

NATIONAL OLYMPIAD PROGRAMME
IN
ASTRONOMY, BIOLOGY, CHEMISTRY
JUNIOR SCIENCE AND PHYSICS

2022-2023

leading to participation in International Olympiads



Homi Bhabha Centre for Science Education
Tata Institute of Fundamental Research
V. N. Purav Marg, Mankhurd
Mumbai - 400 088, India

Tel: 022 - 2507 2322, 2507 2300

Fax: 022 - 2556 6635, 2556 6803

URL: olympiads.hbcse.tifr.res.in

**AN INVITATION TO EXPERIENCE THE FUN,
CHALLENGE AND DEPTH OF DOING SCIENCE**

**A major Olympiad programme
in basic sciences
is operational in the country.
The programme aims at promoting
excellence in science among
pre-university students and selecting
teams of students to represent India at the
International Olympiads in Astronomy, Biology,
Chemistry, Junior Science and Physics.**

**This brochure gives the necessary information
regarding this programme to all concerned:
students, teachers, parents and others.**

Do India proud at the International Olympiads 2023.

Enrol for NSEA/NSEB/NSEC/NSEJS/NSEP

Introduction

The international Olympiad movement is aimed at bringing the most talented secondary and higher secondary students of the world together in a friendly competition of the highest level. The Olympiads do not lead directly to any career benefits; rather, they provide a stimulus to begin a career in science or mathematics, to undertake a lifelong journey into the realms of exciting intellectual challenges. The Olympiads are not merely competitions, they are the meeting places of the brightest young minds of the world, and many friendships forged at the Olympiads form the seeds of scientific collaboration later in life. Much like the Olympics in sports, the Olympiads are a celebration of the very best in school level science and mathematics. The Olympiad programmes globally have aimed at not just the international events, but have also served as national channels to enrich school educational curriculum. Even beyond the scope of the examinations, Olympiad problems provide intellectual stimulus and uncommon opportunities for teaching and learning of sciences.

The scientific community of India recognises the need for a national Olympiad programme in mathematics and basic sciences, which would lead to participation in the international Olympiads. India has been participating in the international Olympiads in Mathematics since 1989, and later started participation in Physics (1998), Chemistry (1999), Biology (2000), Astronomy (1999) and Junior Science (2007) as well. Enrolment of students in each subject has grown steadily over time, and currently stands at between 20000 and 60000 in different subjects. The science Olympiad programme involves a large number of teachers and scientists from across the nation. The nodal agency for all the science and mathematics Olympiads in the country is the Homi Bhabha Centre for Science Education (HBCSE), a national centre of the Tata Institute of Fundamental Research (TIFR). The Olympiad programme is run in close collaboration with the teacher associations: the Indian Association of Physics Teachers (IAPT), Association of Chemistry Teachers (ACT), and the Association of Teachers in Biological Sciences (ATBS). The first stage examinations of the Olympiads in Astronomy, Biology, Chemistry and Physics are conducted by IAPT, while the later stages are the responsibility of HBCSE. From 2022, IAPT is in charge of all stages of the Junior Science Olympiad.

The science Olympiad programme is fully funded by the Government of India through the Board of Research in Nuclear Science, Department of Atomic

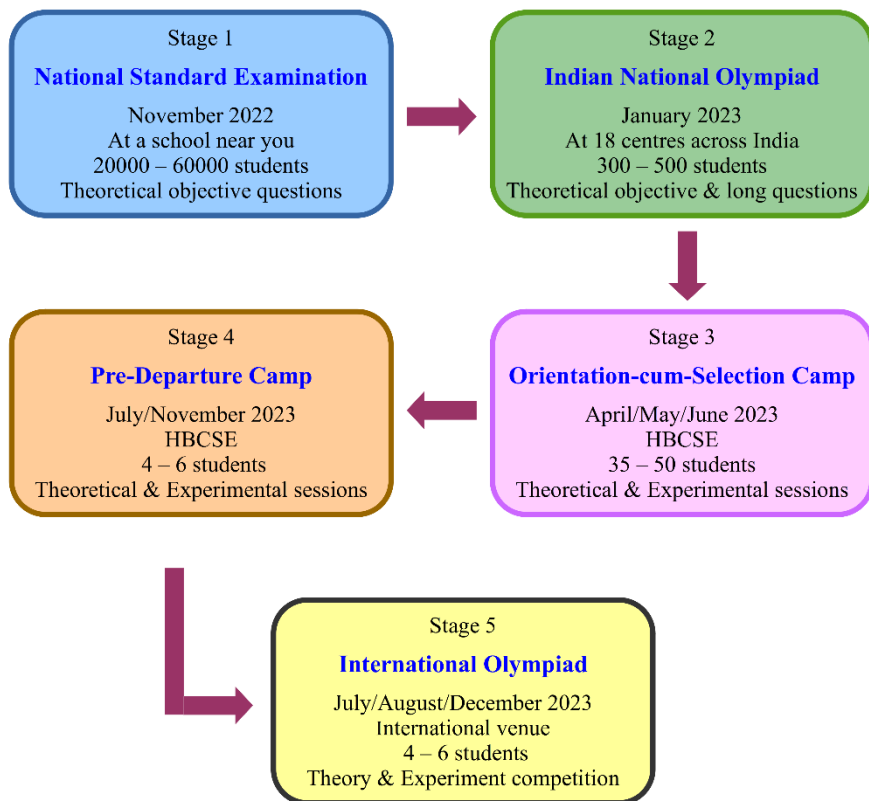
Energy (BRNS, DAE), Department of Science and Technology (DST), Ministry of Human Resource Development (MHRD) and the Indian Space Research Organisation, Department of Space (ISRO, DoS). The national Olympiads are overseen by a National Steering Committee (NSC), constituted by DAE, and comprised of members of each funding agency as well as eminent experts in each subject.

Right from the beginning of participation, Indian students have excelled at the international Olympiads in every subject. More than 99% of the nearly 530 contestants from India have won medals and laurels at the international competitions in the last 25 years of participation. Over one-third of the students have won coveted gold medals, and several special prizes have been won as well. The international community has also recognised India's strong presence at the Olympiads. India has hosted the international Olympiads in every subject: Mathematics (1996), Chemistry (2001), Astronomy (2006 and 2016), Biology (2008), Junior Science (2013) and Physics (2015).

The national Olympiad programme follows a five stage process, starting with an examination held at nearly 1400 schools across the country and culminating with the international Olympiads at different corners of the world. The national level examinations are designed to assess the conceptual understanding, logical reasoning, laboratory skills, and above all, ability to apply problem-solving skills to novel situations, both theoretical and experimental. Training is included from the third stage of the programme and the first two stages do not necessarily require any specialised coaching outside the regular school system. The programme for the year 2022-2023 is outlined in this brochure.



Overview of the Science Olympiads: Five Stages



Stage I National Standard Examinations (NSEs)

National Standard Examinations in Astronomy (NSEA), Biology (NSEB), Chemistry (NSEC), Junior Science (NSEJS), and Physics (NSEP) constitute the first stage of selection of students in the National Olympiad Programme. **Every student aspiring to go through successive stages of the programme and participating in the international Olympiads in 2023 must enrol for the NSEs in the respective subjects to be held in 2022.**

ELIGIBILITY FOR NSE/AND SUBSEQUENT STAGES:

Astronomy, Biology, Chemistry and Physics:

1. Must be eligible to hold an Indian passport. *
 - 1a. As per the orders of the Madras High Court, OCI students will NOT be eligible for selection to the Indian team in the International Olympiads. However, such students are provisionally eligible for selection at all prior stages, up to and including the OCSC (stage III), provided they fulfill all other criteria. They are also provisionally eligible to write the selection tests at the OCSC. This policy is subject to revision without prior notice depending on any further orders issued by the courts, or by a competent government authority.
2. Date of birth between 1 July 2003 and 30 June 2008, both days inclusive.
3. Must be residing and studying in India since 30 November 2020 or earlier.
OR
Must be studying in an Indian school system since 30 November 2020 or earlier.
4. Must not have passed (or scheduled to complete) class 12 board examination earlier than 30 November 2022.
5. Must not have commenced (or planning to commence) studies in a university or equivalent institution by 1 June, 2023.
6. Must not be appearing in NSEJS 2022.

Junior Science:

1. Must be eligible to hold an Indian passport. *
 - 1a. As per the orders of the Madras High Court, OCI students will NOT be eligible for selection to the Indian team in the International Olympiads. However, such students are provisionally eligible for selection at all prior stages, up to and including the OCSC (stage III), provided they fulfill all other criteria. They are also provisionally eligible to write the selection tests at the OCSC. This policy is subject to revision without prior notice depending on any further orders issued by the courts, or by a competent government authority.
2. Date of birth between 1 January 2008 and 31 December 2009, both days inclusive.
3. Must be residing and studying in India since 30 November 2020 or earlier.
OR
Must be studying in an Indian school system since 30 November 2020 or earlier.
4. Must not have passed (or scheduled to complete) class 10 board examination earlier than 30 November 2022.
5. Must not be appearing in any of NSEA, NSEB, NSEC or NSEP 2022.

It is the student's responsibility to determine if he/she satisfies the eligibility norms. If at some later stage it is found that the student does not meet the eligibility norms, he/she may face disqualification from the programme.

*[The criterion of holding a valid Indian passport is subject to revision in case of further court orders or orders by a competent Government authority with regard to eligibility of OCI card holders.]

First stage Examination	Date, Time and Venue of Examination	Question paper pattern	Language	Syllabus
National Standard Examination in Astronomy (NSEA)	November 26, 2022 (Saturday) 14:30 – 16:30 hrs Respective NSE Exam centre	A) 48 multiple choice questions with one alternative correct. +3 marks credit for correct choice. -1 mark penalty for incorrect choice. B) 12 multiple choice questions with one or more than one correct alternatives. To get credit, all the correct option(s) and incorrect option(s) should be marked	English & Hindi (option at the time of enrolment)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE. There will be greater emphasis on Physics, Mathematics and elementary Astronomy.
National Standard Examination in Biology (NSEB)	November 27, 2022 (Sunday) 14:30 – 16:30 hrs Respective NSE Exam centre	A) 48 multiple choice questions with one alternative correct. +3 marks credit for correct choice. -1 mark penalty for incorrect choice. B) 12 multiple choice questions with one or more than one correct alternatives. To get credit, all the correct option(s) and no incorrect option(s) should be marked	English & Hindi (option at the time of enrolment)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE.
National Standard Examination in Chemistry (NSEC)	November 27, 2022 (Sunday) 11:30 – 13:30 hrs Respective NSE Exam centre	A) 48 multiple choice questions with one alternative correct. +3 marks credit for correct choice. -1 mark penalty for incorrect choice. B) 12 multiple choice questions with one or more than one correct alternatives. To get credit, all the correct option(s) and no incorrect option(s) should be marked.	English & Hindi (option at the time of enrolment)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE.

First stage Examination	Date, Time and Venue of Examination	Question paper pattern	Language	Syllabus
National Standard Examination in Junior Science (NSEJS)	November 27, 2022 (Sunday) 14:30 – 16:30 hrs Respective NSE exam centre	A) 48 multiple choice questions with one alternative correct. +3 marks credit for correct choice. -1 mark penalty for incorrect choice. B) 12 multiple choice questions with one or more than one correct alternatives. To get credit, all the correct option(s) and no incorrect option(s) should be marked.	English & Hindi (option at the time of enrolment)	Is broadly equivalent to secondary school level (up to and including Class X) of CBSE India. All the basic subjects of science (Biology, Chemistry and Physics) and Mathematics may have roughly equal emphasis.
National Standard Examination in Physics (NSEP)	November 27, 2022 (Sunday) 08:30 – 10:30 hrs Respective NSE exam centre	A) 48 multiple choice questions with one alternative correct. +3 marks credit for correct choice. -1 mark penalty for incorrect choice. B) 12 multiple choice questions with one or more than one correct alternatives. To get credit, all the correct option(s) and no incorrect option(s) should be marked.	English, Hindi, Gujarati, Bangla (option at the time of enrolment)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE India.

ENROLMENT FOR NSE:

Enrolment at student's own school/college: A student can enrol for NSE at his/her own institution if it is a registered NSE centre (see below for registration of NSE centres). The principal would be the contact person for this purpose.

Direct Enrolment: If a student's own institution is not a registered NSE centre, it is still possible to participate in NSE by enrolling directly on the IAPT website: www.iapt.org.in.

Enrolment fees: Rs. 200/- per student per subject.

Enrolment dates: 21 August - 14 September, 2022 (check IAPT website)

NSE centre registration: Any state recognised school/college is eligible to become a NSE centre with a minimum enrolment of 20 students, subject to approval by Chief Coordinator, IAPT Examinations. Online NSE centre registration on the IAPT website will be between 1 August and 20 August, 2022.

Contact:

Prof. B. P. Tyagi (Chief Coordinator, IAPT Examinations)
Dr. Anand Singh Rana (NSE Coordinator)
Dr. V. V. Soman (NSEJS Coordinator)
15, Block II, Rispana Road,
DBS (PG) College Chowk, Dehradun 248 001
E-mail: iapt.nse@gmail.com
Tel. No: 9632221945 (Mon-Fri: 10.00 to 13.00 and 14.00 to 17.00)

NSEs are the organizational responsibility of IAPT. All queries about NSEA, NSEB, NSEC, NSEJS and NSEP must be addressed to the above mentioned address. **PLEASE DO NOT CONTACT HBCSE IN THIS CONNECTION.**

Stage II Indian National Olympiad Examinations (INOs)

The second stage in the selection process, the Indian National Olympiads in Astronomy (INAO), Biology (INBO), Chemistry (INChO) and Physics (INPhO) will be organized by HBCSE in early 2023. Indian National Olympiad in Junior Science (INJSO) will be organised by IAPT around the same time. These examinations will be held at about 18 centres in the country. The list of students selected for the INOs according to the criteria given below will be published by January 15, 2023 on the IAPT website: www.iapt.org.in

All students appearing in INOs must register themselves on the HBCSE website (olympiads.hbcse.tifr.res.in) after the publication of the list in order to obtain their INO admit cards. This registration is mandatory for appearing in INO. Failure to register for INO will result in disqualification of the candidate for INO.

The tentative schedule of these examinations is given below. Confirmation of the schedule and all necessary instructions pertaining to the INOs will be available on the same website. As far as possible the National Olympiads in different subjects are held on separate days/times so that a student who is eligible to appear for more than one subject can do so. Students appearing in INOs are eligible for TA/DA as per the norms of the programme.

ELIGIBILITY FOR INO

The aim of the first stage examination is to have a wide reach, to progressively increase this reach and to attain nationwide representation for Stage II without overly compromising on merit. Hence the selection for the Stage II examinations, i.e., Indian National Olympiad Examinations (INOs) is based on the following scheme.

- (a) **Minimum Admissible Score (MAS) Clause:** To be eligible for the Stage II INO exam leading to the International Olympiad, a candidate must secure a score equal to or greater than a Minimum Admissible Score (MAS). The MAS for a given subject will be 50% of the average of the top ten scores in that subject rounded off to the nearest lower integer.
- (b) **Merit Index (MI) Clause:** There will be a high score called the Merit Index (MI) associated with each subject in Olympiads. The MI in a

subject is defined as 80% of the average of the top ten scores in that subject rounded off to the nearest lower integer. All students with a score equal to or greater than merit index MI for the subject will automatically qualify for INO Stage II examination in that subject. For example, if the average of top ten scores in a certain subject is 92, then 80% of this is 73.6. Then the MI in that subject will be 73. All candidates with a score equal to or above 73 in that subject will automatically qualify for INO stage II.

- (c) **Proportional Representation Clause:** Students from all States and UTs need to be encouraged to appear for the first stage examination and a nationwide representation for INO Stage II is desirable. The quota for each State/UT used in National Talent Search Examination (NTSE) 2022-23, a nationwide competitive examination will be used as the baseline for calculating the number of students qualifying for Stage II INO in every subject from centres in that State or UT. The target total number of students to be selected in each subject (except Astronomy, see below) is 300. Suppose the NTSE quota is S for a State, and the total for all States and UTs is T , then the total number of students to be selected to INO Stage II from that State would be S/T times 300, rounded off to the nearest higher integer. This number will include those selected on the basis of the Merit Index. In the event of tie at the last position in the list, all students with same marks at this position will qualify to appear for the INO Stage II examination. The selected students must nevertheless satisfy the MAS clause (a). The number to be selected from all the centres in each State or UT will be displayed on the IAPT and HBCSE websites (www.iapt.org.in; olympiads.hbcse.tifr.res.in).
- (d) **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 MAS clause (a) is satisfied.

The above criteria are illustrated with the following examples:

- i. Let the quota on the basis of the Proportional Representation Clause (c) for a State S_1 be 20. Suppose the number of students satisfying the Merit Index Clause (b) in a subject is 10. These 10 students will qualify for the second stage INO exam in the given subject and an additional 10 students from the State S_1 in the

given subject will be selected merit-wise, provided they satisfy the MAS Clause (a).

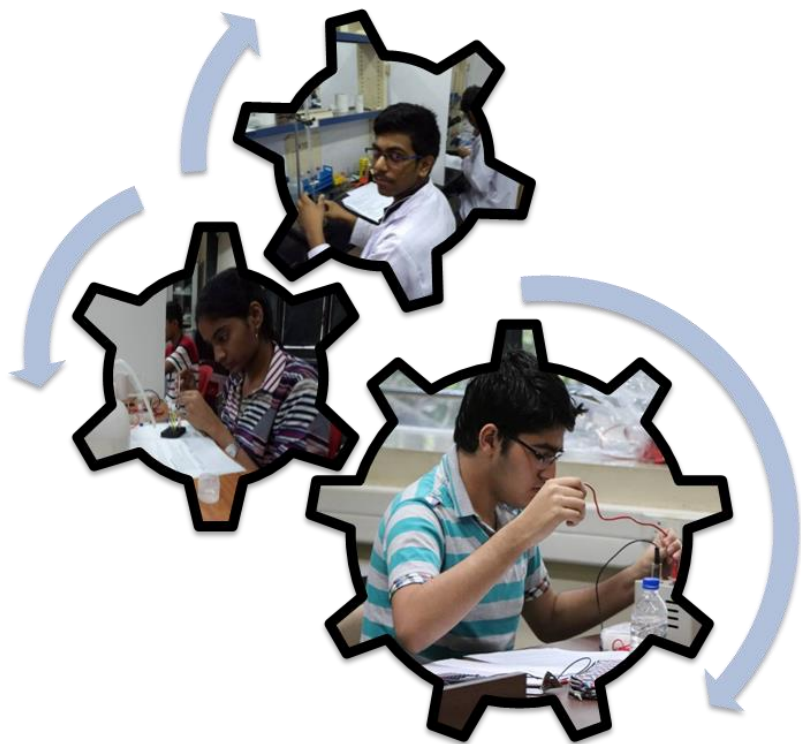
- ii. Let the quota on the basis of the Proportional Representation Clause (c) for a State S1 be 20. Suppose the number of students satisfying the Merit Index Clause (b) in a subject is 30. In this case, all 30 students will qualify for the second stage INO exam in the given subject, and there will be no further selection from the State S1.
- (e) **Minimum Total Number Clause:** In each subject, after all the above criteria have been applied, it is possible that the target number of 300 students to be selected for INO is not reached (due to non-availability of enough number of students in some states who satisfy MAS Clause (a)). In such an event, additional students will be selected purely merit-wise, provided MAS Clause (a) is satisfied, till the target number of 300 is reached. Other clauses will not apply for these students. In case of a tie at the last position, all students with the same marks at this position will qualify to appear for the INO Stage II examination.
- (f) **Previous International Representation Clause:** Candidates who have represented India in the International Olympiad on a previous occasion (IOAA, IBO, IChO, IJSO and IPhO) need not appear for the first stage NSE examination in the respective subject. Candidates who have represented India in the Asian Physics Olympiad (APhO) and the International Astronomy Olympiad Junior (IAO-Jr) need not appear for the 1st stage NSEP and NSEA Examinations respectively. Such candidates who thus qualify to skip the first stage NSEs should write to the National Coordinator, Science Olympiad (nc_olympiad@hbcse.tifr.res.in) before 1 January, 2023, seeking permission, to directly appear for the second stage Indian National Olympiad (INO) examination.

There will be no other criterion or provision for selection to the Indian National Olympiad Examinations (INOs).

Eligibility for Astronomy (INAO 2023):

In order to encourage younger students to participate in astronomy Olympiad the rules of selection for Stage II (INAO) are modified as below:

1. The student pool of NSEA will be divided into two groups:
 - i. Group A: Students who are in Class XII as of November 30, 2022
 - ii. Group B: Students who are in Class XI or lower as of November 30, 2022
2. For Stage II (INAO), a target number of 250 students will be selected from each group. Thus, a total of 500 students will be selected.
3. The MI and MAS will be calculated separately for each of these groups.
4. All the clauses ((a) to (f) above) of selection will be applied separately to each group.
5. The question papers of NSEA 2022 and INAO 2023 will be identical for the two groups.



Second stage Examination	Date & Time of Examination	Venues	Language	Syllabus
Indian National Astronomy Olympiad (INAO)	January 28, 2023 (Saturday) 9:00 – 12:00 hrs	Ahemdabad Bengaluru Bhopal Bhubaneswar Chandigarh Chennai Delhi Guwahati Hyderabad Jaipur Kochi Kolkata Kota Lucknow Mumbai Nagpur Patna Ranchi	English & Hindi	Is broadly equivalent to NSEA
India National Junior Science Olympiad (INJSO)	January 28, 2023 (Saturday) 13:30 – 16:30 hrs		English & Hindi	Is broadly equivalent to NSEJS
Indian National Chemistry Olympiad (INChO)	January 28, 2023 (Saturday) 13:30 – 16:30 hrs	Ahemdabad Bengaluru Bhopal Bhubaneswar Chandigarh Chennai Delhi Guwahati Hyderabad Jaipur Kochi Kolkata Kota Lucknow Mumbai Nagpur Patna Ranchi	English & Hindi	Is broadly equivalent to NSEC
Indian National Physics Olympiad (INPhO)	January 29, 2023 (Sunday) 9:00 – 12:00 hrs		English & Hindi	Is broadly equivalent to NSEP
Indian National Biology Olympiad (INBO)	January 29, 2023 (Sunday) 13:30 – 15:30 hrs	Ahemdabad Bengaluru Bhopal Bhubaneswar Chandigarh Chennai Delhi Guwahati Hyderabad Jaipur Kochi Kolkata Kota Lucknow Mumbai Nagpur Patna Ranchi	English & Hindi	Is broadly equivalent to NSEB

Questions and problems in INOs, while circumscribed by the above mentioned CBSE syllabus, are usually non-conventional and of high difficulty level, comparable to the international Olympiads.

Stage III Orientation-Cum-Selection Camps (OCSCs)

On the basis of performance in the Indian National Olympiads students will be selected in each subject for the Orientation-Cum-Selection Camp (OCSC) in that subject. At these camps, orientation is provided to students for Olympiad level of theoretical, experimental and observational (for astronomy) tasks. Emphasis is laid on developing conceptual foundations and problem-solving skills. Students are exposed to innovative experiments with focus on conceptual and procedural understanding in experimental science. In astronomy, students are trained in basic notions in astrophysics, astronomical data analysis and night sky observations.

Several theoretical and experimental/observational tests are held during the camp. On the basis of performance in these tests, few students (numbers specified below) are selected to represent India at the international Olympiads. These students also receive merit awards in the form of books and cash. In addition, there are special prizes in each subject to recognize meritorious performance in theory and experiments. A camp concludes with a valedictory function where distinguished scientists are invited to speak to the students.

International Olympiad	No of students selected
International Olympiad on Astronomy and Astrophysics (IOAA)	5
International Biology Olympiad (IBO)	4
International Chemistry Olympiad (IChO)	4
International Junior Science Olympiad (IJSO)	6
International Physics Olympiad (IPhO)	5

SELECTION PROCEDURE FOR OCSCs:

The number of students to be selected for OCSC is 35 in Biology, Chemistry, Junior Science and Physics, and 50 in Astronomy, unless declared to be otherwise before the INO examinations. In the event there is a tie at the last position in the merit list of the respective INO, all students with the same marks at the last position will qualify to be selected for the OCSC.

For Astronomy, a target number of 15 students from group A and 35 students from Group B will be selected (see above), according to respective order of merit in INAO. Thus a total of 50 students will be selected for OCSC-Astronomy. Selection of the team to represent India in IOAA will NOT be based on the above groups, but will be done purely on the basis of a combined merit list of all students attending OCSC-Astronomy.

The following procedure will be applied for selection of students for OCSCs. **In a given year, a student can participate in the orientation/ training/ selection of only one subject including Mathematics (OCSC for the five science subjects, or International Mathematical Olympiad Training Camp (IMOTC)) according to a preference order decided by the student himself/herself.** A student who qualifies in more than one subject (on the basis of his/her performance in INO or Indian National Mathematical Olympiad (INMO)) will be invited to the OCSC that is ranked highest in his/her preference list. The procedure is as follows:

- **Before INO/INMO**: A student who qualifies to appear in more than one subject in INO/INMO will be asked to arrange the subjects in order of preference of attending the OCSC/IMOTC (and therefore competing for selection in the international team). This preference will have to be indicated during the mandatory registration for INO. This will not affect in any way the evaluation of his/her INO/INMO performance in any subject.
- **After INO/INMO**: A target number of students will be invited to the OCSC camp of each subject. The students in each subject will be assigned a rank according to his/her performance in the respective INO/INMO.

If a student obtains qualifying marks in INO in multiple subjects, he/she will be included only in the OCSC/IMOTC for the subject which figures highest in his/her preference list among the subjects in which he/she has obtained qualifying marks. His/her name will not be considered for OCSC/IMOTC in the other subjects, and the next students in those subjects will be considered, till the target number of students is reached in each subject.

Irrespective of selection or participation in OCSC/IMOTC, the student will receive a Certificate of Merit in every subject in which his/her score is equal to or higher than the score of the last selected student in that subject.

The process of selection is illustrated below in an example with three possible cases. We consider the example of a student, Amita, who has qualified for INO in Astronomy, Physics and Chemistry. Prior to INO, she declares her preference in the order: Physics, Chemistry, Astronomy. In this example, the target number of students in each subject is 35.

Case 1: Based on her INO performance, Amita is ranked 17th in Physics, 15th in Chemistry and 4th in Astronomy. She will be selected in Physics OCSC and her name will not be included in Chemistry or Astronomy OCSCs. As a result, all the students ranked below her in Chemistry and Astronomy will gain one rank while being considered for OCSC selection. Amita will receive a certificate of merit in all three subjects.

Case 2: Amita is ranked 80th in Physics, 15th in Chemistry and 4th in Astronomy. She is unlikely to be selected for Physics OCSC because her rank is too low to be upgraded to higher than 35. She will now be selected in Chemistry OCSC, and not for Astronomy. She will receive a certificate of merit in Chemistry and Astronomy.

Case 3: Amita is ranked 37th in Physics, 15th in Chemistry and 4th in Astronomy. She is initially not eligible for Physics, but has qualified for Chemistry and Astronomy. However, it so happens that two students ranked above her in Physics get selected in some other subject based on their preferences. Since their names are now removed from the Physics list, Amita's rank goes up to 35, and she becomes eligible for Physics which is her first preference. Therefore, she gets selected in Physics, and not in Chemistry or Astronomy. She will receive a certificate of merit in all three subjects.



SCHEDULE OF OCSC:

The OCSC dates will be announced on HBCSE website (olympiads.hbcse.tifr.res.in) by January 15, 2023.

To the extent possible, care is taken that the camp dates do not overlap with the national level competitive exams, (e.g. IIT-JEE or AIIMS). Students are advised to select Mumbai as their examination centre of any national level entrance examination that might be scheduled during the OCSC period.

The selection of the members of the Indian teams (IOAA, IBO, IChO IJSO and IPhO) holds provided they satisfy required criteria such as age limit, pre-university status, medical fitness, parental/ guardian consent, etc. In addition, by the beginning of the OCSC they must hold an Indian passport that is valid till at least six months beyond the dates of the respective international Olympiad.

The decisions of the examination committees of the INOs and OCSCs in the various subjects regarding selection of international team, special merit awardees and other awardees will be treated as final.



Stage IV Training of Indian teams for International Olympiads at HBCSE

The selected Indian teams undergo a rigorous training programme at HBCSE in theory and experiment and in case of astronomy, observational astronomy prior to their departure for the international Olympiads. Special laboratories have been developed in HBCSE for this purpose. Resource persons from different institutions across the country are invited to the training camps. The maximum period of training may be limited in some subjects as per the statutes of the respective international Olympiads.

Stage V Participation in International Olympiads

Subject	Team Composition	Venue	Month
Physics (53 rd IPhO)	5 Students 2 Teacher Leaders	Tokyo, Japan	July 2023
Chemistry (55 th IChO)	4 Students 2 Teacher Leaders	Zurich, Switzerland	July 2023
Biology (34 th IBO)	4 Students 2 Teacher Leaders	UAE	July 2023
Astronomy & Astrophysics (16 th IOAA)	5 Students 2 Teacher Leaders	Chorzow, Poland	August 2023
Junior Science (20 th IJSO)	6 Students 3 Teacher Leaders	Thailand	December 2023

[Each team may be accompanied by a number of Scientific Observers.]

Teacher participation in National Olympiad programme

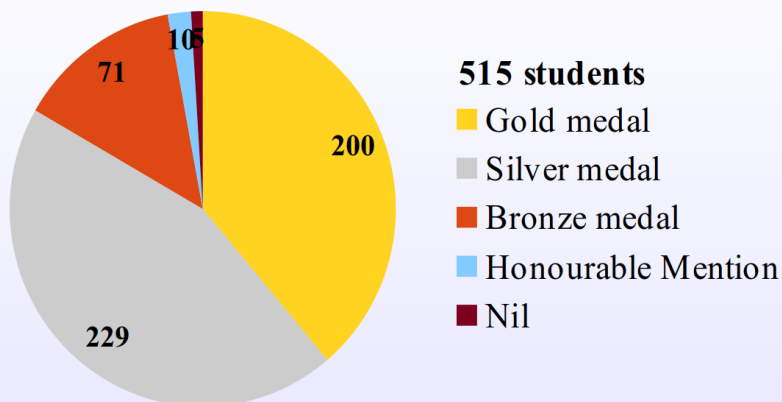
A large number of secondary, higher secondary and undergraduate teachers from all over India are involved in the national Olympiad programme. Many of them are invited to Resource Generation Camps (RGCs) at HBCSE throughout the year. Exposure camps are also organised at HBCSE to orient teachers to the academic and organisational aspects of the Olympiads. Usually these camps are held in the second half of the calendar year. Teachers are encouraged to keep an eye on our website for participation in exposure camps.



Indian performance in International Science Olympiads

Indian students have excelled at all the international science Olympiads ever since participation started in 1998. Almost every student has won a gold, silver, bronze medal or an honourable mention. Over the years several Indian students have also won special awards for best performances in theoretical or experimental components.

India at Science Olympiads (1998 - 2021)



Olympiads: An Inspiration for a Career in Science

The unique experience of the Olympiads inspires young students to continue their fascinating journey with science. Most of our past Olympiad students have chosen academic careers and several of them are today among the faculty at reputed universities and research institutions in India and abroad. Many more are currently pursuing research careers in various disciplines of science and engineering. Here is a small sample.



Note on other Olympiads

- **International Mathematical Olympiad (IMO):**

HBCSE is also a nodal centre for the Mathematical Olympiad. The details of selection to this Olympiad maybe found in a separate brochure and also on the HBCSE website: olympiads.hbcse.tifr.res.in

We mention below a few other recognized international Olympiads in science disciplines but participation in them is not directly organized by HBCSE.

- **Asian Physics Olympiad (APhO):** Participation is organized by IAPT. Students aspiring for this Olympiad must normally appear in the first stage NSEP exam followed by the second stage INPhO exam. The details of further selection and training are decided by IAPT and you may consult their website (www.iapt.org.in).
- **International Astronomy Olympiad - Junior (IAO - Junior):** Participation is organized by the National Council of Science Museums (NCSM). Students aspiring for this Olympiad must normally appear in the first stage NSEJS exam. The details of further selection and training are decided by NCSM and you may consult their website (www.nehrusciencecentre.gov.in).
- **International Earth Science Olympiad (IESO):** Participation is organized by the Geological Society of India and you may consult their website for more information (www.geosocindia.org).
- **International Olympiad in Informatics (IOI):** Participation is organized by the Indian Association for Research in Computing Science and you may consult their website for more information (www.iarcs.org.in/inoi).

We caution the students and teachers about numerous private examinations titled 'Olympiads', which may charge high fees, are not officially recognized by the Government of India and which do not lead to participation in the International Olympiads.

Queries and Grievances

All queries regarding Stage I examinations (NSEs) should be addressed to IAPT (Prof. B. P. Tyagi - see page 8).

For general queries regarding Astronomy, Biology, Chemistry Physics Olympiad programmes you may contact:

Prof. Anwesh Mazumdar
National Coordinator, Science Olympiads
Homi Bhabha Centre for Science Education (TIFR),
V. N. Purav Marg, Mankhurd, Mumbai 400 088
Tel: 022-2507 2322; 022-2548 2104; 022-2558 0036;
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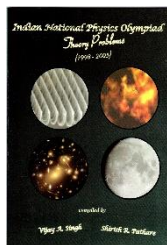
Prof. J. P. Gadre
Coordinator, Junior Science Olympiad
Tel: 09422987884
Email: iapt.jso@gmail.com

For more information, visit the website: olympiads.hbcse.tifr.res.in

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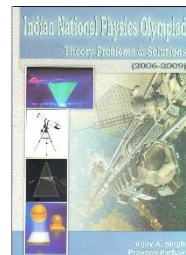


Indian National Physics Olympiad - Theory Problems (1998 - 2005), *Vijay A. Singh* and *Shirish R. Pathare*. **Price Rs. 50/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 90/-**

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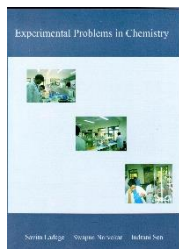


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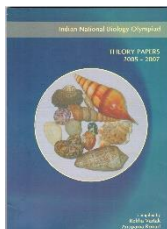
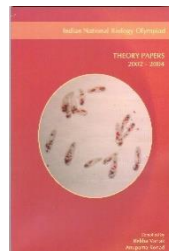
<http://chem.hbcse.tifr.res.in/indian-national-chemistry-olympiad-2002-2007>



Experimental Problems in Chemistry, *Savita Ladage*, *Swapna Narvekar* and *Indrani Sen*.

<http://chem.hbcse.tifr.res.in/wp-content/uploads/2019/05/Experimental-problems-in-Chemistry-2003-2007.pdf>

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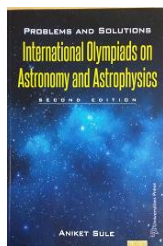
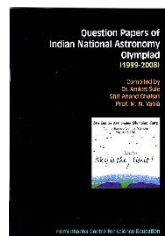


Indian National Biology Olympiad - Theory Papers (2005-2007), *Rekha Vartak and Anupama Ronad*.

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Question Papers of Indian National Astronomy Olympiad (1999- 2008) Aniket Sule, Anand Ghaisas and M. N. Vahia, Manovikas Prakashan. **Price Rs. 100/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 150/-**



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