

PART 1 - PHYSICS

Topic : Waves

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;

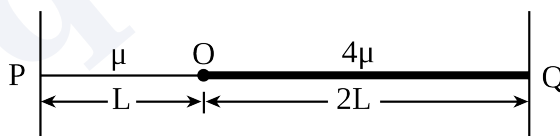
Partial Marks : +1 If two or more options are correct but ONLY one option is chosen and it is a correct option;

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. Two uniform strings of mass per unit length μ and 4μ , and length L and $2L$, respectively, are joined at point O, and tied at two fixed ends P and Q, as shown in the figure. The strings are under a uniform tension T . If we define the frequency $\nu_0 = \frac{1}{2L} \sqrt{\frac{T}{\mu}}$, which of the following statement(s) is(are) correct? [JEE Advanced 2024 Paper 1]



- (A) With a node at O, the minimum frequency of vibration of the composite string is ν_0 .
 (B) With an antinode at O, the minimum frequency of vibration of the composite string is $2\nu_0$.
 (C) When the composite string vibrates at the minimum frequency with a node at O, it has 6 nodes, including the end nodes.
 (D) No vibrational mode with an antinode at O is possible for the composite string.

Scan or tap for the full solution



Space for Rough Work

JEE ADVANCED WAVES — STANDING WAVES AND NORMAL MODES (STRINGS, ORGAN PIPES) — PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY
SECTION-A

Ques.	1																
Ans.	A, C, D																