

NSEA - 2019

A Detailed Analysis by Resonance

INTRODUCTION

On 24th November 2019, NSEA (National Standard Examination in Astronomy) – 2019 exam was conducted by the Indian Association of Physics Teachers (IAPT) at many centers all over the country. NSEA is the stepping stage for selection of aspiring and talented students in the astronomy Olympiad Program. The student can move forward to other stages only after clearing this stage.

Eligibility: Only Indian citizens with date of birth between 1 July 2000 and 30 June 2005, both days inclusive and studying in Class XII or lower as of November 30, 2019, can apply and appear for NSEA 2019. The student has to himself re-assure his eligibility. At any stage if the student is found to be not eligible for the exam, he/she may be disqualified from the program. The student must not be appearing in NSEJS 2019.

Syllabus: The syllabus for National Standard Examination in Astronomy (NSEA) is almost similar as the curriculum of senior secondary level (Class XI and Class XII) of CBSE. However, only basic guideline for the course is mentioned. No detailed syllabus is given for NSEA. There is greater emphasis on physics and mathematics (calculus not asked) and elementary astronomy.

Question Paper: The medium of test was English only and it comprised of 80 objective type questions, each with only one of the four options correct with 3 marks each and -1 negative marking for incorrect answer.

Qualifying for the Second Stage: The basic objective of conducting this test is not focusing on merit but to involve as many students from the country to participate in the exam and try to show and expose their talent. Hence the selection to the stage II examinations i.e. Indian National Olympiad Examinations (INOs) is based on the following scheme.

- **Cutoff:** To be eligible to get to the next level, i.e. the second stage, it is necessary that a student scores at-least a Minimum Admissible Score (MAS) which is 50% of the average of the top ten scores in that subject.
- **Proportional Representation Clause:** The maximum number of students that can get to Stage II (INO) in each subject is around 300. These many students are not selected only on the merit basis but also on proportionate basis. This proportion is decided on the base of the number of candidates who appeared for NSE in the previous year from that center in each State or Union Territory (UT). In case there is a tie at the last position, then all the students competing for the last position will be eligible to move to stage II. However it's necessary that the selected students fulfill the eligibility clause laid out above. The total number to be selected from centers in each State for each subject will be displayed on the IAPT and HBCSE website.

- **Minimum Representation Clause:** Notwithstanding the proportional representation clause the number of students selected for INO from each State and UT must be at least five, provided that the eligibility clause is satisfied.
- **Merit Clause:** As stated above, approximately 300 students are to be selected for second stage. If this does not happen according to MAS, then after selection as per merit, the shortfall from 300 students will be selected based purely on merit without further consideration to proportional representation and minimum representation clauses. In the event of a tie at the last position in the list all students with the same marks at this position will qualify to appear for the Stage II examination.

There will be no other criterion or provision for selection to the Indian National Olympiad Examinations (INOs). All students who qualify to appear for the INAO get a certificate of merit from IAPT.

OVERALL MARKS DISTRIBUTION

The paper pattern was same as last year. The paper had 80 questions each worth 3 marks. All questions were objective type with single correct option each carrying 1 negative mark for incorrect attempt. The subject wise breakup is as follows:

SUBJECT	Class 11		Class 12		Total	
	No of Q.	Total Marks	No of Q.	Total Marks	No of Q.	Total Marks
Astronomy	Total 17 Questions of 51 Marks					51
Mathematics	22	66	7	21	29	87
Physics	22	66	12	36	34	102

SUBJECT WISE ANALYSIS

PHYSICS AND ASTRONOMY ANALYSIS

PHYSICS			
UNIT & TOPIC NAME	NO OF QUESTIONS	TOTAL MARKS	(%) WEIGHTAGE
Physics	51	153	100.00%
Electrodynamics	7	21	13.73%
Capacitance	1	3	1.96%
Electro Magnetic Field	4	12	7.84%
Electrostatics	2	6	3.92%
Heat & Thermodynamics	1	3	1.96%
KTG & Thermodynamics	1	3	1.96%
Mechanics	18	54	35.29%
Rigid Body Dynamics	1	3	1.96%
Work, Power & Energy	3	9	5.88%
Centre of Mass	1	3	1.96%
Rectilinear Motion & Vectors	1	3	1.96%
Gravitation	2	6	3.92%
Projectile Motion	4	12	7.84%
Newton's Laws of Motion	1	3	1.96%
Fluid Mechanics & Properties of Matter	5	15	9.80%
Modern Physics	3	9	5.88%
Nuclear Physics	1	3	1.96%
Atomic Physics	1	3	1.96%
Photoelectric effect	1	3	1.96%
Optics	1	3	1.96%
Geometrical Optics & Physical Optics	1	3	1.96%
SHM & Waves	3	9	5.88%
SHM	3	9	5.88%
Principle of Communication	1	3	1.96%
Principle of Communication	1	3	1.96%
General Astronomy	17	51	33.33%
General Astronomy	17	51	33.33%
Grand Total	51	153	100.00%

MATHEMATICS ANALYSIS

MATHEMATICS			
UNIT & TOPIC NAME	NO OF QUESTIONS	TOTAL MARKS	(%) WEIGHTAGE
Maths	29	87	100.00%
Complex Numbers	1	3	3.45%
Complex Numbers	1	3	3.45%
Coordinate Geometry	6	18	20.69%
Circle	2	6	6.90%
Ellipse	1	3	3.45%
Straight Line	3	9	10.34%
Differential Calculus	3	9	10.34%
Limit, Continuity & Differentiability	1	3	3.45%
Application of Derivatives	2	6	6.90%
Integral Calculus	2	6	6.90%
Definite integration	1	3	3.45%
Differential equation	1	3	3.45%
Permutation & Combination	3	9	10.34%
Permutation & Combination	3	9	10.34%
Sequence & Series	6	18	20.69%
Sequence & Series	6	18	20.69%
Trigonometry	4	12	13.79%
Trigonometric Ratio & identities	3	9	10.34%
Solution of Triangle	1	3	3.45%
Vector and 3D	1	3	3.45%
Vector	1	3	3.45%
Quadratic Equation	3	9	10.34%
Quadratic Equation	3	9	10.34%
Grand Total	29	87	100.00%