



Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	6 marks questions	Total Marks
Conic Sections	-	-	1	-	1	9

One mark questions

1. Define a Circle as the locus of a point.

Answer: Circle is defined as the locus of a point which moves such that its distance from a fixed point is a Constant.

2. Find the equation of the Circle with Centre $(-3, 2)$, radius $\sqrt{6}$

Answer: $(x+3)^2 + (y-2)^2 = 6$

3. Find the equation of the Circle with centre $(-5, -6)$, radius 10

Answer: $(x+5)^2 + (y+6)^2 = 100$

4. Find the equation of the Circle with Centre $(-a, b)$ and radius $\sqrt{a^2 - b^2}$

Answer: $(x+a)^2 + (y-b)^2 = a^2 - b^2$

5. Find the equation of the Circle with Centre $\left(\frac{1}{2}, \frac{3}{2}\right)$, radius $\sqrt{8}$

Answer: $\left(x - \frac{1}{2}\right)^2 + \left(y - \frac{3}{2}\right)^2 = 8$

6. Find the equation of the Circle with Centre $\left(\frac{1}{3}, -\frac{1}{2}\right)$ radius $\frac{1}{\sqrt{6}}$

Answer: $\left(x + \frac{1}{3}\right)^2 + \left(y + \frac{1}{2}\right)^2 = \frac{1}{6}$

Two marks questions

7. Find the Centre and radius of the following Circles $x^2 + y^2 + 2x + 2y - 7 = 0$.

Answer: $(x^2 + 2x) + (y^2 + 2y) - 7 = 0$

$$\Rightarrow (x+1)^2 - 1 + (y+1)^2 - 1 - 7 = 0$$

$$\Rightarrow (x+2)^2 + (y+1)^2 = 9$$

$$\therefore C \equiv (-1, -1) \quad r = 3$$

8. Find the equation of the Circle whose centre is $(1, -2)$ and which passes through the point $(-3, -5)$

Answer: $C \equiv (h, k) \equiv (1, -2)$ $P \equiv (-3, -5)$

$$\therefore r = cp = \sqrt{(1+3)^2 + (-2+5)^2} = \sqrt{16+9} = 5$$

\therefore equation of the Circle is

$$(x-h)^2 + (y-k)^2 = r^2 \Rightarrow (x-1)^2 + (y+2)^2 = 25$$

9. Find the equation of the Circle if the circle passes through the points $(0, 0)$, $(8, 0)$ and $(0, 9)$.

Answer: Consider $(x-h)^2 + (y-k)^2 = r^2$ Since it passes through $(0, 0)$, $(8, 0)$ and $(0, 9)$, we have

$$h^2 + k^2 = r^2 \quad \dots(1)$$



$$(1)-(2) \Rightarrow 64-16h=0 \Rightarrow h=4$$

$$(8-h)^2+k^2=r^2 \quad \dots(2) \text{ and}$$

$$(2)-(3) \Rightarrow 81-18k=0 \Rightarrow k=\frac{9}{2}$$

$$h^2+(9-k)^2=r^2 \quad \dots(3)$$

$$\text{from (1) } r=\frac{\sqrt{97}}{2}$$

$$\therefore \text{ equation of the circle is } (x-4)^2+\left(y-\frac{9}{2}\right)^2=\frac{97}{4}$$

10. Find the equation of the Circle whose radius is $\sqrt{7}$ and concentric with the circle $x^2+y^2-8x+6y-11=0$

$$\text{Answer: } r=\sqrt{7}, \text{ the given circle is } (x^2-8x)+(y^2+6y)-11=0$$

$$\Rightarrow (x-4)^2-16+(y+3)^2-9-11=0$$

$$\Rightarrow (x-4)^2+(y+3)^2=36$$

$$C \equiv (4, -3)$$

Since the required circle and given circle are concentric

For the required circle also $C \equiv (4, -3)$

$$\therefore \text{ Equation is } (x-4)^2+(y+3)^2=7$$

11. Find the equation of the Circle If two of its diameters are $x+4y=5$ and $7x-y=6$, and whose radius is $\sqrt{7}$.

Answer: The point of inter section of the diameters is the centre solving the equations of the diameters we get

$$x=1, \quad y=1 \quad \therefore C \equiv (1, 1), \quad r=\sqrt{7}$$

$$\therefore \text{ The equation of the circle is } (x-1)^2+(y-1)^2=7$$

12. Show that the point $(-2, 0)$ lies inside the Circle $x^2+y^2+6x+2y-1=0$.

$$\text{Answer: The given circle is } (x^2+6x)+(y^2+2y)-1=0$$

$$\Rightarrow (x+3)^2-9+(y+1)^2-1-1=0$$

$$\Rightarrow (x+3)^2+(y+1)^2=9$$

$$\therefore C \equiv (-3, 1) \quad r=3 \quad P \equiv (-2, 0)$$

$$\therefore CP = \sqrt{(-3+2)^2+(1-0)^2} = \sqrt{(1+1)} = \sqrt{2} < r$$

$\therefore P$ lies inside the circle.