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| **MIDTERM TEST****CRT-04** |
| **NAME :** | **CLASS: XII - EINSTEIN** | **SUBJECT: MATHS** | **DATE:** **16.09.19** |
| **CH:9 – DIFFERENTIAL EQUATIONS** | **MARKS:**  | **25** |

1. Verify that the given function (explicit or implicit) is a solution of the corresponding differential equation:

 *y* – cos *y* = *x* : (*y* sin *y* + cos *y* + *x*) *y*ˈ = *y*  (4)

2. Form a differential equation representing the given family of curves by eliminating arbitrary constants a and b.

 *y* = a e3*x* + b e-2*x*  (4)

3. In a bank, principal increases continuously at the rate of 5% per year. In how many years Rs 1000 double itself? (4)

4. For the differential equation *xy* $\frac{dy}{dx}$ = (*x* + 2) (*y* + 2), find the solution curve passing through the point (1, -1). (4)

5. Form the differential equation of the family of circles having centre on *y*-axis and radius 3 units. (4)

6. Find the equation of a curve passing through the point (0, -2) given that at any point (*x*, *y*) on the curve, the product of the slope of its tangent and *y* coordinate of the point is equal to the *x* coordinate of the point. (4)

7. Find the order and degree, if defined, of each of the following differential equation:

 *y*˶ + *y*2 + ey’ = 0. (1)