

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



U.G. DEGREE EXAMINATION – ALLIED

FIRST SEMESTER – NOVEMBER 2023

UMT 1303 – MATHEMATICS FOR STATISTICS - I

Date: 09-11-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

SECTION A - K1 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

1. Answer the following

- a) What is the product rule in differentiation?
- b) Define a critical point of a function.
- c) State Euler's theorem.
- d) Describe integration by parts.
- e) List any two applications of integral calculus.

2. Fill in the blanks

- a) In implicit differentiation, differentiating both sides of an implicit equation with respect to the variable is the initial step.
- b) If the second derivative of a function is positive at a specific point, the function has a local at that point.
- c) The partial derivative of a function with respect to a variable means that the of the function concerning that variable.
- d) The integral of $\frac{1}{\sqrt{x}}$ with respect to x is
- e) The definite integral of $\frac{1}{x}$ from 1 to e is

SECTION A - K2 (CO1)

Answer ALL the Questions

(10 x 1 = 10)

3. Choose the correct answer

- a) If $f(x) = \tan x$, what is $f'(x)$?
 - (i) $\cos^2 x$
 - (ii) $\sec^2 x$
 - (iii) $\cot x$
 - (iv) $\sin^2 x$
- b) Leibnitz theorem provides a formula to find
 - (i) The n^{th} derivative of a sum of two functions
 - (ii) The n^{th} derivative of a product of two functions
 - (iii) The integral of a product of two functions
 - (iv) The integral of a sum of two functions
- c) What is a partial differential equation?
 - (i) An equation involving only partial derivatives of a function.
 - (ii) An equation involving only ordinary derivatives of a function.
 - (iii) An equation involving both partial and ordinary derivatives of a function.
 - (iv) An equation involving only algebraic expressions.

