PART 1 - PHYSICS

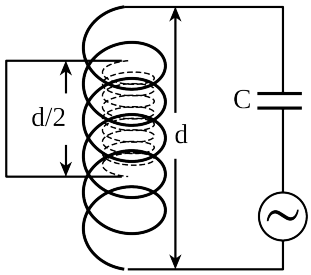
Topic : Electromagnetic induction

SECTION–1 : (Maximum Marks : 3)

- This section contains **ONE** question.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.
- For each question, choose the option corresponding to the correct answer.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks	: +3	If ONLY the correct option is chosen;
Zero Marks	: 0	If none of the options is chosen (i.e. the question is unanswered);
Negative Marks	: −1	In all other cases.

1. Consider a circuit consisting of a capacitor of capacitance C and a coil with N turns per unit length, cross sectional area S and length d, where $d^2 \gg S$. There is another coil of length d/2, cross sectional area S/2 and 2N turns per unit length completely inside the larger coil, as shown in the figure. The ends of this smaller coil are connected with each other by an insulated conducting wire. The self-inductance of the larger coil is L. Neglecting edge effects and all the Ohmic resistances, the resonant frequency of the circuit is: [JEE Advanced 2026 Paper 1]



(A) $\frac{4}{\sqrt{15LC}}$ (B) $\frac{6}{\sqrt{5LC}}$ (C) $\frac{2}{\sqrt{3LC}}$ (D) $\sqrt{\frac{2}{3LC}}$

Scan or tap for the full solution

Space for Rough Work

JEE ADVANCED ELECTROMAGNETIC INDUCTION — MUTUAL INDUCTANCE — PYQS

Test Pattern : **JEE (Advanced)**

ANSWER KEY

SECTION–1																													
Ques.	1																												
Ans.	**C**																												