

ABOUT OLYMPIADS

WHAT ARE THE OLYMPIADS ?

International Olympiads in Science and Mathematics are the world championships for school students held every year in a different country.

The most famous Olympiads are The International Mathematical Olympiad (IMO), The International Physics Olympiad (IPhO), The International Chemistry Olympiad (IChO), The International Biology Olympiad (IBO), The International Olympiad in Informatics (IOI) and The International Astronomy Olympiad (IAO).

Countries send a delegation of students and leaders to participate at the International level. India conducts National Olympiads to identify the best students who can represent India at the international level.

MATHEMATICAL OLYMPIAD

The Mathematical Olympiad Programme in India, which leads to participation of Indian students in the International Mathematical Olympiad (IMO) is organized by the Homi Bhabha Centre for Science Education (HBCSE) on behalf of the National Board for Higher Mathematics (NBHM) of the Department of Atomic Energy (DAE), Government of India. This programme is one of the major initiatives undertaken by the NBHM. Its main purpose is to spot mathematical talent among pre-university students in the country.

For the purpose of training and selection of students for the Olympiad contest, 25 regions all over the country have been designated and each assigned a Regional Coordinator. Additionally, three groups (Central Board of Secondary Education (CBSE), Navodaya Vidyalaya Samiti (NVS) and Kendriya Vidyalaya Sangathana (KVS) have a 'Regional Coordinator' each. The Mathematical Olympiad programme consists of five stages.

- **Stage 1: Regional Mathematical Olympiad (RMO and pre - RMO):** The RMO is a three-hour written test with six or seven problems. On the basis of the performance in RMO, a certain number of students from each region is selected for Stage 2 (INMO). The Regional Coordinators are in charge of conducting the RMO in their respective regions. They have the option of preparing RMO question papers all by themselves or they may choose to use the central RMO question paper prepared by the Mathematical Olympiad Cell, HBCSE, TIFR. Some regions may hold a pre-RMO examination by way of which students will be selected to appear for RMO. All pre-RMOs will be conducted by the concerned regions. The format of the pre-RMO paper and the criteria for selecting students for RMO are at the sole discretion of the respective Regional Coordinator.
- **Stage 2: Indian National Mathematical Olympiad (INMO):** The INMO will be held on the first Sunday of February between 1.00 pm and 5.00 pm. Only those students who are selected in RMO 2015 and those who have received an INMO certificate of merit in 2015 are eligible to appear for the INMO. This contest is a four hour written test. On the basis of the INMO, the top 30-35 students in merit from all over the country are chosen as INMO awardees. In addition to INMO awardees, the next 45-50 students who are in class X or lower and have done well in INMO, but have not qualified as INMO awardee are awarded INMO certificate of merit.
- **Stage 3: International Mathematical Olympiad Training Camp (IMOTC):** The INMO awardees are invited to a month long training camp in April-May each year at the Homi Bhabha Centre for Science Education (HBCSE), Mumbai. The INMO awardees of the previous years who are eligible for IMO 2016 and, in addition, who have satisfactorily gone through postal tuition throughout the year are invited to the training camp as senior students. The junior students will receive INMO certificate and a prize in the form of books. The senior students will receive a prize in the form of books and cash. On the basis of a number of selection tests through the Camp, a team of the best six students is selected from the combined pool of junior and senior batch participants.
- **Stage 4: Pre-departure Training Camp for IMO**

The selected team of six students goes through another round of training and orientation for about ten days prior to departure for IMO.

- **Stage 5: International Mathematical Olympiad (IMO):** The six member team selected at the end of IMOTC accompanied by a leader, a deputy leader and an observer represents the country at the IMO, held in July each year in a different member country of the IMO. The IMO contest consists of two written tests held on two consecutive days. On each day of the contest the test consists of three problems and lasts for four and half hours. India has been participating in the IMO since 1989. Students of the Indian Team who receive gold, silver and bronze medals at the IMO receive a cash prize of Rs. 5000/-, Rs. 4000/- and Rs. 3000/- respectively at a formal ceremony at the end of the training camp during the following year.

The selection of the members of the Indian team for IMO will be subject to their fulfilling criteria such as age limit, medical fitness, parental consent, etc., as may be applicable. In particular, the selected students need to have a valid Indian passport meeting the visa regulations of the host country. Ministry of Human Resource Development (MHRD) finances international travel of the team, the leader and the deputy leader, while NBHM (DAE) finances the other expenditures connected with the international participation and the entire in-country programme. Students aiming to go through the Mathematical Olympiad programme leading to international participation (IMO) should note that RMO is the first essential step for the programme. To appear for the RMO, the students should get in touch with the RMO co-ordinator of their region well in advance for enrollment and payment of stipulated (nominal) fees.

PHYSICS, CHEMISTRY, BIOLOGY, ASTRONOMY, JUNIOR SCIENCE OLYMPIADS

STAGE I - NATIONAL STANDARD EXAMINATION (NSE) IN PHYSICS, CHEMISTRY, BIOLOGY, ASTRONOMY, JUNIOR SCIENCE ORGANIZED BY IAPT

Every student aspiring to go through successive stages of the Olympiad programme must enroll for NSE. NSEs are held at a large number of centres in the country usually in the last week of November. All students of Class XII or below (science stream) are eligible to appear for NSEs. A student may appear for more than one Olympiad as per the examination schedule. Students who have passed Class XII are not eligible.

Astronomy: For the Junior level, students should be in Class IX. For the Senior level, students should be in Class X or Class XI. NSE emphasizes comprehension of the subject, not rote memory.

STAGE II - INDIAN NATIONAL OLYMPIAD EXAMINATIONS

For Indian National Olympiad Examinations, the national top 200-250 students selected from NSEP, NSEC, NSEB and NSEA each are eligible to appear for Indian National Physics Olympiad (INPhO), Indian National Chemistry Olympiad (INChO), Indian National Biology Olympiad (INBO) and Indian National Astronomy Olympiad (INAO) respectively.

Indian National Olympiads are held sometime in the last week of January or early February. These examinations are held at about 16 Centres in the country.

Questions and problems in National Olympiads are usually non-conventional and of high difficulty level, comparable to the International Olympiads. On the basis of performance in the National Olympiads (theory) about 50 students are short-listed in each subject.

STAGE III - ORIENTATION CUM SELECTION CAMP (OCSC)

BIOLOGY, PHYSICS AND CHEMISTRY

The selected group of students in different subjects will be invited to the Orientation Cum Selection Camps at HBCSE. These camps are typically of two to three weeks duration in each subject. The camps include several theoretical and experimental tests. Orientation is provided to students especially for the experimental tests. A camp

concludes with a valedictory function where distinguished scientists are invited to speak to the students. On the basis of their performance in OCSC the top 5 students in Physics, top 4 in Chemistry and top 4 in Biology will be declared to be special merit awardees. These special merit awardees are given a prize each in the form of books and cash. In addition there will be special prizes in each subject to recognize meritorious performance in theory and experiments. The 5 special merit awardees in Physics constitute the 5-member student team to represent India at the International Physics Olympiad. The 4 special merit awardees in Chemistry constitute the 4-member student team to represent India at the International Chemistry Olympiad. The 4 special merit awardees in Biology constitute the 4-member student team to represent India at the International Biology Olympiad (IBO).

ASTRONOMY

Since HBCSE is academically involved in the hosting of the 10th International Olympiad on Astronomy and Astrophysics (IOAA) in Bhubaneswar in 2016, the second stage (INAO) examination, the third stage (OCSC-Astronomy) and the fourth stage (Training of the Indian team for IOAA 2016) will be organized by a different organisation (to be announced later). The selected group of students in Astronomy will be invited to the Orientation Cum Selection Camp. The camp is of about three weeks duration. The camp includes several theoretical, data analysis and observation tests. Students are trained in basic concepts in astronomy and astrophysics during the camp. Orientation is provided to students especially for problem-solving in astronomy, astrophysics and for observational astronomy tests. The camp concludes with a valedictory function where distinguished scientists are invited to speak to the students. On the basis of the performance in OCSC, the top 5 students will be declared special merit awardees. These special merit awardees will be given a prize each in the form of books and cash. In addition there will be special certificates to recognize meritorious performance in theory, data analysis and observation.

JUNIOR SCIENCE

The selected group of students from INJSO will be invited to the Orientation Cum Selection Camp at HBCSE. The camp is of two to three weeks duration. The camp includes several theoretical and experimental tests. Orientation is provided to students especially for the experimental tests. The camp concludes with a valedictory function where distinguished scientists are invited to speak to the students. On the basis of their performance in OCSC the top 6 students will be declared to be special merit awardees. These special merit awardees will be given a prize each in the form of books and cash. The 6 special merit awardees will constitute the 6-member student team to represent India at the International Junior Science Olympiad (IJSO).

STAGE IV - TRAINING OF INDIAN TEAMS FOR INTERNATIONAL OLYMPIADS

The selected Indian teams undergo a rigorous training program at HBCSE in theory and experiment.

STAGE V - PARTICIPATION IN INTERNATIONAL OLYMPIADS

- The 5-member student team, 2 teacher leaders and one scientific observer constitute the delegation to represent India at the International Physics Olympiad (IPhO)
- The 4-member student team, 2 teacher leaders and one scientific observer constitute the delegation to represent India at the International Chemistry Olympiad (IChO)
- The 4-member student team, 2 teacher leaders and one scientific observer constitute the delegation to represent India at the International Biology Olympiad (IBO)
- The 5-member student team, 2 teacher leaders and one scientific observer constitute the delegation to represent India at the International Astronomy Olympiad (IAO).
- The 5-member student team, 2 teacher leaders and one scientific observer constitute the delegation to represent India at the International Astronomy Olympiad (IAO).
- The 6-member student team, 3 teacher leaders and one scientific observer constitute the delegation to represent India at the International Junior Science Olympiad (IJSO).

OLYMPIAD IN INFORMATICS

The Indian Computing Olympiad is used to select the team of four students to represent India at the International Olympiad for Informatics (IOI). The competition is held in three stages: the Zonal Informatics Olympiad, the Indian National Olympiad in Informatics, and the International Olympiad in Informatics Training Camp.

Stage I: The Zonal Informatics Olympiad (ZIO) is a written round. Most of the questions can be solved with the use of algorithmic techniques, although logic is usually enough.

Stage II: The Indian National Olympiad in Informatics (INOI) - In this students have to write programs on a computer. The INOI is a programming competition round. Students are expected to solve two algorithmic problems in 3 hours in either C, C++ or Pascal. Questions in this round are similar to those in the IOI and other national computing Olympiads.

About thirty top-performing students in the INOI are selected for the International Olympiad in Informatics Training Camp (IOITC).

Stage III: The International Olympiad in Informatics Training Camp (IOITC) is a one fortnight long annual training camp held in India to select and train students to represent India at the International Olympiad in Informatics.

At the completion of the camp, 4 students are selected to represent India at the International Olympiad in Informatics.

WHEN AND HOW SHOULD I START PREPARING FOR THE OLYMPIADS?

The Olympiads are the most prestigious school competitions in the world. Students have to go through a rigorous process to be selected for the Indian team. Students selected to represent the country get an opportunity to compete and win prizes at an International level.

Students who represent **India** in the International Olympiads in Physics / Chemistry /Mathematics / Informatics and Astronomy automatically qualify for KVPY Fellowship. Organisations like Infoysys, Sasken, NASSCOM etc. also give prizes to the participants and winners of the International Olympiads.

Usually students appear for the Olympiads in Class XI but brilliant students can appear for the stage I exam even in lower classes and increase their number of attempts and even their medal tally as they can participate in the International Olympiads till they reach Class XII.