NATIONAL OLYMPIAD PROGRAMME

IN

ASTRONOMY, BIOLOGY, CHEMISTRY

JUNIOR SCIENCE AND PHYSICS

2015-2016

leading to participation in International Olympiads

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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 2016.

Enrol for NSEA/NSEB/NSEC/NSEJS/NSEP

Introduction

The need for a national olympiad programme in basic sciences had been recognized by the scientific community in India for a long time. India started participating in the International Mathematics Olympiad from 1989. It was felt that with a large base of quality human resources in science, the country must also participate in the International Olympiads in basic sciences: Astronomy, Biology, Chemistry and Physics.

In 1997-98, Homi Bhabha Centre for Science Education (HBCSE) [a National Centre of the Tata Institute of Fundamental Research (TIFR), Mumbai] and the Indian Association of Physics Teachers (IAPT) jointly took initiative in starting the physics olympiad programme. A year later, HBCSE took the initiative to extend the programme to chemistry and biology also. IAPT came forward to offer its wide network for help in the conduct of chemistry and biology examinations also. These initiatives received strong support and encouragement from the Department of Atomic Energy (DAE), Department of Science and Technology (DST) and the Ministry of Human Resource Development (MHRD) of the Government of India. India sent its first team to the International Physics Olympiad (IPhO) in 1998, International Chemistry Olympiad (IChO) in 1999 and International Biology Olympiad (IBO) in 2000. Around the same time TIFR, in association with the National Council of Science Museums and Astronomical Society of India, initiated efforts to participate in the International Astronomy Olympiad (IAO). Our first foray into IAO was in 1999. Indian teams started participating in International Junior Science Olympiad (IJSO) and International Olympiad in Astronomy and Astrophysics (IOAA) from 2004 and 2007 respectively. The good performances of the Indian teams right from the first few years of participation helped in the consolidation of the programme.

In July 2001, India hosted the 33rd International Chemistry Olympiad in Mumbai. Further, India hosted the 11th International Astronomy Olympiad in Mumbai in November 2006, the 19th International Biology Olympiad in Mumbai in July 2008, the 13th Asian Physics Olympiad in Delhi in May 2012 and the 10th International Junior Science Olympiad in Pune, in December 2013. Recently, India hosted the 46th International Physics Olympiad in Mumbai in July 2015. These events organized by Homi Bhabha Centre for Science Education (TIFR) give a boost to the entire academic programme of Science Olympiads in India.

The National Olympiad programme in astronomy, biology, chemistry, junior science and physics is overseen by a National Steering Committee constituted by the DAE. The Olympiad programme is financially supported by Board of Research in Nuclear Science (BRNS, DAE), Department of Science and Technology (DST), Ministry of Human Resource Development (MHRD) and Department of Space, Indian Space Research Organization (DoS, ISRO). The programme follows a five stage process. Stage I of the programme is the organizational responsibility of the Indian Association of Physics Teachers (IAPT). All the subsequent stages are conducted by HBCSE. The programme for the year 2015-2016 is outlined below.

Stage I National Standard Examinations (NSEs)

National Standard Examinations constitute the first stage of selection of students in the National Olympiad Programme. Every student aspiring to go through successive stages of the programme must enrol for the NSEs.

Eligibility

All Indian students who are born on or after July 1, 1996 and, in addition, are in Class XII or lower as of November 30, 2015, are eligible to appear for NSEA, NSEB, NSEC and NSEP 2015-2016. If they qualify in NSEA/NSEB/NSEC/NSEP they will be eligible for the next stage leading to participation in International Olympiads for Astronomy and Astrophysics, Biology, Chemistry and Physics in 2016, respectively.

Junior Science (NSEJS):

All Indian students who are born on or after January 1, 2001 and, in addition, are in Class X or Class IX as of November 30, 2015, are eligible to appear in NSEJS 2015–2016. If they qualify in the NSEJS, they will be eligible for the next stage leading to participation in International Junior Science Olympiad in 2016. Students in lower or higher classes are not eligible to appear in NSEJS 2015-2016.

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.

Syllabus

The syllabus for NSEs in Biology, Chemistry and Physics is broadly equivalent to the senior secondary level (up to and including Class XII) of CBSE.

The syllabus for NSEA 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.

The syllabus for NSEJS 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.

Schedule

The schedule for the NSEs is described below.

- **National Standard Examination in Astronomy (NSEA)**

Date of exam : 22nd November 2015 (Sunday)

Time of exam : 03.00 pm – 05.00 pm

Last Date of Enrolment : 15th September 2015

The question paper consists of 80 multiple choice questions, each with only one of the four options correct.

Language : English only

- **National Standard Examination in Biology (NSEB)**

Date of exam : 22nd November 2015 (Sunday)

Time of exam : 03.00 pm – 05.00 pm

Last Date of Enrolment : 15th September 2015

The question paper consists of 80 multiple choice questions, each with only one of the four options correct.

Language : English only

- **National Standard Examination in Chemistry (NSEC)**

Date of exam : 22nd November 2015 (Sunday)

Time of exam : 12.30 pm – 02.30 pm

Last Date of Enrolment : : 15th September 2015

The question paper consists of 80 multiple choice questions, each with only one of the four options correct.

Language : English only

- **National Standard Examination in Junior Science (NSEJS)**

Date of exam : 22nd November 2015 (Sunday)

Time of exam : 03.00 pm – 05.00 pm

Last Date of Enrolment : 15th September 2015

The question paper consists of 80 multiple choice questions, each with only one of the four options correct.

Language : English only

- **National Standard Examination in Physics (NSEP)**

Date of exam : 22nd November 2015 (Sunday)

Time of exam : 09.30 am – 11.30 am

Last Date of Enrolment : 15th September 2015

The question paper consists of multiple choice questions of the following types:

1. 3-mark questions, each with only one of the four options correct, and
2. 6-mark questions, each with one or more than one option correct. To get credit, all correct option(s) and no incorrect option(s) should be marked

Language : English, Hindi, Gujarati, Bangla.

To Enrol for NSEs

Find out from the principal and/or the head of department whether your school/college is a registered centre. (Each registered centre may be an examination centre for all the subjects.) 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: 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 person:

Prof. M. L. Ogalapurkar
Chief Co-ordinator (IAPT Examinations)
IAPT Office, Sheela Vihar Colony,
7, Heramb Co-op HSG Society,
Near Kimaya Hotel, Karve Road,
Kothrud, Pune - 411 038
Tel: 020 – 2542 0163; 020 - 2025 2754(O)
E-mail: iaptpune@gmail.com

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)

Indian National Olympiads will be held in Astronomy, Biology, Chemistry, Junior Science and Physics (INAO/INBO/INChO/INJSO/INPhO). They will be organized by HBCSE*. These examinations will be held at about 16 centres in the country. The list of students selected for the INOs according to the criteria given below will be published by January 15, 2016 on the website: http://olympiads.hbcse.tifr.res.in. 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 for INAO/INBO/INChO/ INJSO/INPhO are eligible for TA/DA as per the norms of the programme.

***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 conducted by a different organisation (to be announced later).**

Eligibility for Stage II:

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) **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.

(b) **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.

(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) 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. 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://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 one, provided that the eligibility clause 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 S1 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 S1 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) **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.

(f) **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.

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

Eligibility for INAO and OCSC-Astronomy in 2016:

Since India will be hosting the 10th International Olympiad in Astronomy and Astrophysics (IOAA) in Bhubaneswar in 2016, it might be possible to select two teams (one official team and the other guest team) for the competition. To encourage younger students to participate in IOAA 2016, the rules of selection for Stage II (INAO) and Stage III (OCSC-Astronomy) are modified as below:

1. There will be no change in the eligibility for Stage I (NSEA).
2. The student pool of NSEA will be divided into two groups:
   i. Group A: Students who are in Class XII as of November 30, 2015
   ii. Group B: Students who are in Class XI or lower as of November 30, 2015
3. 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.
4. The MI and MAS will be calculated separately for each of these groups.
5. All the clauses ((a) to (f) above) of selection will be applied separately to each group.
6. The question papers of NSEA 2015 and INAO 2016 will be identical for the two groups.
7. For Stage III (OCSC-Astronomy), a target number of 25 students will be selected from each group, according to respective order of merit in INAO. Thus a total of 50 students will be selected.
8. Selection of official and guest teams 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.

- **Indian National Astronomy Olympiad Examination (INAO)**

  INAO Duration 3 hours

  The syllabus for INAO is broadly equivalent to the NSEA

- **Indian National Biology Olympiad Examination (INBO)**

  INBO Duration 2 hours

  The syllabus for INBO is broadly equivalent to NSEB.

- **Indian National Chemistry Olympiad Examination (INChO)**

  INChO Duration 3 hours

  The syllabus for INChO is broadly equivalent to NSEC.

- **Indian National Junior Science Olympiad Examination (INJSO)**

  INJSO Duration 3 hours

  The syllabus for INJSO is broadly equivalent to the NSEJS.

- **Indian National Physics Olympiad Examination (INPhO)**

  INPhO Duration 3 hours

  The syllabus for INPhO is broadly equivalent to NSEP.

Syllabus

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

Tentative Schedule of INO Exams

January 30, 2016 (Saturday) : 09.00 a.m. - 12.00 noon (INAO)

January 30, 2016 (Saturday) : 01.30 p.m. - 04.30 p.m. (INJSO)

January 30, 2016 (Saturday) : 01.30 p.m. - 04.30 p.m. (INChO)

January 31, 2016 (Sunday) : 09.00 a.m. - 12.00 noon (INPhO)

January 31, 2016 (Sunday) : 01.30 p.m. - 03.30 p.m. (INBO)

Stage III Orientation Cum Selection Camps (OCSC)

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. The number of students to be selected in each subject will be announced before the INO Examinations.

In all the above cases, 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.

There will be no other criterion or provision for selection to Orientation Cum Selection Camps (OCSC).

Biology, Chemistry and Physics

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.

Please see above for the procedure to select the team(s) to represent at the International Olympiad on Astronomy and Astrophysics in 2016.

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).

Tentative dates of OCSC

The OCSC dates will be announced on HBCSE website (http://olympiads.hbcse.tifr.res.in) by January 15, 2016.

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 look at the OCSC dates and 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 they must hold a valid Indian passport as per the visa regulations of the host country by the beginning of the respective OCSC.

The recommendations of the examination committees of the INOs and OCSCs in the various subjects regarding 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. Special laboratories have been developed in HBCSE for this purpose. Resource persons from different institutions across the country are invited to the training camps. As per International Olympiad statutes, the training in Chemistry and Biology is limited to two weeks duration. In Physics the training may be longer. For Astronomy and Junior Science the training camp will be of one week duration.

Stage V Participation in International Olympiads

Subject	**Team Composition**	**Venue**	**Month (tentative)**
Physics (47^{th} IPhO)	5 Students 2 Teacher Leaders	Zurich, Switzerland	July 2016
Chemistry (48^{th} IChO)	4 Students 2 Teacher Leaders	Karachi, Pakistan	July 2016
Biology (27^{th} IBO)	4 Students 2 Teacher Leaders	Hanoi, Vietnam	July 2016
Astronomy & Astrophysics (10^{th} IOAA)*	5 Students 2 Teacher Leaders	Bhubaneswar, India	December 2016
Junior Science (13^{th} IJSO)	6 Students 3 Teacher Leaders	Kazakhstan	December 2016

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

*A guest team of five additional students may be selected for IOAA 2016.

Note on other Olympiads:

HBCSE is also a nodal centre for the Mathematics Olympiad. The details of selection to this Olympiad maybe found in a separate brochure and also on the HBCSE website.

We mention below a few other recognized International Olympiads 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 (http://www.iapt.org.in).

2. **International Astronomy Olympiad - Junior (IAO - Jr):** 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).

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).

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 (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. M. L. Ogalapurkar - see page 5).

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: 022-2548 2104; 022-2558 0036; 022-2507 2322
Fax: 022-25566635, 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; 2278 2350
Email: astronomy@hbcse.tifr.res.in

For more information visit the website: 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. 60/- (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 110/-**

- 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.*
  Price Rs. 160/- (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 210/-**

- Indian National Chemistry Olympiad - Theory Papers with Solutions (2005-2007), *Savita Ladage* and *Swapna Narvekar.*
  Price Rs. 160/- (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 210/-**

- 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/-**

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

List of Acronyms

AIIMS	:	All India Institute of Medical Sciences (Examination)
BRNS	:	Board of Research in Nuclear Sciences
CBSE	:	Central Board of Secondary Education
DAE	:	Department of Atomic Energy
DoS	:	Department of Space
DST	:	Department of Science and Technology
HBCSE	**:**	**Homi Bhabha Centre for Science Education**
IAPT	:	Indian Association of Physics Teachers
IBO	:	International Biology Olympiad
IChO	:	International Chemistry Olympiad
IIT-JEE	:	Indian Institute of Technology-Joint Entrance Exam
IJSO	:	International Junior Science Olympiad
INAO	:	Indian National Astronomy Olympiad Examination
INBO	:	Indian National Biology Olympiad Examination
INChO	:	Indian National Chemistry Olympiad Examination
INJSO	:	Indian National Junior Science Olympiad Examination
INPhO	:	Indian National Physics Olympiad Examination
IOAA	:	International Olympiad in Astronomy and Astrophysics
IPhO	:	International Physics Olympiad
ISRO	:	Indian Space Research Organization
MHRD	:	Ministry of Human Resource Development
NCSM	:	National Council of Science Museums
NSE	:	National Standard Examinations
NSEA	:	National Standard Examination in Astronomy
NSEB	:	National Standard Examination in Biology
NSEC	:	National Standard Examination in Chemistry
NSEJS	:	National Standard Examination in Junior Science
NSEP	:	National Standard Examination in Physics
OCSC	:	Orientation cum Selection Camp
TIFR	:	Tata Institute of Fundamental Research

INDIAN DELEGATION
8th International Olympiad on Astronomy and Astrophysics 2014
at Suceva, Romania

Standing from left to right: Dr. Aniket Sule (Leader), Prof. A. N. Ramprakash (Leader), P. S. E. Sai Prakash Reddy (Silver), Prof. Harvinder Kaur Jassal (Scientific Observer), J. Ranjith Ganesh (Silver), Sheshansh Agrawal (Gold), K. Nagendra Reddy (Silver), Shruthi Sridhar (Silver), Mr. V. P. Raul (Observer).

INDIAN DELEGATION
25th International Biology Olympiad 2014
at Bali, Indonesia

Standing from left to right: Prof. Rekha Vartak, HBCSE (Leader), Prof. P. G. Kale (Leader), Arnav Kalra (Silver), Vaidehi Rakholia (Silver), Lajjaben Patel (Silver), Mudit Agarwal (Silver), Dr. Dharmendra Shah (Scientific Observer).

INDIAN DELEGATION
46th International Chemistry Olympiad 2014
at Hanoi, Vietnam

Standing from left to right: Ms. Indrani Das (Scientific Observer), Prof. P. A. Sathe (Leader), Kushal Babel (Bronze), Aniket Murhekar (Silver), Shubham Goel (Silver), Aditya Kumar (Bronze), Prof. Prodeep Phukan (Leader), Prof. M. Swaminathan (Scientific Observer).

INDIAN DELEGATION
11th International Junior Science Olympiad 2014
at Mendoza, Argentina

Standing from left to right: Dr. P. K. Joshi (Scientific Observer), Dr. Jogeswar S. Purohit (Leader), Debaditya Pramanik (Gold), Yash Jain (Gold), Kushagra Juneja (Gold), Irin Ghosh (Gold), Sai Teja (Gold), G. Pradeep (Gold), Pradeep Dasgupta (Leader) and Sujata Haralkar (Leader).

INDIAN DELEGATION
45th International Physics Olympiad 2014
at Astana, Kazakhstan

Standing from Left to Right: Prof. Anwesh Mazumdar (Scientific Observer), Dr. Rajesh Khaparde (Scientific Observer), Chitrang Murdia (Gold), Bure Vidya Sagar Naidu (Silver), Gurkirat Singh Bajwa (Silver), Prof. Vijay Singh (Scientific Observer), Rupanshu Ganvir (Silver), Aniket Bajpai (Gold), Prof. C. K. Desai (Leader), Dr. Praveen Pathak (Leader).