A Detailed Analysis of JEE Main Session 2 Paper (B.E./B.Tech) 2023
12th April 2023 Shift 1 (9 am - 12 pm)
(Memory Based)

> **Disclaimer: Although students had to answer only 75 questions in exam, analysis below pertains to <=90 questions**

The JEE Main 2023 (B.E./B.Tech) exam is being conducted entirely in computer-based mode by the National Testing Agency (NTA). JEE Main Exam 2023 (B.E./B.Tech.) will be held on 6th, 8th, 10th, 11th, and 12th April, 2023. The paper will be conducted in two shifts, i.e. **first shift from 9:00 am to 12:00 pm** & second shift from 3:00 pm to 6:00 pm.

JEE Main Exam Pattern 2023: Paper 1 (B.E/B.Tech)

Particulars	Details
Exam Mode	Computer-based examination
Test Duration	Three hours
No. of Subjects	(i)Physics (ii)Chemistry (iii)Mathematics
Type of questions	MCQs: 4 options with only 1 correct option Numerical Value Questions: Questions whose answers are to be filled in as a numerical value
JEE Mains Total No. of questions **Total: 75 Questions (25 questions in each subject)**	**Mathematics: 25 (20+10)** 20 Questions were compulsory MCQ Based & 10 Questions were answers as a numerical value. Out of these 10 questions, 5 questions are compulsory. **Physics: 25 (20+10)** 20 Questions were compulsory MCQ Based & 10 Questions were answers as a numerical value. Out of these 10 questions, 5 questions are compulsory. **Chemistry: 25 (20+10)** 20 Questions were compulsory MCQ Based & 10 Questions were answers as a numerical value. Out of these 10 questions, 5 questions are compulsory.
JEE Mains Total Marks	**300 Marks**
JEE Main Marking Scheme	**MCQ's**: Four marks will be awarded for each correct answer and there will be a negative marking of one mark for each wrong answer. **Questions with numerical value answers:** Four marks will be awarded for each correct answer and there will be a negative marking of one mark for each wrong answer.

Subject Wise Difficulty Level Analysis

Although it was a memory-based question analysis, our experts could figure out **68 questions out of 90 i.e.**, **25** questions in Physics, **23** questions in Chemistry and **20** questions in Mathematics.

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	18	72	7	28	0	0	25	100
Chemistry	18	72	5	20	0	0	23	92
Mathematics	10	40	5	20	5	20	20	80
Grand Total	**46**	**184**	**17**	**68**	**5**	**20**	**68**	**272**

Subject Wise Difficulty Level Analysis
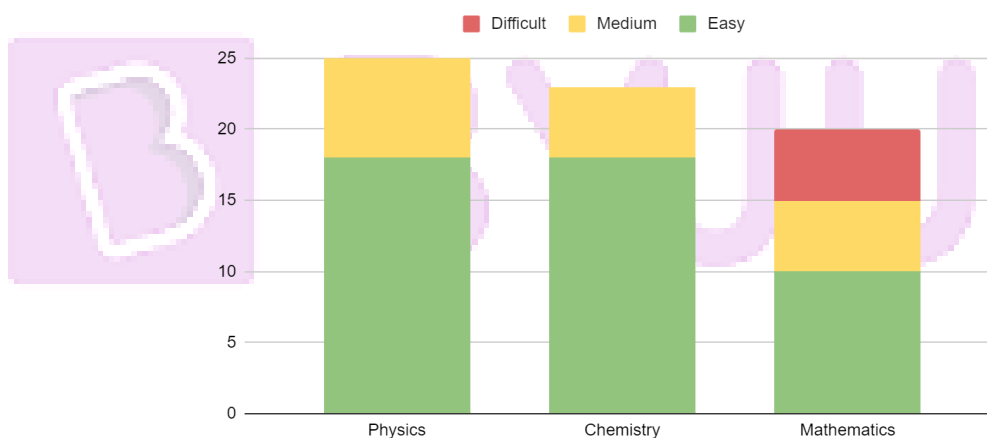
- Physics was rated as easy to moderate on the difficulty level. It consisted mostly of easy & moderate questions. Most of the questions were NCERT based and were evenly distributed among all major units and.
- Chemistry was rated as easiest out of the all. Number of questions in Physical Chemistry was more than Inorganic Chemistry and Organic Chemistry.
- Mathematics was rated as moderate to difficult. Questions were asked from all chapters. Emphasis was on Algebra & on Calculus.

Question Wise Distribution Analysis

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

Physics

Date & Shift	Question No	Class	Section	Subject	Chapter Name	Topic Name	Difficulty Level
12th April Shift 1	1	11th	A	Physics	Gravitation	Escape Speed	Easy
12th April Shift 1	2	12th	A	Physics	Dual Nature Of Matter & Radiation	de Broglie Hypothesis	Easy
12th April Shift 1	3	11th	A	Physics	Laws Of Motion	Equilibrium Of Forces	Easy
12th April Shift 1	4	11th	A	Physics	Thermal Properties Of Matter	Newton's Law Of Cooling	Easy
12th April Shift 1	5	11th	A	Physics	Kinetic Theory Of Gases	RMS and Most Probable Speed	Easy
12th April Shift 1	6	12th	A	Physics	Magnetism & Matter	Oscillation Of Dipole In Magnetic Field	Medium
12th April Shift 1	7	11th	A	Physics	Work Energy & Power	Work Done Against Friction	Easy
12th April Shift 1	8	11th	A	Physics	Gravitation	Satellite & Planetary Motion	Easy
12th April Shift 1	9	12th	A	Physics	Ray Optics & Optical Instruments	Refraction Of Light	Easy
12th April Shift 1	10	11th	A	Physics	Work Energy & Power	Kintic Energy and Stopping Distance	Medium

12th April Shift 1	11	11th	A	Physics	Units & Measurements	Dimensional Analysis	Easy
12th April Shift 1	12	12th	A	Physics	Current Electricity	Resistance Of A Resistor	Easy
12th April Shift 1	13	12th	A	Physics	Alternating Current	Series LCR Circuits	Medium
12th April Shift 1	14	12th	A	Physics	Electric Charges & Fields	Electric Flux & Gauss's Law	Medium
12th April Shift 1	15	12th	A	Physics	Electromagnetic Induction	Induced EMF	Medium
12th April Shift 1	16	11th	A	Physics	Oscillations	S.H.M.	Easy
12th April Shift 1	17	12th	A	Physics	Current Electricity	Variation Of Resistance due To Temperature	Medium
12th April Shift 1	18	12th	A	Physics	Electromagnetic Waves	Properties Of EM Waves	Easy
12th April Shift 1	19	11th	A	Physics	Thermodynamics	Efficiency Of Carnot's Engine	Easy
12th April Shift 1	20	11th	A	Physics	Waves	Standing Waves In Closed Organ Pipe	Easy
12th April Shift 1	21	11th	B	Physics	Motion In A Straight Line	Motion Under Gravity	Easy
12th April Shift 1	22	12th	B	Physics	Electrostatic Potential & Capacitance	Electric Potential	Medium
12th April Shift 1	23	12th	B	Physics	Ray Optics & Optical Instruments	Refraction Through Lenses	Easy

12th April Shift 1	24	12th	B	Physics	Atom	Hydrogen Spectrum	Easy
12th April Shift 1	25	11th	B	Physics	System Of Particles & Rotational Motion	Rolling Motion	Easy

Chemistry

12th April Shift 1	31	11th	A	Chemistry	s block elements	Chemical reactions	Easy
12th April Shift 1	32	11th	A	Chemistry	Some basic concept of organic chemistry	Ozonolysis	Easy
12th April Shift 1	33	11th	A	Chemistry	Hydrogen	Hydrides	Easy
12th April Shift 1	34	12th	A	Chemistry	Polymers	Classification of polymers	Easy
12th April Shift 1	35	12th	A	Chemistry	d and f block elements	f block elements	Easy
12th April Shift 1	36	11th	A	Chemistry	s block elements	Physical properties	Easy
12th April Shift 1	37	11th	A	Chemistry	States of Matter	Andrews Isotherm-Critical points	Medium
12th April Shift 1	38	12th	A	Chemistry	Solutions	Relative lowering in vapour pressure	Easy
12th April Shift 1	39	11th	A	Chemistry	p block elements- I	Physical properties on Boron	Easy
12th April Shift 1	40	11th	A	Chemistry	Chemical Bonding	Molecular Orbital Theory	Easy

12th April Shift 1	41	12th	A	Chemistry	Metallurgy	Elingham diagram	Medium
12th April Shift 1	42	11th	A	Chemistry	States of Matter	Kinetic Theory of gases	Easy
12th April Shift 1	43	11th	A	Chemistry	Atomic structure	Bohr model of Hydrogen	Easy
12th April Shift 1	44	11th	A	Chemistry	Chemical Kinetics	Order of a reaction	Easy
12th April Shift 1	45	12th	A	Chemistry	Haloalkanes and Haloarenes	Grignard reagent	Medium
12th April Shift 1	46	12th	A	Chemistry	Electrochemistry	Cells	Easy
12th April Shift 1	47	12th	A	Chemistry	Aldehyde Ketones and carboxylic acid	Oxidation reactions -Tollen's reagent	Easy
12th April Shift 1	48	11th	A	Chemistry	p block elements- II	Group 14 elements	Easy
12th April Shift 1	49	11th	B	Chemistry	Atomic structure	Photoelectric effect	Easy
12th April Shift 1	50	11th	B	Chemistry	Some basic concept of chemistry	Mole concept	Easy
12th April Shift 1	51	11th	B	Chemistry	Equilibrium	PH	Easy
12th April Shift 1	52	11th	B	Chemistry	Thermodynamics	Entropy	Medium
12th April Shift 1	53	12th	B	Chemistry	Biomolecules	Peptide linkage	Medium

Mathematics

12th April Shift 1	61	11th	A	Mathematics	Conics Section 2	Circles	Easy
12th April Shift 1	62	12th	A	Mathematics	Applications of Integrals	Area bounded by two curves	Medium
12th April Shift 1	63	12th	A	Mathematics	Differential Equations	Bernoulli forms of differential equation	Difficult
12th April Shift 1	64	11th	A	Mathematics	Binomial theorem	Properties of Binomial theorem	Easy
12th April Shift 1	65	11th	A	Mathematics	Statistics	Mean and variance	Difficult
12th April Shift 1	66	12th	A	Mathematics	Determinants	Properties of determinants	Easy
12th April Shift 1	67	11th	A	Mathematics	Trigonometric Functions 2	Properties of triangle	Difficult
12th April Shift 1	68	11th	A	Mathematics	Quadratic equations	Relations between roots and coefficients	Easy
12th April Shift 1	69	12th	A	Mathematics	3 D geometry	Family of plane	Difficult
12th April Shift 1	70	11th	A	Mathematics	Complex numbers	Geometry of complex numbers	Medium
12th April Shift 1	71	12th	A	Mathematics	Vectors	Products	Medium
12th April Shift 1	72	11th	A	Mathematics	Sequence and series	Miscellaneous sequences	Difficult

12th April Shift 1	73	11th	B	Mathematics	Binomial Theorem	Binomial Coeff series	Easy
12th April Shift 1	74	12th	B	Mathematics	Definite Integration	Integration of non differential function	Easy
12th April Shift 1	75	11th	B	Mathematics	Permutations and combinations	restricted permutations	Easy
12th April Shift 1	76	11th	B	Mathematics	Permutations and combinations	Restricted counting	Easy
12th April Shift 1	77	12th	B	Mathematics	Vectors	Coplanar Vectors	Easy
12th April Shift 1	78	12th	B	Mathematics	LImits continuity and differentiability	Continuity	Easy
12th April Shift 1	79	11th	B	Mathematics	Conics	Ellipse diameter	Medium
12th April Shift 1	80	12th	B	Mathematics	Relations and functions	Relations	Medium

Class Wise Distribution Level Analysis

As per our expert faculties, the questions from the **Class 12th syllabus dominated Class 11th syllabus**. Below is the Class wise question distribution table -

Subject	11th		12th	
	No. of Questions	Total Marks	No. of Questions	Total Marks
Physics	13	52	12	48
Chemistry	15	60	8	32
Mathematics	11	44	9	36
Grand Total	39	156	29	116

**Class Wise Distribution Analysis**
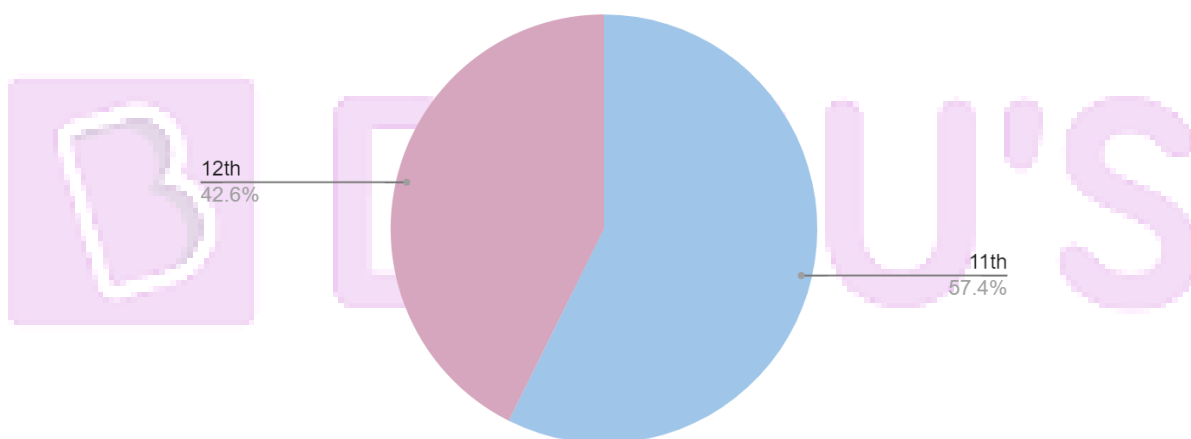
- In Physics, questions from Class 11th & Class 12th syllabus were approximately of the same weightage.
- In Chemistry, majorly questions were from the Class 11th syllabus.
- In Mathematics, majorly questions were from the Class 11th syllabus.
- Overall the questions from Class 11th syllabus dominated the paper.

Overall Difficulty Level Analysis

In this analysis, we have rated every question on a scale of 1 to 3. The ratings are done by our expert faculty. The individual ratings are then averaged to calculate the overall difficulty level.
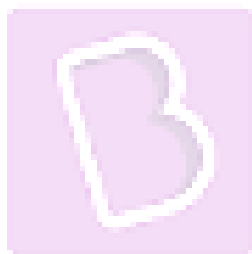
- Easy - 1
- Medium - 2
- Difficult - 3

Subject	Difficulty Level
Physics	1.28
Chemistry	1.22
Mathematics	1.75
Overall	**1.40**
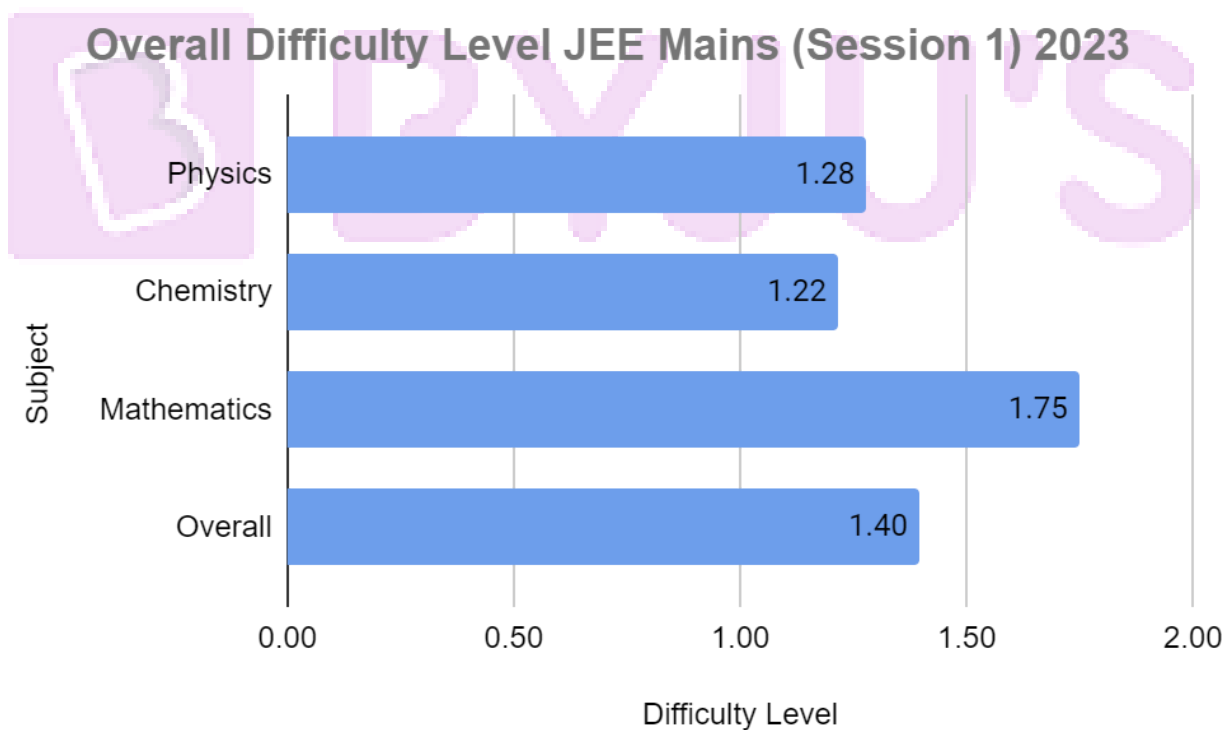
Conclusion

The overall difficulty of **JEE Main (Session 2) 12th April 2023 - Shift 1** was **easy to moderate. Mathematics was the most difficult subject to attempt out of all three subjects.**

The order of difficulty in different subjects- as assessed by our experts is Mathematics > Physics > Chemistry.