Find the equation of the line passing through the midpoint of the line segment joining the point (3, 4) and (5,-2) and perpendicular to the line x+3y =8      **Ans.** 3x-y =11,
- Q19.** Find the equation of the line perpendicular to the line 3x -y =5 and at a distance of 4units from the origin. **Ans.** x +3y ±4√10 =0

**P.T.O.**

**Q20.** Find what the equation  $x^2+xy-3y^2+y+2=0$  becomes when the origin is shifted to the point (1,1)

**Ans.**  $X^2-3Y^2+XY+3X-6Y=0$

**Q21.** Find the equations of the medians of the triangle ABC whose vertices are A (2, 5), B (-4, 9) and C (-2, -1) **Ans.**  $8x-y+15=0$ ,  $x-5y+23=0$ ,  $7x+4y-8=0$

**Q22.** Find the image of the point (-8, 12) with respect to the line mirror  $4x+7y+13=0$ . **Ans.** (-16,-2)

**Q23** Find the equation of the line passing through the intersection of the lines  $3x-4y+1=0$  and  $5x+y-1=0$  and cutting off equal intercepts on the coordinate axes. **Ans.**  $23x+23y=11$

**Q24.** Find the coordinates of the foot of the perpendicular from a point (-1, 3) to the line  $3x-4y=16$

**Ans.**  $68/25, -49/25$

**Q25.** Find the equation of the line parallel to y- axis and drawn through the point of intersection of  $x-7y+5=0$  and  $3x+7y=7$  **Ans.**  $x=1/2$

**Q26.** Find the equation of parabola with focus at (5, 0) and directrix  $x+5=0$ , Also find the length of latus rectum. **Ans.**  $y^2=20x$ , 20

**Q27.** For the parabola  $y^2=-12x$ , Find the coordinates of focus, the equation of directrix and length of latus rectum. **Ans.** (-3, 0),  $x=3$ , 12

**Q28.** Find the equation of parabola with vertex at origin and having directrix  $y=2$  **Ans.**  $x^2=-8y$

**Q29.** Find the equation of the circle which passes through the points (5,-8), (2,-9) and (2, 1). Find also the coordinate of its centre and radius. **Ans.**  $x^2+y^2-4x+8y-5=0$ , (2,-4), 5,

**Q30.** Find the equation of the circle which passes through the points (-2,-3) and has its centre on negative side of x-axis and is of radius 5 units. **Ans.**  $x^2+y^2+12x+11=0$ ,

**Q31.** Find the equation of the circle whose centre is (3,-2) and which passes through the intersection of the line  $5x+7y=3$  and  $2x-3y=7$ , **Ans.**  $x^2+y^2-6x+4y+11=0$ ,

**Q32.** Find the equation of the circle which passes through the points (3,-2), (-2, 0) and having the line segment  $2x-y=3$  as its diameter. **Ans.**  $x^2+y^2+3x+12y+2=0$ ,

**Q33.** Find the equation of the circle which passes through the points (-3, 1), (6, 4) and (2, -6).

**Ans.**  $13x^2+13y^2-64x+10y-332=0$ ,

**Q34.** Find the coordinate of the foci, the vertices, the eccentricity, the length of the latus rectum, the

axis of the hyperbola  $y^2-16x^2=16$ , **Ans.**  $(0, \pm\sqrt{17})$ ,  $(0, \pm 4)$ ,  $\frac{\sqrt{17}}{4}$ ,  $1/2$ , 8, 2,

**Q35.** Find the equation of the hyperbola whose vertices are  $(\pm 5, 0)$  and foci  $(\pm 7, 0)$  **Ans.**  $\frac{x^2}{25} - \frac{y^2}{24} = 1$

**Q36.** If the major axis and eccentricity of an ellipse are respectively 8 and  $\frac{1}{2}$ , then find equation of the ellipse **Ans.**  $3x^2+4y^2=48$

**Q37.** Find the coordinate of the foci, the vertices, the eccentricity, the length of the latus rectum, the

major axis and the minor axis of the ellipse  $\frac{x^2}{169} + \frac{y^2}{144} = 1$ , **Ans.**  $(\pm 5, 0)$ ,  $(\pm 13, 0)$ ,  $5/13$ ,  $288/13$ , 26

**Q38.** Find the point to which the origin should be shifted after shifting of origin so that the equation  $x^2-12x+4=0$  will have no first degree term. **Ans.** (6, k) where k is real value.

**Q39.** Prove that the area of a triangle is invariant under the translation of the axes.

