

PART 1 - MATHEMATICS

Topic : Conic sections

SECTION-1 : (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	: -2	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 -2 marks.

1. Let $P(x_1, y_1)$ and $Q(x_2, y_2)$ be two distinct points on the ellipse

$$\frac{x^2}{9} + \frac{y^2}{4} = 1$$

such that $y_1 > 0$, and $y_2 > 0$. Let C denote the circle $x^2 + y^2 = 9$, and M be the point $(3, 0)$.

Suppose the line $x = x_1$ intersects C at R , and the line $x = x_2$ intersects C at S , such that the y -coordinates of R and S are positive. Let $\angle ROM = \frac{\pi}{6}$ and $\angle SOM = \frac{\pi}{3}$, where O denotes the origin $(0, 0)$. Let $|XY|$ denote the length of the line segment XY .

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

[JEE Advanced 2025 Paper 2]

- (A) The equation of the line joining P and Q is $2x + 3y = 3(1 + \sqrt{3})$
- (B) The equation of the line joining P and Q is $2x + y = 3(1 + \sqrt{3})$
- (C) If $N_2 = (x_2, 0)$, then $3|N_2Q| = 2|N_2S|$
- (D) If $N_1 = (x_1, 0)$, then $9|N_1P| = 4|N_1R|$

Scan or tap for the full solution



Space for Rough Work

JEE ADVANCED CONIC SECTIONS — ELLIPSE: STANDARD EQUATION, ECCENTRICITY, LATUS RECTUM — PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-1																								
Ques.	1																							
Ans.	A, C																							