

**ANNAI VIOLET ARTS AND SCIENCE COLLEGE**

**DEPARTMENT OF MATHEMATICS**

**CONTINUOUS INTERNAL ASSESSMENT – II (ODD SEM.)**

**SUBJECT : DIFFERENTIAL CALCULUS**

**Class : I B.Sc (Mathematics)**

**Date : 3.11.2022**

**Max.Marks : 75**

**Sub. Code:SM21B**

**PART A (10× 2 = 20 Marks)**

**Answer any TEN questions**

1. Find the derivative of
2. State Leibnitz's Theorem.
3. Calculate Partial Differential coefficient of
4. What is meant by Implicit Function and write the formula.
5. If then find
6. Write the conditions of maxima and minima for a function.
7. Define Euler's Theorem
8. Define Envelope
9. Write the cartesian formula for the radius of curvature
10. What is Evolute and give example
11. Find the 1<sup>st</sup> derivative of
12. Find when where

**PART B – (5× 5 = 25 Marks)**

**Answer any FIVE questions**

13. Find when
14. Verify Euler's theorem when
15. Find the envelope of the family of circles , where a is the parameter.
16. Calculate if where
17. State and prove Euler's theorem
18. What is the radius of curvature of the curve at the point (1 , 1) .
19. From the polar equation of the parabola , show that

**PART C – (3× 10 = 30 Marks)**

**Answer ANY THREE questions**

20. Prove that if ,
21. If , prove that
22. Find the maxima and minimum values of
23. Prove that the radius of curvature at any point of the cycloid and is
24. Calculate the p-r equation of the cardioid if

**Prepared by**

Mrs. Y. Lavanya

Assistant Professor

Dept of Mathematics