

PART 1 - MATHEMATICS

Topic : Binomial theorem

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. Let R denote the set of all real numbers. Consider the polynomial function $f: R \rightarrow R$ defined by

$$f(x) = \frac{d^{10}}{dx^{10}}((x^2 - 1)^{10}), \quad \text{for all } x \in R.$$

Here $\frac{d^{10}}{dx^{10}}((x^2 - 1)^{10})$ is the 10th order derivative of the function $(x^2 - 1)^{10}$.

Then which of the following statements is (are) TRUE ?

[JEE Advanced 2026 Paper 2]

- (A) The coefficient of x^8 in the polynomial $f(x)$ is $(-10) \left(\frac{18!}{8!} \right)$
- (B) The value of $f(1) + f(-1)$ is equal to $10! \cdot 2^{11}$
- (C) The degree of the polynomial $f(x)$ is 10
- (D) The constant term of the polynomial $f(x)$ is $-\left(\frac{10!}{5!} \right)$

Scan or tap for the full solution



Space for Rough Work

SECTION-B : (Maximum Marks : 4)

This section contains **ONE** question.

The answer to each question is a **NON-NEGATIVE INTEGER**.

For each question, enter the correct integer corresponding to the answer 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.

2. Let $a_0, a_1, \dots, a_{23}$ be real numbers such that

$$\left(1 + \frac{2}{5}x\right)^{23} = \sum_{i=0}^{23} a_i x^i$$

for every real number x . Let a_r be the largest among the numbers a_j for $0 \leq j \leq 23$.

Then the value of r is _____.

[JEE Advanced 2025 Paper 2]

Scan or tap for the
full solution



Space for Rough Work

JEE ADVANCED BINOMIAL THEOREM — PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A																			
Ques.	1																		
Ans.	A, B, C																		

SECTION-B																			
Ques.	2																		
Ans.	6																		