

- The equation of the circle which touches both the axes and the straight line  $4x + 3y = 6$  in the first quadrant and lies below it is :
  - $4x^2 + 4y^2 - 4x - 4y + 1 = 0$
  - $4x^2 + y^2 - 6x - 6y + 9 = 0$
  - $x^2 + y^2 - 6x - y + 9 = 0$
  - $4(x^2 + y^2 - x - 6y) + 1 = 0$
- The foot of the normal from the point  $(4, 3)$  to a circle is  $(2, 1)$  and a diameter of the circle has the equation  $2x - y - 2 = 0$ , then the equation of the circle is
  - $x^2 + y^2 - 4y + 2 = 0$
  - $x^2 + y^2 - 4y + 1 = 0$
  - $x^2 + y^2 - 2x - 1 = 0$
  - $x^2 + y^2 - 2x + 1 = 0$
- Equation of the tangent to the circle, at the point  $(1, -1)$ , whose center, is the point of intersection of the straight lines  $x - y = 1$  and  $2x + y = 3$  is:
  - $x + 4y + 3 = 0$
  - $3x - y - 4 = 0$
  - $x - 3y - 4 = 0$
  - $4x + y - 3 = 0$
- The equation of the two tangents from  $(-5, -4)$  to the circle  $x^2 + y^2 + 4x + 6y + 8 = 0$  are
  - $x + 2y + 13 = 0, 2x - y + 6 = 0$
  - $2x + y + 13 = 0, x - 2y = 6$
  - $3x + 2y + 23 = 0, 2x - 3y + 4 = 0$
  - $x - 7y = 23, 6x + 13y = 4$
- If the tangent at the point P on the circle  $x^2 + y^2 + 6x + 6y = 2$  meets the straight line  $5x - 2y + 6 = 0$  at a point Q on the y-axis, then the length of PQ is
  - 4
  - $2\sqrt{5}$
  - 5
  - $3\sqrt{5}$
- A circle touches the y-axis at the point  $(0, 4)$  and passes through the point  $(2, 0)$ . Which of the following lines is not a tangent to this circle?
  - $4x + 3y + 17 = 0$
  - $3x - 4y - 24 = 0$
  - $3x + 4y - 6 = 0$
  - $4x + 3y - 8 = 0$
- If the length of the chord of the circle,  $x^2 + y^2 = r^2 (r > 0)$  along the line,  $y - 2x = 3$  is  $r$ , then  $r^2$  is equal to:
  - $\frac{9}{5}$
  - 12
  - $\frac{24}{5}$
  - $\frac{12}{5}$
- The sum of the squares of the lengths of the chords intercepted by the line  $x + y = n, n \in N$  on the circle  $x^2 + y^2 = 4$  is  $11k$ , where  $k$  is equal to
  - 2
  - 0
  - Cannot say
  - None of these
- If the angle of intersection at a point where the two circles with radii 5 cm and 12 cm intersect is  $90^\circ$ , then the length (in cm) of their common chord is:
  - $\frac{120}{13}$
  - $\frac{60}{13}$
  - $\frac{13}{5}$
  - $\frac{13}{2}$
- If the chord of a circle  $x^2 + y^2 = 32$  makes equal intercepts of length  $l$  on the coordinate axes, then
  - $l < 8$
  - $l < 16$
  - $l > 8$
  - $l < 18$