EXERCISE – II MULTIPLE CORRECT (OBJECTIVE QUESTIONS)

1. Circles are drawn touching the co-ordinate axis and having radius 2, then
(A) centre of these circles lie on the pair of lines $y^2 - x^2 = 0$
(B) centre of these circles lie only on the line $y = x$
(C) Area of the quadrilateral whose vertices are centre of these circles is 16 sq. units.
(D) Area of the circle touching these four circles internally is $4\pi(3 + 2\sqrt{2})$

2. For the circles $S_1 \equiv x^2 + y^2 - 4x - 6y - 12 = 0$ and $S_2 \equiv x^2 + y^2 + 6x + 4y - 12 = 0$ and the line $L \equiv x + y = 0$
(A) L is common tangent of S_1 and S_2
(B) L is common chord of S_1 and S_2
(C) L is radical axis of S_1 & S_2
(D) L is Perpendicular to the line joining the centre of S_1 & S_2

3. $x^2 + y^2 + 6x = 0$ and $x^2 + y^2 - 2x = 0$ are two circles, then
(A) They touch each other externally
(B) They touch each other internally
(C) Area of triangle formed by their common tangents is $3\sqrt{3}$ sq. units.
(D) Their common tangents do not form any triangle.

4. 3 circle of radii 1, 2 and 3 and centres at A, B and C respectively, touch each other. Another circle whose centre is P touches all these 3 circles externally. and has radius r. Also $\angle PAB = \theta$ & $\angle PAC = \alpha$.

(A) $\cos\theta = \frac{3-r}{3(1+r)}$ (B) $\cos\alpha = \frac{2-r}{2(1+r)}$

(C) $r = \frac{6}{23}$ (D) $r = \frac{6}{\sqrt{23}}$

5. Slope of tangent to the circle $(x - r)^2 + y^2 = r^2$ at the point (x, y) lying on the circle is

(A) $\frac{x}{y-r}$ (B) $\frac{r-x}{y}$ (C) $\frac{y^2-x^2}{2xy}$ (D) $\frac{y^2+x^2}{2xy}$

6. The centre(s) of the circle(s) passing through the points (0, 0), (1, 0) and touching the circle $x^2 + y^2 = 9$ is/are

(A) $\left(\frac{3}{2}, \frac{1}{2}\right)$ (B) $\left(\frac{1}{2}, \frac{3}{2}\right)$

(C) $\left(\frac{1}{2}, 2^{1/2}\right)$ (D) $\left(\frac{1}{2}, -2^{1/2}\right)$

7. Point M moved along the circle $(x - 4)^2 + (y - 8)^2 = 20$. Then it broke away from it and moving along a tangent to the circle cuts the x-axis at the point (–2, 0). The co-ordinates of the point on the circle at which the moving point broke away can be

(A) $\left(-\frac{3}{5}, \frac{46}{5}\right)$ (B) $\left(-\frac{2}{5}, \frac{44}{5}\right)$

(C) (6, 4) (D) (3, 5)

8. Consider the circles $x^2 + y^2 = 1$ & $x^2 + y^2 - 2x - 6y + 6 = 0$. Then equation of a common tangent to the two circles is
(A) $4x - 3y - 5 = 0$ (B) $x + 1 = 0$
(C) $3x + 4y - 5 = 0$ (D) $y - 1 = 0$