

## PART 1 - MATHEMATICS

Topic : Probability (class 12)

## SECTION-B : (Maximum Marks : 8)

This section contains **TWO** questions.

The answer to each question is a **NUMERICAL VALUE**.

For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30) in the place designated to enter the answer.

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If **ONLY** the correct answer is entered;

Zero Marks : 0 In all other cases.

1. A bookshelf contains 6 distinct books of Mathematics and 5 distinct books of Physics. From these 11 books, 6 books are chosen at random. Let  $X$  be the absolute value of the difference between the number of Mathematics books chosen and the number of Physics books chosen. If  $\alpha$  is the mean of the random variable  $X$ , then the value of  $77\alpha$  is \_\_\_\_\_.

[JEE Advanced 2026 Paper 2]

Scan or tap for the  
full solution

2. Let  $X$  be a random variable, and let  $P(X = x)$  denote the probability that  $X$  takes the value  $x$ . Suppose that the points  $(x, P(X = x))$ ,  $x = 0, 1, 2, 3, 4$ , lie on a fixed straight line in the  $xy$ -plane, and  $P(X = x) = 0$  for all  $x \in \mathbb{R} - \{0, 1, 2, 3, 4\}$ . If the mean of  $X$  is  $\frac{5}{2}$ , and the variance of  $X$  is  $\alpha$ , then the value of  $24\alpha$  is \_\_\_\_\_.

[JEE Advanced 2024 Paper 1]

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full solution

Space for Rough Work

**JEE ADVANCED PROBABILITY (CLASS 12) — MEAN (EXPECTATION) OF A RANDOM VARIABLE — PYQS**

Test Pattern : JEE (Advanced)

**ANSWER KEY**

| SECTION-B |           |    |  |  |  |  |  |  |  |  |  |  |  |
|-----------|-----------|----|--|--|--|--|--|--|--|--|--|--|--|
| Ques.     | 1         | 2  |  |  |  |  |  |  |  |  |  |  |  |
| Ans.      | 99 to 101 | 42 |  |  |  |  |  |  |  |  |  |  |  |