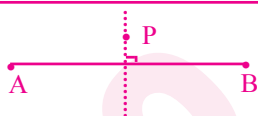
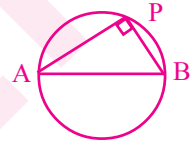
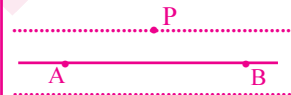
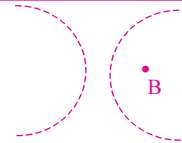
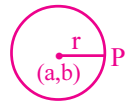
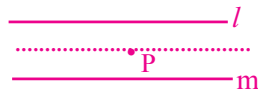


1. LOCUS

1 x 4 = 4 Marks

- 1) **Locus:** The path traced out by a variable point $P(x, y)$ satisfying a well defined geometrical condition is called Locus of the point P .
- 2) Standard Geometrical conditions and their Loci with $P(x, y)$ as variable point:

Geometrical condition	Description of the locus	Locus - figure
1) P is equidistant from 2 points A, B : $PA = PB$	Perpendicular bisector of $\overline{AB}$	
2) P is at a constant distance r from a fixed point C : $CP = r$	Circle with centre at C and radius r .	
3) A, B are two given points and P is such that $\angle APB$ is a right angle: $PA^2 + PB^2 = AB^2$	Circle with AB as diameter	
4) A, B are two given points and P is such that Area of $\triangle PAB = k$	Pair of lines parallel to the line AB	
5) P is such that its distance from a given point S is equal to its distance from a fixed line l .	Parabola with S as focus.	
6) A, B are 2 given points & P is such that $PA + PB = k$, $k > AB$	Ellipse with A, B as its foci	
7) A, B are 2 given points & P is such that $ PA - PB = k$, $k < AB$	Hyperbola with A, B as its foci	
8) $x = a + r\cos\theta$, $y = b + r\sin\theta$, $\theta \in \mathbb{R}$	Circle with centre $C(a, b)$, radius r	
9) P is equidistant from two parallel lines l, m	Line parallel to the given lines and lying midway between lines l, m .	
10) P is at a constant distance from a fixed line l .	Pair of lines parallel to the given line l .	
11) P is equidistant from two intersecting lines l, m	Pair of lines which are the angular bisectors of the given lines.	