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Sample Question Paper - SET 1

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Class	XII	Subject	Mathematics (041)
Chapter	5 - Continuity and Differentiability	Time Allowed	18 Minutes
Maximum Marks	9	Date	_____

GENERAL INSTRUCTIONS:

1. This question paper contains **5 questions** from Chapter 5 - Continuity and Differentiability.
2. All questions are compulsory.
3. Questions 1-2 carry **1 mark each**.
4. Question 3 carries **2 marks**.
5. Questions 4-5 carry **3 marks each**.
6. Show all steps of your calculations clearly.
7. Use proper mathematical notation and terminology.

HOW TO SUBMIT:

1. Solve this question paper in your notebook or on loose sheets.
2. Clearly write your **Name, CBSE Roll Number, School Name, Place, and Date** on the first page.
3. Upload your solved paper at our website: **www.mathlove.in**

4. Check your **detailed report card on the website** after evaluation.
5. For any queries or assistance, WhatsApp us at **+91-7869553517**

SECTION A - 1 MARK QUESTIONS (2 × 1 = 2 Marks)

Q1. If $x e^y = 1$, then the value of dy/dx at $x = 1$ is:
(A) 0 (B) -1 (C) 1 (D) e **[1]**

Q2. The function $f(x) = [x]$, where $[x]$ denotes the greatest integer less than or equal to x, is continuous at:
(A) x = 4 (B) x = -2 (C) x = 1.5 (D) x = 3.0 **[1]**

SECTION B - 2 MARKS QUESTION (1 × 2 = 2 Marks)

Q3. Differentiate $\tan^{-1}[(\sqrt{(1+x^2)} - 1)/x]$ with respect to x. **[2]**

SECTION C - 3 MARKS QUESTIONS (2 × 3 = 6 Marks)

Q4. If $x = a(\cos\theta + \theta \sin\theta)$ and $y = a(\sin\theta - \theta \cos\theta)$, find d^2y/dx^2. **[3]**

Q5. Show that the function f(x) defined by:

$$f(x) = \begin{cases} x^2, & \text{if } x \geq 1 \\ x, & \text{if } x < 1 \end{cases}$$

is NOT differentiable at x = 1. Also verify whether it is continuous at x = 1. **[3]**

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