A Detailed Analysis of JEE Main Session 2 Paper (B.E./B.Tech) 2023 13th April 2023 Shift 2 (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.
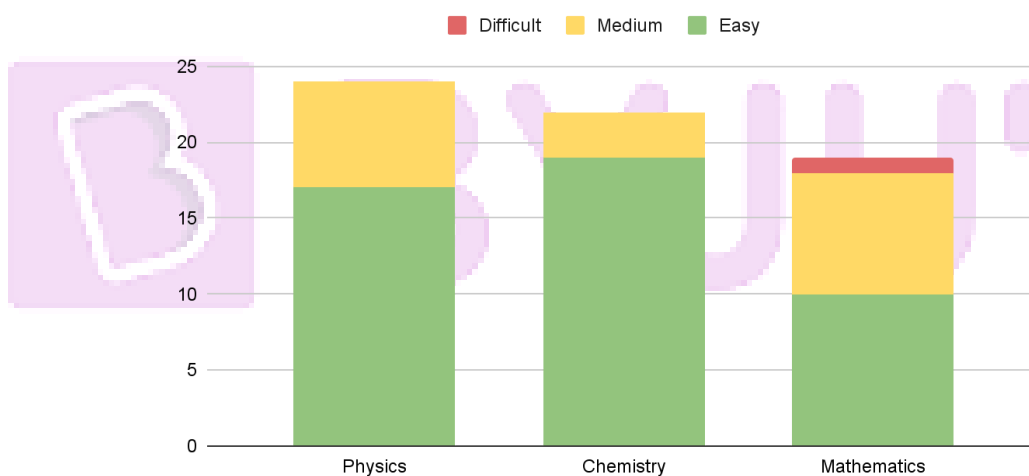
JEE Main Exam Pattern 2023: Paper 1 (B.E/B.Tech)

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 **65 questions out of 90 i.e. 24** questions in Physics, **22** questions in Chemistry and **19** 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	17	68	7	28	0	0	24	96
Chemistry	19	76	3	12	0	0	22	88
Mathematics	10	40	8	32	1	4	19	76
Grand Total	46	184	18	72	1	4	65	260

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.
- Chemistry was rated as easiest out of the all. Inorganic & Organic Chemistry had more weightage compared to Physical Chemistry.
- Mathematics was rated as moderate to difficult on the difficulty level. Questions were asked from all chapters. Emphasis was on Algebra & 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
13th April Shift 2	1	12th	A	Physics	Communication System	Height Of Transmitting Antenna	Easy
13th April Shift 2	2	12th	A	Physics	Electric Charges & Fields	Electrostatics Forces	Easy
13th April Shift 2	3	11th	A	Physics	Motion In A Straight Line	Relative Speed	Easy
13th April Shift 2	4	11th	A	Physics	Oscillations	Energy Of Particle In SHM	Easy
13th April Shift 2	5	12th	A	Physics	Current Electricty	Electrical Circuits	Medium
13th April Shift 2	6	12th	A	Physics	Moving Charges & Magnetism	Motion Of Charges In Magnetic Field	Easy
13th April Shift 2	7	11th	A	Physics	System Of Particles & Rotational Motion	Rotational Motion	Easy
13th April Shift 2	8	11th	A	Physics	Gravitation	Acceleration Due To Gravity	Easy

13th April Shift 2	9	12th	A	Physics	Nuclei	Binding Energy Of Nuclei	Easy
13th April Shift 2	10	12th	A	Physics	Wave Optics	Young's Double SLit Experiment	Easy
13th April Shift 2	11	12th	A	Physics	Moving Charges & Magnetism	Force Oa A Current Carrying Conductor In Magnetic Field	Medium
13th April Shift 2	12	11th	A	Physics	Thermodynamics	Adiabatic Process	Easy
13th April Shift 2	13	11th	A	Physics	Units & Measurements	Error Analysis	Medium
13th April Shift 2	14	12th	A	Physics	Alternating Current	Impedance & Power Factor	Medium
13th April Shift 2	15	11th	A	Physics	Motion In A Straight Line	Position Time Relation	Easy
13th April Shift 2	16	12th	A	Physics	Alternating Current	Power in AC Circuit and Resonance	Easy
13th April Shift 2	17	12th	A	Physics	Solids & Semiconductor Devices	Logic Gates	Medium
13th April Shift 2	18	11th	A	Physics	Units & Measurements	Dimensional Analysis	Easy

13th April Shift 2	19	12th	A	Physics	Electromagnetic Waves	Properties Of EM Waves	Easy
13th April Shift 2	20		A	Physics			
13th April Shift 2	21	12th	B	Physics	Ray Optics & Optical Instruments	Lens Maker's Formula	Easy
13th April Shift 2	22	11th	B	Physics	Work Energy & Power	Kinetic Energy	Easy
13th April Shift 2	23	12th	B	Physics	Atoms	Radiation & Absorption Of Energy	Medium
13th April Shift 2	24	11th	B	Physics	Laws Of Motion	Centripetal Force	Easy
13th April Shift 2	25	11th	B	Physics	Thermal Properties Of Matter	Conduction Of Heat	Medium

Chemistry

13th April Shift 2	31	12th	A	Chemistry	Alcohol phenols and ether	Acidic strength	Easy
13th April Shift 2	32	11th	A	Chemistry	s block elements	Halides of Beryllium	Easy

13th April Shift 2	33	11th	A	Chemistry	s block elements	Enthalpy of formations	Easy
13th April Shift 2	34	12th	A	Chemistry	Amines	Chemical reactions	Easy
13th April Shift 2	35	11th	A	Chemistry	Chemical Bonding	VSEPR Theory	Easy
13th April Shift 2	36	11th	A	Chemistry	Qualitative analysis	Basic radicals	Easy
13th April Shift 2	37	12th	A	Chemistry	P block elements-II	Group 17 - Reduction Potential	Easy
13th April Shift 2	38	12th	A	Chemistry	Biomolecules	Amino acids	Easy
13th April Shift 2	39	12th	A	Chemistry	Polymers	Classification of polymers	Easy
13th April Shift 2	40	12th	A	Chemistry	Aldehyde ketones and carboxylic acid	Nucleophilic addition reaction	Medium
13th April Shift 2	41	11th	A	Chemistry	Hydrocarbons	Preparation of alkenes	Medium
13th April Shift 2	42	11th	A	Chemistry	Some basic concept of organic chemistry	Aromaticity	Easy

13th April Shift 2	43	12th	A	Chemistry	Coordination chemistry	VSEPR Theory	Easy
13th April Shift 2	44	11th	A	Chemistry	Environmental chemistry	Green house gases	Easy
13th April Shift 2	45	11th	B	Chemistry	Atomic structure	Bohr model	Easy
13th April Shift 2	46	12th	B	Chemistry	Coordination chemistry	Isomerism	Easy
13th April Shift 2	47	11th	B	Chemistry	Ionic equilibrium	Buffer solution	Easy
13th April Shift 2	48	12th	B	Chemistry	Solutions	colligative properties	Easy
13th April Shift 2	49	12th	B	Chemistry	Solutions	Raoult's law	Medium
13th April Shift 2	50	12th	B	Chemistry	Solid state	BCC Unit cell	Easy
13th April Shift 2	51	11th	B	Chemistry	Redox reaction	Equation balancing	Easy
13th April Shift 2	52	11th	B	Chemistry	P block elements	Borax	Easy

Mathematics

13th April Shift 2	61	12th	A	Mathematics	Inverse Trigonometric functions	Properties of Inverse trigonometric functions	Medium
13th April Shift 2	62	11th	A	Mathematics	Complex numbers	De Moivere's theorem	Easy
13th April Shift 2	63	12th	A	Mathematics	Relations and functions	Range of FUnctions	Medium
13th April Shift 2	64	11th	A	Mathematics	Binomial Theorem	General Terms	Easy
13th April Shift 2	65	11th	A	Mathematics	Permutations and Combinations	Permutations	Medium
13th April Shift 2	66	12th	A	Mathematics	Definite Integrals	Properties of definite integrals	Easy
13th April Shift 2	67	12th	A	Mathematics	Determinants	Adjoint	Medium
13th April Shift 2	68	11th	A	Mathematics	Statistics	Variancw	Medium
13th April Shift 2	69	11th	A	Mathematics	Complex numbers	Inequality of complex numbers	Easy

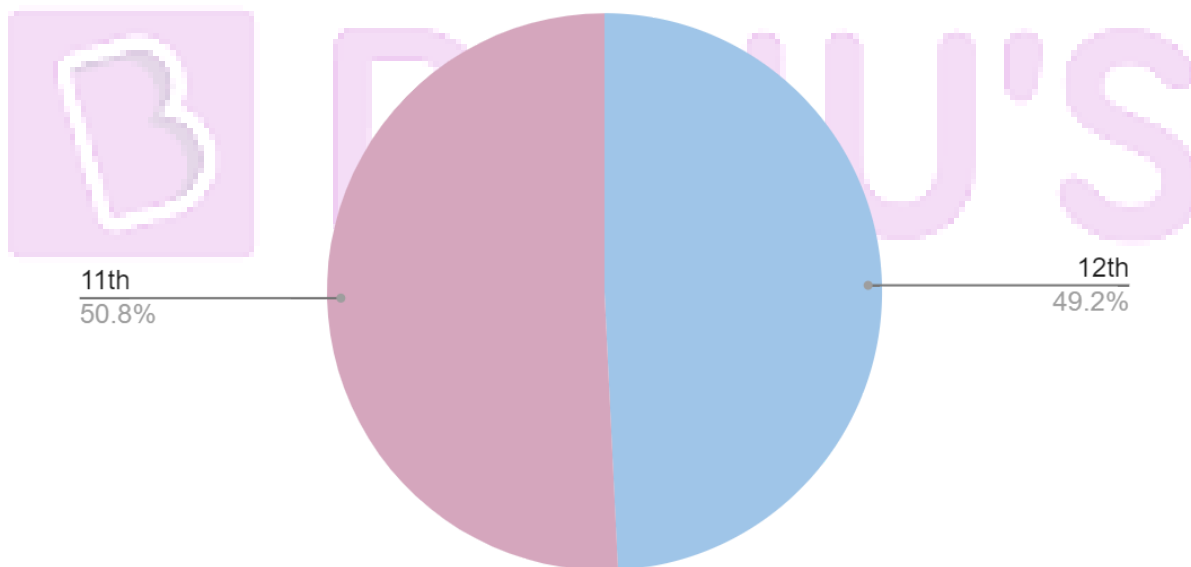|							
13th April Shift 2	70	12th	A	Mathematics	Applications of Integrals	Area Bounded by two curves	Medium
13th April Shift 2	71	11th	A	Mathematics	Sequence and Series	Geometric Progression	Easy
13th April Shift 2	72	11th	A	Mathematics	Mathematical Reasoning	Distributive law	Easy
13th April Shift 2	73	12th	A	Mathematics	3D geometry	Line coplanarity	Easy
13th April Shift 2	74	12th	A	Mathematics	Vectors	Cross Products	Easy
13th April Shift 2	75	12th	A	Mathematics	3 D geometry	Line and Plane	Easy
13th April Shift 2	76	11th	A	Mathematics	Straight lines	Important centres of triangle	Difficult
13th April Shift 2	77	11th	B	Mathematics	Binomial Theorem	Remainder problem	Medium
13th April Shift 2	78	11th	B	Mathematics	Sequence and series	Special series	Medium
13th April Shift 2	79	11th	B	Mathematics	Permutations and combinations	Ranks problem	Easy

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	11	44	13	52
Chemistry	11	44	11	44
Mathematics	11	44	8	32
Grand Total	**33**	**132**	**32**	**128**

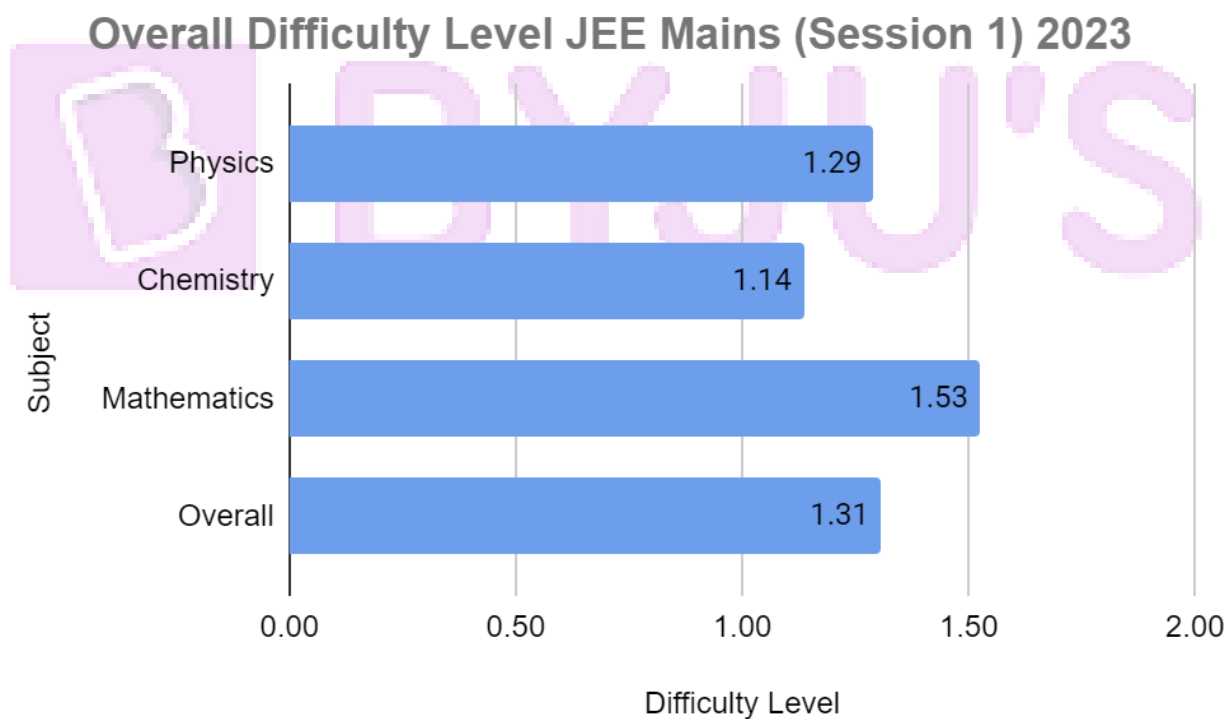## Class Wise Distribution Analysis

11th
50.8%

12th
49.2%

- In Physics, questions from Class 11th & Class 12th syllabus were approximately of the same weightage.
- In Chemistry, questions from Class 11th & Class 12th syllabus were approximately of the same weightage.
- In Mathematics, majorly questions were from the Class 11th syllabus.

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.
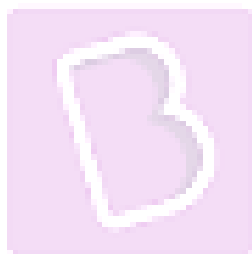
- Easy - 1
- Medium - 2
- Difficult - 3

Subject	Difficulty Level
Physics	1.29
Chemistry	1.14
Mathematics	1.53
Overall	1.31

Overall Difficulty Level JEE Mains (Session 1) 2023

Conclusion

The overall difficulty of **JEE Main (Session 2) 13th April 2023 - Shift 2** was **easy to moderate.** The order of difficulty in different subjects- as assessed by our experts is Mathematics > Physics > Chemistry.