

JEE Advanced 2023 Paper 1 Detailed Analysis

4th June, 2023 (Sunday 9:00 am – 12:00 pm)

The Joint Entrance Examination (Advanced) 2023 was conducted by the seven Zonal Coordinating IITs under the guidance of the Joint Admission Board 2023 (JAB). This year, IIT Guwahati conducted JEE Advanced 2023 in computer-based test (CBT) mode. JEE Advanced was held in two shifts. Paper 1 was conducted from 9 am to 12 pm and Paper 2 was conducted from 2:30 pm to 5:30 pm.

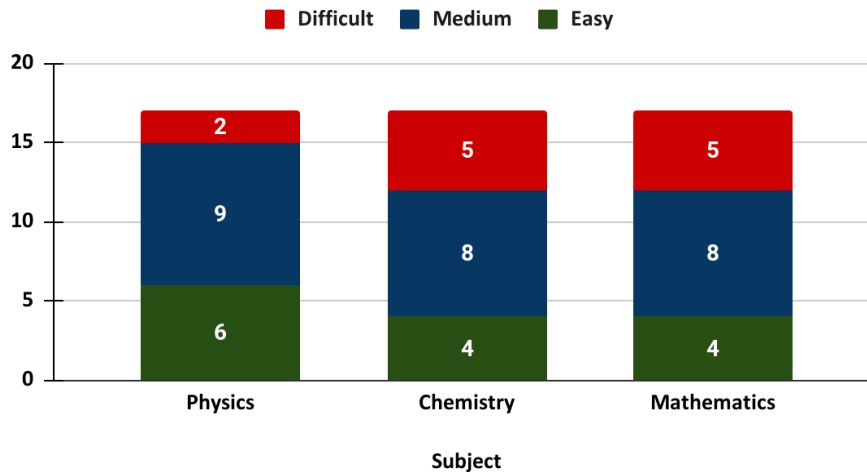
The paper pattern was different in comparison to last Year. Paper 1 had a total of 51 questions, distributed evenly across three subjects i.e, Physics, Chemistry & Mathematics.

SUBJECT-WISE DIFFICULTY LEVEL ANALYSIS: NO OF QUESTIONS

This is the analysis on the basis of an official question paper which was sent to the respective candidate. Hence it has covered all the questions.

Subject	Easy		Medium		Difficult		Grand Total	
	No of Questions	Total Marks	No of Questions	Total Marks	No of Questions	Total Marks	No of Questions	Total Marks
Physics	6	20	9	33	2	7	17	60
Chemistry	4	13	8	30	5	17	17	60
Mathematics	4	14	8	28	5	18	17	60
Grand Total	14	47	25	91	12	42	51	180

Subject Wise Difficulty Level



Experts feel that Mathematics Paper 1 had the maximum difficult questions as compared to Physics and Chemistry. Out of **180** marks, **47** marks constituted of easy level questions, **91** marks constituted of moderate level questions and **42** marks constituted of difficult level questions.

Physics

Following is the question distribution table as per Class,Chapter, Topic & Difficulty -

Q. No	Class	Subject	Chapter Name	Topic Name	Difficulty Level	Section	Question type	Marks per Question
1	11th	Physics	Work Powr Energy	Conservation of Mechanical Energy, Collision	Medium	1	MCQs more than one correct answer	4
2	12th	Physics	Ray optics & Optical instruments	Prism	Medium	1	MCQs more than one correct answer	4
3	12th	Physics	Current Electricity	RC Circuit	Medium	1	MCQs more than one correct answer	4
4	11th	Physics	System of Particles and Roational Motion	Collision	Medium	2	MCQs with one correct answer	3
5	12th	Physics	Electrostatic Potential and Capacitance	Capacitors	Easy	2	MCQs with one correct answer	3
6	11th	Physics	Thermodyna mics	Thermodynamics Process	Easy	2	MCQs with one correct answer	3
7	11th	Physics	Gravitation	Variation of g	Easy	2	MCQs with one correct answer	3
8	12th	Physics	Dual Nature of Radiation & Matter, Atoms	Photoelectric Effect	Easy	3	Non-negativ e integer type questions	4
9	12th	Physics	Ray optics & Optical instruments	Combination of Mirrors & Lenses	Difficult	3	Non-negativ e integer type	4

							questions	
10	12th	Physics	Experimental Physics	Determination of focal length & Estimation of Error in f	Medium	3	Non-negative integer type questions	4
11	11th	Physics	Thermodynamics	Thermodynamics Process	Medium	3	Non-negative integer type questions	4
12	12th	Physics	Ray optics & Optical instruments	Images & Shadows	Easy	3	Non-negative integer type questions	4
13	11th	Physics	Oscillations	Torsional Pendulum	Medium	3	Non-negative integer type questions	4
14	12th	Physics	Nuclei	Alpha and Beta decay	Easy	4	Match List	3
15	11th	Physics	Thermal Properties of Matter	Wein's displacement	Medium	4	Match List	3
16	12th	Physics	Alternating Current	Series LCR Circuit	Medium	4	Match List	3
17	12th	Physics	Electromagnetic Induction	Motional EMF	Difficult	4	Match List	3

Chemistry

Following is the question distribution table as per Class, Chapter, Topic & Difficulty -

Q. No	Class	Subject	Chapter Name	Topic Name	Difficulty Level	Section	Question type	Marks per Question
1	12th	Chemistry	Metallurgy	Extraction processes	Easy	1	MCQs more than one correct answer	4
2	12th	Chemistry	Aldehyde Ketones and Carboxylic acid	Name reactions	Difficult	1	MCQs more than one correct answer	4
3	12th	Chemistry	Aldehyde Ketones and Carboxylic acid	Name reactions	Medium	1	MCQs more than one correct answer	4

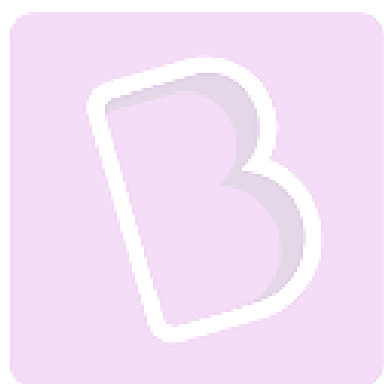
4	12th	Chemistry	d and f block elements	Properties of potassium permanganate	Difficult	1	MCQs with one correct answer	3
5	12th	Chemistry	Electrochemistry	Molar Conductance	Difficult	2	MCQs with one correct answer	3
6	11th	Chemistry	Ionic equilibrium	Solubility product	Medium	2	MCQs with one correct answer	3
7	12th	Chemistry	Alcohols and Phenols	Properties of Phenol	Difficult	2	MCQs with one correct answer	3
8	11th	Chemistry	P block elements	Silicones	Medium	3	Non-negative integer type questions	4
9	11th	Chemistry	States of matter	Compressibility factor	Medium	3	Non-negative integer type questions	4
10	12th	Chemistry	Chemical Kinetics	Arrhenius equation	Medium	3	Non-negative integer type questions	4
11	11th	Chemistry	Thermodynamics	Thermodynamic processes	Difficult	3	Non-negative integer type questions	4
12	11th	Chemistry	Thermodynamics	Gibbs's Energy	Medium	3	Non-negative integer type questions	4
13	12th	Chemistry	Haloalkane and haloarenes	Isomers	Medium	3	Non-negative integer type questions	4
14	12th	Chemistry	P block elements	Reaction of Phosphorus	Easy	4	Match List	3
15	12th	Chemistry	Coordination compounds	Calculation of CFSE	Easy	4	Match List	3
16	12th	Chemistry	Haloalkane and haloarenes	Substitution nucleophilic reactions	Medium	4	Match List	3
17	12th	Chemistry	Aldehyde Ketones and Carboxylic acid	Name reactions	Easy	4	Match List	3

Mathematics

Mathematics had moderate to difficult levels of questions. Chemistry had 14 medium and 1 easy & 3 difficult questions. Following is the question distribution table as per Class, Chapter, Topic & Difficulty -

Q. No	Class	Subject	Chapter Name	Topic Name	Difficulty Level	Section	Question type	Marks per Question
1	12th	Mathematics	Continuity and Differentiability	Continuity and Differentiability	Medium	1	MCQs more than one correct answer	4
2	11th	Mathematics	Conics Section II	Common tangents to Parabola and Eclipse	Easy	1	MCQs more than one correct answer	4
3	12th	Mathematics	Application of Integrals	Area Under curve	Difficult	1	MCQs more than one correct answer	4
4	11th	Mathematics	Limits & Derivatives	Limits	Difficult	2	MCQs with one correct answer	3
5	12th	Mathematics	Three Dimensional Geometry	Shortest distance between two skew lines	Medium	2	MCQs with one correct answer	3
6	12th	Mathematics	Probability	Geometrical Probability	Difficult	2	MCQs with one correct answer	3
7	11th	Mathematics	Conics Section II	Parabola	Easy	2	MCQs with one correct answer	3
8	12th	Mathematics	Inverse Trigonometric functions	Properties of ITF	Medium	3	Non-negative integer type questions	4
9	11th	Mathematics	Straight line	Area of triangle	Medium	3	Non-negative integer type questions	4
10	11th	Mathematics	Sequence and series	Special series	Difficult	3	Non-negative integer type questions	4
11	11th	Mathematics	Complex Numbers	Conjugate	Medium	3	Non-negative integer type questions	4
12	12th	Mathematics	Three	3D	Difficult	3	Non-negative	4

			Dimensional Geometry				integer type questions	
13	11th	Mathematics	Binomial Theorem	Finding coefficients	Easy	3	Non-negative integer type questions	4
14	12th	Mathematics	Matrices and Determinants	System of Equation	Medium	4	Match List	3
15	11th	Mathematics	Statistics	Mean deviation	Easy	4	Match List	3
16	12th	Mathematics	Three Dimensional Geometry	Perpendicular distance of a point from a plane	Medium	4	Match List	3
17	11th	Mathematics	Complex Numbers	Geometry of Complex numbers	Medium	4	Match List	3

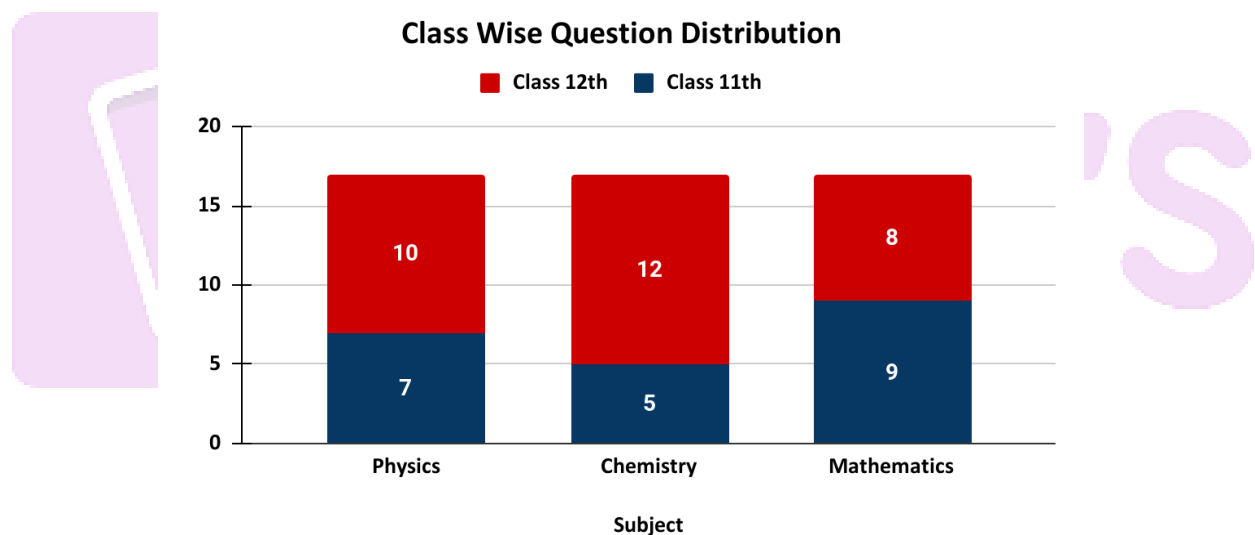


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CLASS WISE QUESTION DISTRIBUTION

As per our expert faculties, the questions from Class 12th syllabus dominated Class 11th syllabus in Physics and Chemistry. In Mathematics, the Class 11th syllabus dominated the Class 12th syllabus. Below is the Class wise question distribution table -

Subject	11th		12th		Total Percentage	
	No. of Questions	Total Marks	No of Questions	Total Marks	Class 11	Class 12
Physics	7	24	10	36	39%	56%
Chemistry	5	19	12	41	28%	67%
Mathematics	9	32	8	28	50%	44%
Grand Total	21	75	30	105	39%	56%



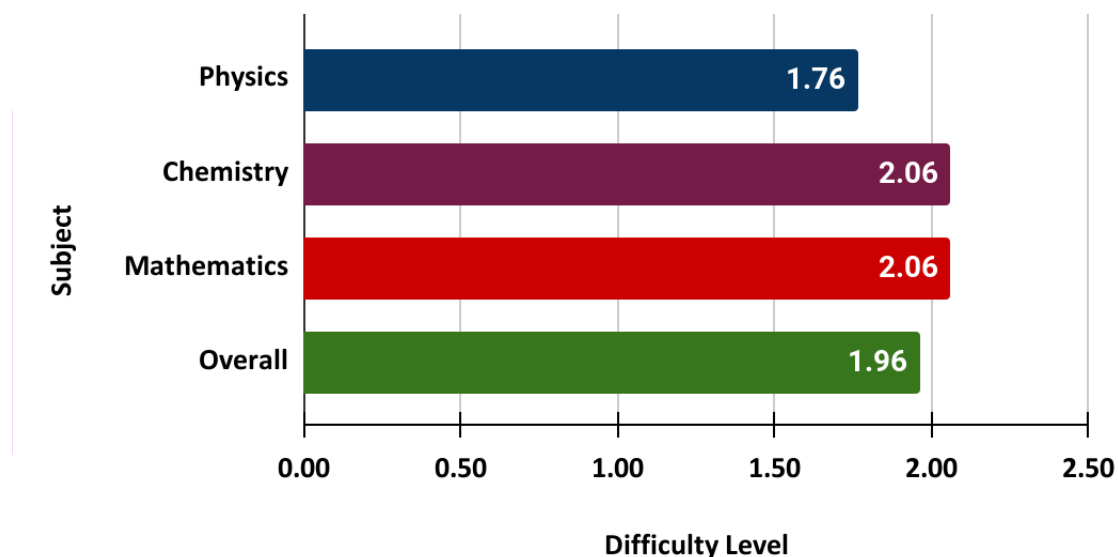
OVERALL DIFFICULTY LEVEL ANALYSIS

In this analysis, we have rated every question on a scale of 1 to 3. The individual ratings are then averaged to calculate the overall difficulty level.

- 1: Easy
- 2: Moderate
- 3: Difficult

Subject	Difficulty Level
Physics	1.76
Chemistry	2.06
Mathematics	2.06
Overall	1.96

Overall Difficulty Level - JEE Mains 2023



In Physics, more weightage was given to chapters like Thermodynamics, Ray optics, Work Power Energy, Current Electricity, Gravitation, Modern Physics, Alternating Current, EMI. Physics was of moderate difficulty but easy in comparison to last year.

In Chemistry, more weightage was given to Organic and Physical chemistry as compared to Inorganic. Inorganic Chemistry had a few questions that were directly from NCERT. Chemistry was on the difficult side in difficulty level.

In Mathematics, questions were unbalanced and tricky. Coordinate Geometry, Algebra and Calculus had more questions in the paper. Mixed concept questions were taken from Application of Integration, Probability. The mathematics section was the toughest as compared to the other subjects.

The overall difficulty of JEE Advanced (Paper 1) 2023 was of moderate difficulty and was comparatively a bit tougher than Paper 2.

*The overall difficulty level of the paper was moderate to difficult. As per our subject experts, Physics was moderately easy, Chemistry was of moderate difficulty and Maths was relatively difficult. Paper 1 was a bit more difficult than Paper 2.

