

PART 1 - PHYSICS

Topic : Waves

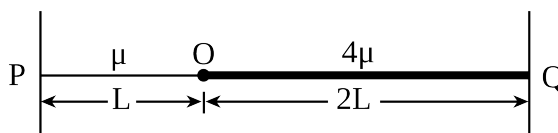
SECTION-1 : (Maximum Marks : 4)

- 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. 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?

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- (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-1																	
Ques.	1																
Ans.	A, C, D																