JAYAM TUITION CENTRE.

VETTAVALAM. TIRUVANNAMALAI-DT.

STD: 12
SUB: MATHS
MARKS: 25

EXERCISE TEST - 13 (EX:10-1,2,3)

2 Mark Questions 5 X 2 =10

1. For the differential equations, determine its order, degree (if exists) $x^2 \frac{d^2y}{dx^2} + \left[1 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{1}{2}} = 0$
2. Determine the order and degree (if exists) of the differential equation: $3\left(\frac{d^2y}{dx^2}\right) = \left[4 + \left(\frac{dy}{dx}\right)^2\right]^{\frac{3}{2}}$
3. Assume that a spherical rain drop evaporates at a rate proportional to its surface area. Form a differential equation involving the rate of change of the radius of the rain drop.
4. Form the differential equation by eliminating the arbitrary constants A and B from $y = A\cos x + B\sin x$.
5. Find the differential equation of the family of parabolas $y^2 = 4ax$, where a is an arbitrary constant.

5 Mark Questions 3 X 5 =15

6. Find the differential equation of the family of circles passing through the origin and having their centres on the x -axis.
7. Form the differential equation of all straight lines touching the circle $x^2 + y^2 = r^2$.
8. Find the differential equation of the family of circles passing through the points $(a, 0)$ and $(-a, 0)$.