NSEP - 2017

A Detailed Analysis by Resonance

INTRODUCTION

On 26th November 2017, NSEP (National Standard Examination in Physics) - 2017 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 1998 and 30 June 2003, both days inclusive and studying in Class XII or lower as of November 30, 2017, can apply and appear for NSEP 2017. 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 2017.

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	24	84	46	156	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	39	135
Medium	29	99
Difficult	2	6
Grand Total	**70**	**240**
Aggregate Difficulty	1.47	

Difficulty Level Analysis: No of Questions

TOPIC WISE ANALYSIS

Unit & Topic Name	No of Questions	Total Marks	% Weightage
Physics	**70**	**240**	**100.00%**
Alternating current	**3**	**12**	**5.00%**
Power consumed in an AC circuit	1	3	1.25%
Resonance	2	9	3.75%
Capacitor	**2**	**6**	**2.50%**
Capacitor with dielectric	1	3	1.25%
Combination of Capacitors	1	3	1.25%
Centre of mass, momentum & collision	**3**	**12**	**5.00%**
Head on collision	2	9	3.75%
Motion of com	1	3	1.25%
Circular Motion	**2**	**9**	**3.75%**
Circular motion in vertical plane	1	6	2.50%
Kinematics of circular motion	1	3	1.25%
Current Electricity	**7**	**21**	**8.75%**
Instruments	6	18	7.50%
Power, energy, battery, EMF,terminal voltage & Kirchhoff's law	1	3	1.25%
Electro Magnetic Field	**6**	**21**	**8.75%**
magnetic field due to a magnet and earth	2	9	3.75%
magnetic field due to a straight wire	1	3	1.25%
Magnetic field due to ring	1	3	1.25%
Magnetic Force and torque on a current carrying loop, dipole moment	1	3	1.25%
Magnetic force on a charge	1	3	1.25%
Electro Magnetic Induction	**1**	**3**	**1.25%**
Self-inductance EMF & magnetic energy density	1	3	1.25%
Electrostatics	**3**	**9**	**3.75%**
Coulomb's law	1	3	1.25%
Electric potential and potential difference	1	3	1.25%

Flux calculation and gauss's law	1	3	1.25%
Electrostatics	**1**	**3**	**1.25%**
Conductor and it's properties, Electric pressure	1	3	1.25%
Fluid	**1**	**3**	**1.25%**
Archimedes principle and force of buoyancy	1	3	1.25%
Fluid	**1**	**3**	**1.25%**
Archimedes principle and force of buoyancy	1	3	1.25%
Geometrical Optics	**11**	**39**	**16.25%**
Lens	3	9	3.75%
Lenses	1	3	1.25%
Lenses	1	6	2.50%
Refraction by Prism	3	12	5.00%
Refraction by spherical surface	1	3	1.25%
Refraction in general, Refraction at plane surface and TIR	1	3	1.25%
Spherical mirror	1	3	1.25%
Gravitation	**1**	**3**	**1.25%**
Universal law of gravitation	1	3	1.25%
Heat Transfer	**2**	**9**	**3.75%**
Thermal conduction in linear conductors at steady state	2	9	3.75%
KTG & 1st law of thermodynamics	**2**	**9**	**3.75%**
First law of thermodynamics	1	6	2.50%
Root mean square velocity, kinetic energy and equation of state	1	3	1.25%
Miscellaneous	**3**	**9**	**3.75%**
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Modern physics-1	**3**	**9**	**3.75%**
Electronic transition in the h/h-like atom/species & effect of motion of nucleus	1	3	1.25%
Photoelectric effect	1	3	1.25%
X-ray	1	3	1.25%
Newton's law of Motion	**2**	**6**	**2.50%**

Calculation of force and acceleration	2	6	2.50%
Rectilinear Motion	**2**	**6**	**2.50%**
Equation of motion and motion under gravity	2	6	2.50%
Rotation (Rigid Body Dynamics)	**1**	**3**	**1.25%**
Moment of inertia	1	3	1.25%
Semi-Conductor	**3**	**12**	**5.00%**
Diode	1	3	1.25%
Logic Gates	1	3	1.25%
Transistor	1	6	2.50%
Simple harmonic Motion	**3**	**9**	**3.75%**
Equation of SHM	2	6	2.50%
Spring mass system	1	3	1.25%
Sound Wave	**2**	**6**	**2.50%**
Doppler effect	1	3	1.25%
Organ pipes and resonance	1	3	1.25%
Surface Tension	**1**	**3**	**1.25%**
Excess pressure in drops and bubble	1	3	1.25%
Wave optics (Light wave- Young's experiment)	**1**	**3**	**1.25%**
YDSE with monochromatic light	1	3	1.25%
Work, power, Energy	**3**	**12**	**5.00%**
Work done by a variable force	1	6	2.50%
Work done by variable Forces	1	3	1.25%
work energy theorem	1	3	1.25%
Grand Total	**70**	**240**	**100.00%**