

PART 1 - MATHEMATICS

Topic : Application of derivatives

SECTION-A : (Maximum Marks : 4)

This section contains **ONE** question.

Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).

For each question, choose the option(s) corresponding to (all) the correct answer(s).

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 ONLY if (all) the correct option(s) is(are) chosen;

Partial Marks : +3 If all the four options are correct but ONLY three options are chosen;

Partial Marks : +2 If three or more options are correct but ONLY two options are chosen, both of which are correct;

Partial Marks : +1 If two or more options are correct but ONLY one option is chosen and it is a correct option;

Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);

Negative Marks : -1 In all other cases.

For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -1 marks.

1. Let R denote the set of all real numbers. Let $f: R \rightarrow R$ be defined by

$$f(x) = \begin{cases} \frac{6x + \sin x}{2x + \sin x} & \text{if } x \neq 0, \\ \frac{7}{3} & \text{if } x = 0. \end{cases}$$

Then which of the following statements is (are) TRUE?

[JEE Advanced 2025 Paper 2]

- (A) The point $x = 0$ is a point of local maxima of f
 (B) The point $x = 0$ is a point of local minima of f
 (C) Number of points of local maxima of f in the interval $[\pi, 6\pi]$ is 3
 (D) Number of points of local minima of f in the interval $[2\pi, 4\pi]$ is 1

Scan or tap for the full solution 

Space for Rough Work

**JEE ADVANCED APPLICATION OF DERIVATIVES —
MAXIMA AND MINIMA: FIRST AND SECOND
DERIVATIVE TESTS — PYQS**

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A

Ques.	1																
Ans.	B, C, D																