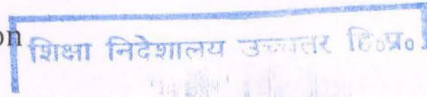


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No. EDN-H (7) 29/2017 Science Activity-II-  
Directorate of Higher Education  
Himachal Pradesh Shimla  
Tel: 0177-2653120, Extn234 FAX: 2812882 Email: [genbr@rediffmail.com](mailto:genbr@rediffmail.com)

From: The Director of Higher Education  
Himachal Pradesh



To: All the Deputy Director of Higher Education, in Himachal Pradesh

Subject: - Regarding Homi Bhabha Centre for Science Education

Memo:

The HOMI BHABHA CENTRE FOR SCINCE EDUCATION (Tata Institute of Fundamental Research) A Deemed University National Centre of the Government of India for Nuclear science and Mathematics V.N. Purav Marg, Mankhurd, Mumbai has proposed to organize Science and Astronomy Olympiad programmes in India and seek support and help to conduct Science and Astronomy Olympiad from Department of Higher Education. Copy of the brochure which describes the Olympiad programme In Astronomy, Biology, Chemistry, Junior Science and Physics (2017-2018) is enclosed herewith for ready reference.

In this connection, you are directed to make publicity amongst the field functionaries for conduct of above said programme under intimation to this office as well as to all concerned.

**Treat it as most Urgent.**

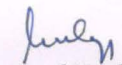
Encl. As Above.

(Krishan Vaidya)  
Jt. Director of Higher Education (C-I)  
Himachal Pradesh

Endst. No. Even dated Shimla-1 the September 2017

Copy for information to:-

1. The Principal Secretary (Education) to the Government of H.P. w.r.t letter No EDN-B-Ga (17)-6/2016-VIII dated: 29/8/2017 for information please.
2. Professor Anwesh Mazumdar, National Coordinator, Science Olympiads, The HOMI BHABHA CENTRE FOR SCINCE EDUCATION (Tata Institute of Fundamental Research) A Deemed University National Centre of the Government of India for Nuclear science and Mathematics V.N. Purav Marg, Mankhurd, Mumbai-400088 w.r.t. his letter No. referred above is hereby requested that the full cooperation will be extended to organize the above said programme.
3. The Superintendent (Computer/IT Cell), Directorate of Higher Education, Himachal Pradesh is hereby requested to upload the same on departmental website
4. **Guard File.**

  
Jt. Director of Higher Education (C-I)  
Himachal Pradesh

54080408  
26-08-2017

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HOMI BHABHA CENTRE FOR SCIENCE EDUCATION

होमी भाभा विज्ञान शिक्षा केंद्र, टाटा मूलभूत अनुसंधान संस्थान

TATA INSTITUTE OF FUNDAMENTAL RESEARCH A Deemed University  
National Centre of the Government of India for Nuclear Science and Mathematics

V. N. Purav Marg, Mankhurd, Mumbai - 400 088

Website: <http://www.hbcse.tifr.res.in>

प्रो. अन्वेष मजुमदार

राष्ट्रीय समन्वयक विज्ञान ओलंपियाड्स

Prof. Anwesh Mazumdar

National Coordinator, Science Olympiads

Phone: 91 - 22 - 2507 2322, 25072424

Fax: 91 - 22 - 2556 6635, 2558 6803

Email: [anwesh@tifr.res.in](mailto:anwesh@tifr.res.in)

Ref.: HBC/NC/17

August 8, 2017

Dear Madam/Sir,

I am writing to you regarding the Science and Astronomy Olympiad programmes in India. Please find enclosed 5 copies of the brochure which describes the Olympiad programme in Astronomy, Biology, Chemistry, Junior Science and Physics for next year (2017 - 2018). The national Olympiad programme, conducted by the Homi Bhabha Centre for Science Education (TIFR) in collaboration with the teacher associations in Physics (IAPT), Chemistry (ACT) and Biology (ATBS) is the highest level test of excellence among secondary and higher secondary students. This programme is the **only channel for participation in the International Olympiads of the respective subjects**. This programme is recognised and fully funded by the Government of India through the Department of Atomic Energy (DAE), Department of Science and Technology (DST), Department of Space (DoS) and the Ministry of Human Resource Development (MHRD). Over the last two decades, almost every Indian student who has qualified through the national programme has brought glory to the nation by winning a medal at the international olympiad.

Let me take this opportunity to bring to your notice the excellent performance of the Indian students in this year's international olympiads. The Indian teams to the Biology, Chemistry and Physics have recently returned from this year's international events held in July 2017. The International Junior Science Olympiad (IJSO) for 2016 was held in Bali, Indonesia in December. As always, every student from India has won a medal at each of the Olympiads.

The International Olympiad on Astronomy and Astrophysics (IOAA) for 2016 was hosted in India by National Institute of Science Education and Research (NISER), Bhubaneswar with academic collaboration of HBCSE. The Indian official team ranked second in this Olympiad with Indian students bagging the coveted awards for Best Overall Performance, Best Performance in Observational Round and Best Performance in Theoretical Round.

Results of IOAA and IJSO 2017 will be sent later. They are scheduled in November - December this year. Kindly find enclosed a summary of the above results. The brochure for the National Olympiad Programme for 2017 - 18 is also enclosed.

I request you to kindly popularise the Olympiad programme in your state by providing publicity to it though the resources at your disposal. The school/college system is the most vital instrument in locating talented students who have the potential to excel at the highest level and can build the future of India. I seek your support and help in this national endeavour.

All information regarding the olympiad programme may be found on our website: [olympiads.hbcse.tifr.res.in](http://olympiads.hbcse.tifr.res.in). Please do not hesitate to contact us for any clarifications.

With best regards,

(Anwesh Mazumdar)

Encl: (I) International Olympiad Results of 2016 - 2017

(II) Olympiad Brochures (5 nos.)

**INDIAN DELEGATION**  
**47<sup>th</sup> International Physics Olympiad 2016**  
**at Zurich, Switzerland**



**Standing from left to right:** Shirish Pathare (Leader), Rekha Ghorpade (Observer), Gowtham Amirthya S. N. (Student - Gold), Debaditya Pramanik (Student - Gold), Preey Shah (Student - Gold), Divyansh Garg (Student - Silver), Manan Bhatia (Student - Silver), Anwesh Mazumdar (Leader, National Coordinator, Science Olympiads), Prasanta K. Jena (Observer).

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

**2017-2018**

*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](http://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 2018.*

*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 also 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. Enrollment of students in each subject has grown steadily over time, and currently stands at between 15000 and 50000 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 of the Olympiad examinations is conducted by IAPT, while the later stages are the responsibility of HBCSE.

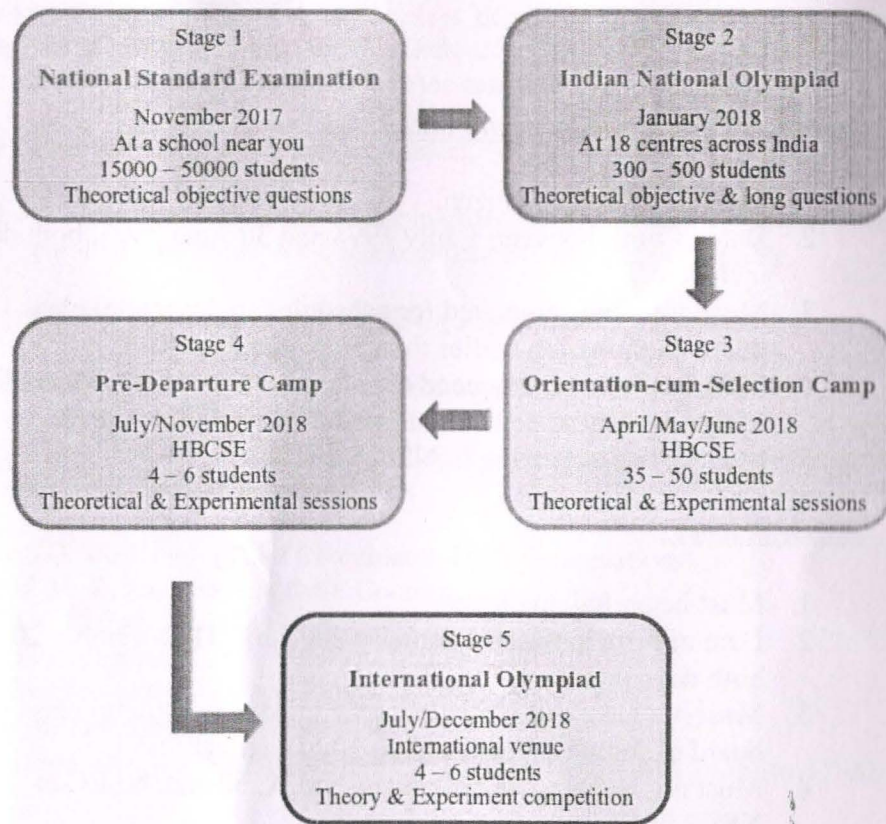
The science Olympiad programme is fully funded by the Government of India through the Board of Research in Nuclear Science, Department of Atomic Energy (BRNS, DAE), Department of Science and Technology (DST), Ministry of Human Resource Development (MHRD) and the Indian

Space Research Organisation, Department of Space (ISRO, D<sub>o</sub>S). 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 450 contestants from India have won medals and laurels at the international competitions in the last 20 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 2017-2018 is outlined in this brochure.

## Overview of the Science Olympiads: Five Stages



## 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 2018 must enrol for the NSEs in the respective subjects to be held in 2017.**

### ELIGIBILITY FOR NSE:

#### Astronomy, Biology, Chemistry and Physics:

1. Must be an Indian citizen.
2. Date of birth between 1 July 1998 and 30 June 2003, both days inclusive.
3. Must not have completed (or scheduled to complete) class 12 board examination earlier than 30 November 2017.
4. Must not have commenced (or planning to commence) studies in a university or equivalent institution by 1 June, 2018.
5. Must not be appearing in NSEJS 2017.

#### Junior Science:

1. Must be an Indian citizen.
2. Date of birth between 1 January 2003 and 31 December 2004, both days inclusive.
3. Must not have completed (or scheduled to complete) class 10 board examination earlier than 30 November 2017.
4. Must not be appearing in any of NSEA, NSEB, NSEC or NSEP 2017.

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.

First stage Examination	Date, Time and Venue of Examination	Question paper pattern	Language	Syllabus
National Standard Examination in Astronomy (NSEA)	November 26, 2017 (Sunday) 14:00 – 16:00 hrs Respective NSE centre	80 multiple choice questions with negative marking.	English & Hindi (option during registration)	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 26, 2017 (Sunday) 14:00 – 16:00 hrs Respective NSE centre	80 multiple choice questions with negative marking.	English & Hindi (option during registration)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE
National Standard Examination in Chemistry (NSEC)	November 26, 2017 (Sunday) 11:00 – 13:00 hrs Respective NSE centre	80 multiple choice questions with negative marking.	English & Hindi (option during registration)	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 19, 2017 (Sunday) 10:00 – 12:00 hrs Only in Kendriya Vidyalaya nearest to your NSE centre	80 multiple choice questions with negative marking.	English & Hindi (option during registration)	Is broadly equivalent to secondary school level (up to and including Class X) of CBSE. All the basic subjects of science (Biology, Chemistry and Physics) and Mathematics may have roughly equal emphasis.
National Standard Examination in Physics (NSEP)	November 26, 2017 (Sunday) 08:30 – 10:30 hrs Respective NSE centre	A) 3-mark questions, each with only one of four options correct. B) 6-mark questions, each with one or more than one option correct. To get credit, all the correct option(s) and no incorrect option(s) should be marked.	English, Hindi, Gujarati, Bangla (option during registration)	Is broadly equivalent to senior secondary level (up to and including Class XII) of CBSE.

### ENROLLMENT FOR NSE:

Find out from the principal and/or the head of department whether your school/college is a registered centre. If so, enrol your name by paying the required fee. Your school/college will give you all necessary instructions pertaining to NSEs.

If your school/college is not a registered centre, visit the IAPT website: [www.iapt.org.in](http://www.iapt.org.in). This website displays details of the centres which were registered **last year**. This may be of help to you in locating the centre nearest to you and in enrolling your name at the centre by paying the required fee.

- ❖ Fee: Rs. 100/- per student per subject.
- ❖ Fee is to be paid to the centre in-charge of the centre where you have enrolled your name. No direct remittance to IAPT is permissible.
- ❖ No TA/ DA is admissible for NSE (Stage I Examination).

Please note that NSEs are the organizational responsibility of IAPT. If you have any queries about NSEA, NSEB, NSEC, NSEJS and NSEP or if you have any difficulty in getting enrolled for these examinations, you should contact the following persons:

Prof. G. Venkatesh (Chief Coordinator, IAPT Examinations)  
 Prof. M. K. Raghavendra (NSE Coordinator)  
 F11A, 1<sup>st</sup> floor, Old Physics Building,  
 UG Programme,  
 Indian Institute of Science, Bangalore 560 012  
 E-mail: [iapt.nse@gmail.com](mailto:iapt.nse@gmail.com)  
 Tel. No: 080-49087030 (Mon-Fri : 10.00 to 13.00 and 14.00 to 17.00)

**PLEASE DO NOT CONTACT HBCSE IN THIS CONNECTION. ALL QUERIES ADDRESSED TO HBCSE IN CONNECTION WITH NSEs MAY BE FORWARDED TO THE ABOVE MENTIONED PERSON FOR REPLY.**

## 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), Junior Science (INJSO) and Physics (INPhO) will be organized by HBCSE in early 2018. 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, 2018 on the website: [olympiads.hbcse.tifr.res.in](http://olympiads.hbcse.tifr.res.in).

**All students appearing in INOs must register themselves on the above website after the publication of the list in order to obtain their INO admit cards. This registration is mandatory for appearing in INO. Unlike previous year, 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.

- Eligibility 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.
- Merit Index 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.

- 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) 2013-14, 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 eligibility clause. 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](http://www.iapt.org.in); [olympiads.hbcse.tifr.res.in](http://olympiads.hbcse.tifr.res.in)).

- 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.

The above criteria are illustrated with the following examples:

- 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 Eligibility 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 Eligibility Clause (a)). In such an event, additional students will be selected purely merit-wise, provided Eligibility 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. Those candidates who thus qualify to skip the first stage NSEs may be allowed, on written request, to the respective National Coordinator, to directly appear for the second stage Indian National Olympiad (INO) examination, provided they satisfy other eligibility criteria such as age, pre-college status, etc.

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

Eligibility for Astronomy (INAO 2018):

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, 2017
  - ii. Group B: Students who are in Class XI or lower as of November 30, 2017
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 2017 and INAO 2018 will be identical for the two groups.

SCHEDULE AND SYLLABUS FOR INO

Second stage Examination	Date & Time of Examination	Syllabus
Indian National Astronomy Olympiad (INAO)	January 27, 2018 (Saturday) 9:00 – 12:00 hrs	Is broadly equivalent to NSEA
India National Junior Science Olympiad (INJSO)	January 27, 2018 (Saturday) 13:30 – 16:30 hrs	Is broadly equivalent to NSEJS.
Indian National Chemistry Olympiad (INChO)	January 27, 2018 (Saturday) 13:30 – 16:30 hrs	Is broadly equivalent to NSEC.
Indian National Physics Olympiad (INPhO)	January 28, 2018 (Sunday) 9:00 – 12:00 hrs	Is broadly equivalent to NSEP.
Indian National Biology Olympiad (INBO)	January 28, 2018 (Sunday) 13:30 – 15:30 hrs	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.

### Part 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 25 students will be selected from each of groups A and B (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 Biology. Prior to INO, she declares her preference in the order: Physics, Biology, Astronomy. In this example, the target number of students in each subject is 35.

**Case 1:** Based on her INO performance, Amita is ranked 17<sup>th</sup> in Physics, 15<sup>th</sup> in Biology and 4<sup>th</sup> in Astronomy. She will be selected in Physics OCSC and her name will not be included in Biology or Astronomy OCSCs. As a result, all the students ranked below her in Biology 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 80<sup>th</sup> in Physics, 15<sup>th</sup> in Biology and 4<sup>th</sup> in Astronomy. She is unlikely to be selected for Physics OCSC because her rank is too low to be upgraded to less than 35. She will now be selected in Biology OCSC, and not for Astronomy. She will receive a certificate of merit in Biology and Astronomy.

**Case 3:** Amita is ranked 37<sup>th</sup> in Physics, 15<sup>th</sup> in Biology and 4<sup>th</sup> in Astronomy. She is initially not eligible for Physics, but has qualified for Biology 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 Biology 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](http://olympiads.hbcse.tifr.res.in)) by January 15, 2018.

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 IJJO 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 have 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.

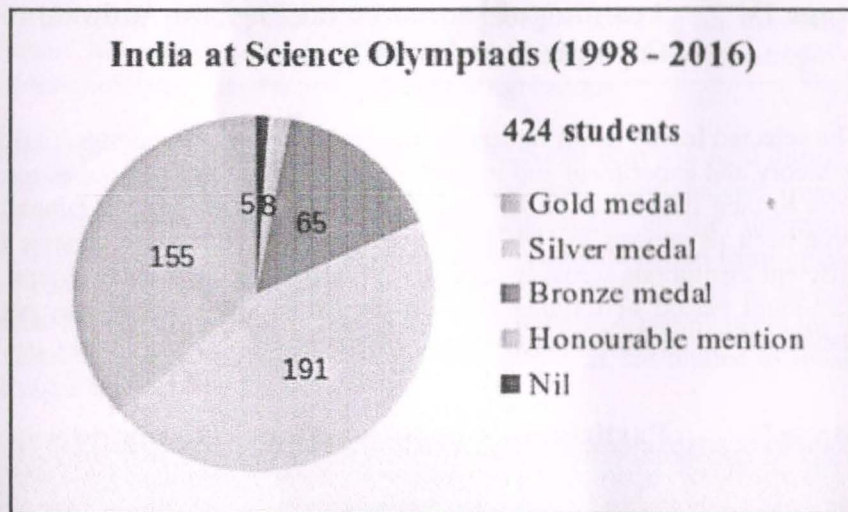
### **Stage V Participation in International Olympiads**

Subject	Team Composition	Venue	Month (tentative)
Physics (49 <sup>th</sup> IPhO)	5 Students 2 Teacher Leaders	Portugal	July 2018
Chemistry (50 <sup>th</sup> IChO)	4 Students 2 Teacher Leaders	Czech Republic & Slovakia	July 2018
Biology (29 <sup>th</sup> IBO)	4 Students 2 Teacher Leaders	Shiraz, Iran	July 2018
Astronomy & Astrophysics (12 <sup>th</sup> IOAA)	5 Students 2 Teacher Leaders	Sri Lanka	December 2018
Junior Science (15 <sup>th</sup> IJJO)	6 Students 3 Teacher Leaders	Gaborone, Botswana	December 2018

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

## 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.



## 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.

## Note on other Olympiads:

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/subjects/mathematics/final-brochure17-18.pdf](http://olympiads.hbcse.tifr.res.in/subjects/mathematics/final-brochure17-18.pdf)

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

- 1. 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](http://www.iapt.org.in)).
- 2. 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 followed by the second stage INAO exam. The details of further selection and training are decided by NCSM and you may consult their website ([www.nehrusciencecentre.gov.in](http://www.nehrusciencecentre.gov.in)).
- 3. 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](http://www.geosocindia.org)).
- 4. 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](http://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. G. Venkatesh - see page 7).

For general queries regarding all Science (Physics, Chemistry, Biology and Junior Science) 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;  
Fax: 022-2556 6635, 022-2556 6803  
Email: nc\_olympiad@hbcse.tifr.res.in

For general queries regarding the Astronomy Olympiad programmes you may contact:

Prof. M. N. Vahia  
National Coordinator, Astronomy Olympiad  
Tata Institute of Fundamental Research  
Homi Bhabha Road, Colaba, Mumbai 400 005.  
Tel: 022-2278 4545; 022-2278 2350  
Email: astronomy@hbcse.tifr.res.in

For more information visit the website: [olympiads.hbcse.tifr.res.in](http://olympiads.hbcse.tifr.res.in)

The courts at Mumbai alone shall have the jurisdiction to settle and decide all matters and disputes related to the Olympiads organised by HBCSE and Examinations from Indian National Olympiad (INO) and onwards as HBCSE is the Nodal Organising Institute for this programme.

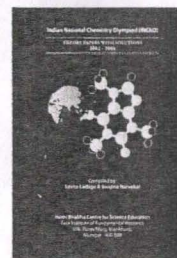
Information in this brochure is subject to revision in the event of unforeseen circumstances.

## Olympiad Books published by HBCSE



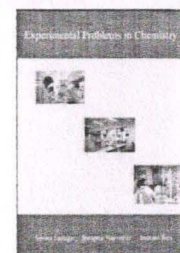
Indian National Physics Olympiad - Theory Problems (1998 - 2005), *Vijay A. Singh* and *Shirish R. Pathare*. **Price Rs. 50/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 90/-**

Indian National Physics Olympiad - Theory Problems and Solutions (2006 - 2009), *Vijay A. Singh* and *Praveen Pathak*. **Price Rs. 90/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 140/-**



Indian National Chemistry Olympiad - Theory Papers with Solutions (2002-2004), *Savita Ladage* and *Swapna Narvekar*. Available for download from: <http://chem.hbcse.tifr.res.in/indian-national-chemistry-olympiad-2002-2007/>

Indian National Chemistry Olympiad - Theory Papers with Solutions (2005-2007), *Savita Ladage* and *Swapna Narvekar*. Available for download from: <http://chem.hbcse.tifr.res.in/indian-national-chemistry-olympiad-2002-2007>



Experimental Problems in Chemistry, *Savita Ladage*, *Swapna Narvekar* and *Indrani Sen*. **Price Rs. 145/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 195/-**

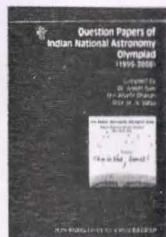
Indian National Biology Olympiad -Theory Papers (2002-2004), *Rekha Vartak and Anupama Ronad*. **Price Rs. 90/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 140/-**



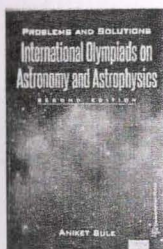
Indian National Biology Olympiad - Theory Papers (2005-2007), *Rekha Vartak and Anupama Ronad*. **Price Rs. 90/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 140/-**



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/-**



Problems and Solutions of International Olympiad on Astronomy and Astrophysics (2007 -2014), Editor: Dr. Aniket Sule, Universities Press India Pvt. Ltd, **Price Rs. 450/-** (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 500**



The Demand Draft includes postage charges for registered parcel and should be drawn in favour of *Homi Bhabha Centre for Science Education, payable at Mumbai* and sent to:

HBCSE Publications Section  
Homi Bhabha Centre for Science Education (TIFR)  
V. N. Purav Marg, Mankhurd, Mumbai 400 088

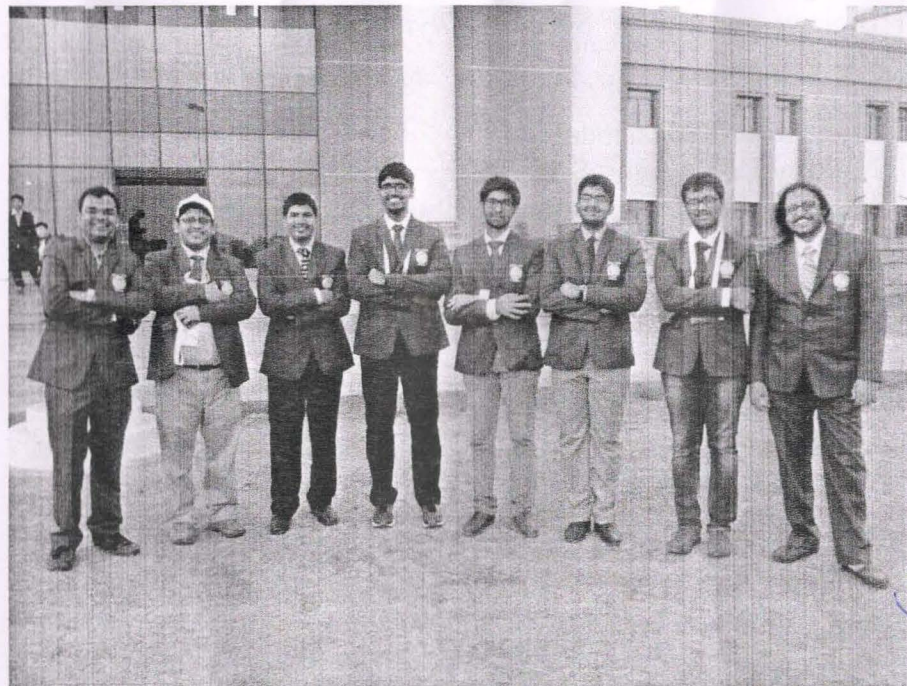
Question papers and solution of Indian National Olympiads are available at:

<http://olympiads.hbcse.tifr.res.in/how-to-prepare/past-papers>

## INDIAN DELEGATION

[Official Team]

10<sup>th</sup> International Olympiad on Astronomy and Astrophysics 2016  
at Bhubaneshwar, India



**Standing from left to right:** Tejas Shah (Scientific Observer), Swapnil Jawkar (Leader), Ameya Patwardhan (Student - Gold), Anand Iyer (Student - Gold), Neel Karia (Student - Silver), Aditya Sharma (Student - Silver), R. Nikhil Reddy (Student - Silver), Manojendu Choudhury (Leader).