NSEP - 2016

A Detailed Analysis by Resonance

INTRODUCTION

On 27nd November 2016, NSEP (National Standard Examination in Physics) - 2016 was exam is conducted by the Indian Association of Physics Teachers (IAPT) at many centers all over the country. NSEP is the stepping stage for selection of aspiring and talented students in the Physics 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 1997 and 30 June 2002, both days inclusive and studying in Class XII or lower as of November 30, 2017, can apply and appear for NSEP 2016. 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.

Syllabus: The syllabus for National Standard Examination in Physics (NSEP) 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 NSEP.

Question Paper: The medium of test was English, although it was also available in Hindi, Bangla and Gujarati. It comprised of Single and Multiple choice correct objective type questions. Single Choice objective question, each with only one of the four options correct with 3 marks each and -1 negative marking for incorrect answer while the multiple options correct questions were with 6 marks and no negative marking.

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 40% of the maximum score.
- **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 one, 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 INPhO get a certificate of merit from IAPT.

OVERALL MARKS DISTRIBUTION

The paper pattern was same as last year. It comprised of Single and Multiple choice correct objective type questions. It had 60 Single Choice objective question, each with only one of the four options correct with 3 marks each and -1 negative marking for incorrect answer while 10 multiple options correct questions were with 6 marks and no negative marking.

SUBJECT	Class 11		Class 12		Total	
	No of Questions	Total Marks	No of Questions	Total Marks	No of Questions	Total Marks
Physics	**36**	**126**	**34**	**114**	**70**	**240**

OVERALL DIFFICULTY LEVEL ANALYSIS

In this analysis we have rated every question on a scale of 1 to 3. The ratings are done by expert faculty of Resonance. The individual ratings are then averaged to calculate overall difficulty level.

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

Difficulty Level	Number of Question	Total Marks
Easy	57	198
Medium	12	39
Difficult	1	3
Grand Total	**70**	**240**
Aggregate Difficulty	1.20	

Difficulty Level Analysis: No of Questions

Resonance Experts feel that paper was relatively on the simpler side from previous year. While 198 marks can be considered easy, 39 marks paper was moderate and only 3 marks paper was tough.

Overall, it is felt by Resonance Faculty Team that paper was on simpler side compared to last year.

TOPIC WISE ANALYSIS

Unit & Topic Name	No of Questions	Total Marks	% Weightage
PHYSICS	**70**	**240**	**100.00%**
Alternating current	**3**	**12**	**5.00%**
AC source with R, L, C connected in series	2	9	3.75%
(blank)	1	3	1.25%
Calorimetry, Thermal Expansion	**2**	**9**	**3.75%**
Calorimetry	1	3	1.25%
Thermal Expansion	1	6	2.50%
Centre of Mass, Momentum & Collision	**2**	**6**	**2.50%**
Oblique collision	1	3	1.25%
Calculation of com	1	3	1.25%
Current Electricity	**6**	**18**	**7.50%**
Instruments	4	12	5.00%
Resistance	1	3	1.25%
Power, Energy, Battery, EMF, Terminal voltage & Kirchhoff's laws	1	3	1.25%
Electro Magnetic Field	**3**	**9**	**3.75%**
Electric and magnetic force on a charge	1	3	1.25%
Magnetic field due to a straight wire and circular arc	1	3	1.25%
Magnetic force on a current carrying wire	1	3	1.25%
Electrostatics	**4**	**18**	**7.50%**
Electric Field	3	15	6.25%
Electric Potential Energy OF A point charge	1	3	1.25%
Fluid	**10**	**36**	**15.00%**
Archimedes principle and force of buoyancy	1	3	1.25%

Continuity equation & Bernoulli theorem and their application	1	6	2.50%
Measurement and calculation of pressure	6	18	7.50%
Archimedes principle and force of buoyancy	1	3	1.25%
Fluid Miscellaneous questions	1	6	2.50%
Friction	**1**	**3**	**1.25%**
Static Friction (General)	1	3	1.25%
Geometrical Optics	**3**	**9**	**3.75%**
Lens	1	3	1.25%
Refraction in general , Refraction at plane surface and T.I.R.	1	3	1.25%
Combination of Lenses/Lens & Mirrors	1	3	1.25%
Gravitation	**2**	**6**	**2.50%**
The Earth and Other Planets Gravity	1	3	1.25%
Universal law of gravitation	1	3	1.25%
KTG & 1st Law of Thermodynamics	**3**	**9**	**3.75%**
Adiabatic process and free expansion	1	3	1.25%
First Law of thermodynamics	1	3	1.25%
Law of equipartition and internal energy	1	3	1.25%
Mathematical Tolls (Vectors)	**1**	**3**	**1.25%**
(blank)	1	3	1.25%
Modern Physics-1	**3**	**9**	**3.75%**
de–Broglie wave	1	3	1.25%
Electronic Transition in the h/h-like atom/species & Effect of Motion of Nucleus	1	3	1.25%
Photon emission from a source and radiation pressure	1	3	1.25%
Modern Physics-2 (Nuclear Physics)	**2**	**6**	**2.50%**
PROPERTIES OF NUCLEUS	1	3	1.25%
STATISTICAL LAW OF Radioactive decay	1	3	1.25%
Newton's laws of Motion	**1**	**3**	**1.25%**
Calculation of normal reaction	1	3	1.25%

Projectile Motion	**1**	**6**	**2.50%**
Equation of trajectory	1	6	2.50%
Rectilinear Motion	**2**	**6**	**2.50%**
Graphs related question	2	6	2.50%
Relative Motion	**1**	**3**	**1.25%**
Velocity of separation & approach	1	3	1.25%
Rotation (Rigid Body Dynamics)	**1**	**3**	**1.25%**
Moment of inertia	1	3	1.25%
Semi Conductor	**3**	**12**	**5.00%**
DIODE	3	12	5.00%
Simple Harmonic Motion	**5**	**18**	**7.50%**
Equation of SHM	2	9	3.75%
Simple Pendulum	1	3	1.25%
Spring mass system	2	6	2.50%
Sound Waves	**4**	**12**	**5.00%**
Beats	1	3	1.25%
Intensity of sound, Decibel scale	1	3	1.25%
Interference	1	3	1.25%
Organ Pipes and Resonance	1	3	1.25%
String Waves	**1**	**3**	**1.25%**
Standing waves and Resonance	1	3	1.25%
Unit & Dimension	**2**	**9**	**3.75%**
(blank)	2	9	3.75%
Wave Optics	**1**	**3**	**1.25%**
(blank)	1	3	1.25%
Wave Optics (Light waves - Young's experiment)	**1**	**3**	**1.25%**
Principle of superposition, path difference, Wave fronts, and coherence	1	3	1.25%
Wave Optics (Polarization)	**1**	**3**	**1.25%**
(blank)	1	3	1.25%
Work, Power & Energy	**1**	**3**	**1.25%**
work Energy theorem	1	3	1.25%
Grand Total	**70**	**240**	**100.00%**

EXPECTED 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 40% of the maximum score. However, all students scoring 80% of the average of top 10 students will be considered qualified (Merit Clause).