VERY SHORT ANSWER TYPE QUESTIONS

Attempt **ALL** questions. Each question carries **2** marks.

1. If $x^2 + y^2 - 4x + 6y + c = 0$ represents a circle with radius '6', then find the value of 'c'.

2. Find the centre and radius of the sphere $x^2 + y^2 + z^2 - 2x + 4y - 6z = 11$.

3. Find the coordinates of the points on the parabola $y^2 = 2x$ whose focal distance is $\frac{5}{2}$.

4. Find the equation to the hyperbola whose foci are $(4, 2)$ and $(8, 2)$ and eccentricity is '2'.

5. If $y = ae^{nx} + be^{-nx}$, then show that $y_2 = n^2 y$.

6. Evaluate $\int \sqrt{1 - \cos 2x}\, dx$

7. Evaluate $\int \frac{x^8}{1 + x^{18}}\, dx$ on R.

8. Find the value of $\int_0^2 |1 - x|\, dx$.

9. Find the area bounded by the parabola $y = x^2$, the x-axis and the lines $x = -1,\ x = 2$.

10. Find the order and degree of $\left[\frac{d^2 y}{dx^2} + \left(\frac{dy}{dx} \right)^3 \right]^{\frac{6}{5}} = 6y$.

SECTION - B

$5 \times 4 = 20$

SHORT ANSWER TYPE QUESTIONS

Attempt **any 5** questions. Each question carries **4** marks.

11. If a point P is moving such that the lengths of tangents drawn from P to the circles $x^2 + y^2 - 4x - 6y - 12 = 0$ and $x^2 + y^2 + 6x + 18y + 26 = 0$ are in the ratio $2 : 3$, then find the equation of the locus P.