

## PART 1 - PHYSICS

Topic : Moving charges and magnetism

## 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. An infinitely long wire, located on the z-axis, carries a current  $I$  along the +z-direction and produces the magnetic field  $\vec{B}$ . The magnitude of the line integral  $\oint \vec{B} \cdot d\vec{l}$  along a straight line from the point  $(-\sqrt{3}a, a, 0)$  to  $(a, a, 0)$  is given by

[ $\mu_0$  is the magnetic permeability of free space.]

[JEE Advanced 2024 Paper 1]

(A)  $7\mu_0 I/24$

(B)  $7\mu_0 I/12$

(C)  $\mu_0 I/8$

(D)  $\mu_0 I/6$

Scan or tap for the  
full solution



Space for Rough Work

JEE ADVANCED MOVING CHARGES AND MAGNETISM —  
AMPERE'S CIRCUITAL LAW AND ITS APPLICATIONS —  
PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

| SECTION-1 |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Ques.     | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ans.      | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |