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

2011 - 2012

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 physics, chemistry, biology, astronomy and junior science.

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

Do India Proud at the International Olympiads 2012.

Enroll for NSEP/NSEC/NSEB/NSEA/NSEJS now.

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: Physics, Chemistry, Biology and Astronomy.

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. 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 and the 19th International Biology Olympiad in Mumbai, in July 2008. These events organized by Homi Bhabha Centre for Science Education (TIFR) have given further boost to the entire programme of academic Olympiads in India.

The National Olympiad progamme in physics, chemistry, biology and astronomy is overseen by a National Steering Committee constituted by the DAE. From the year 2008 – 2009 junior science olympiad is added to the list of subjects. 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 2011-2012 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 enroll for the NSEs.

Eligibility

Physics, Chemistry, Biology (NSEP, NSEC, NSEB):

All Indian students who are born on or after July 1, 1992 and, in addition, are in Class XII or lower as of November 30, 2011, are eligible to appear for NSEP, NSEC, and NSEB 2011-2012. If they qualify in NSEP/NSEC/NSEB they will be eligible for subsequent stages leading to participation in International Olympiads for Physics/Chemistry/Biology 2012 respectively.

Junior Science (NSEJS):

All Indian students who are born on or after January 1, 1997 and, in addition, are in Class X or lower as of November 30, 2011, are eligible to appear in NSEJS 2011–2012. If they qualify in the NSEJS, they will be eligible for subsequent stages leading to participation in International Junior Science Olympiad 2012.

Astronomy (NSEA):

All Indian students who are born on or after January 1, 1993 and, in addition, are in Class XII or lower as of November 30, 2011, are eligible to appear for NSEA 2011–2012. If they qualify in the NSEA they will be eligible for subsequent stages leading to participation in International Olympiad in Astronomy and Astrophysics 2012.

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

Syllabus

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

The syllabus for NSEA is broadly equivalent to senior secondary level (Class XI and Class XII) of CBSE. There will be greater emphasis on physics and mathematics and elementary astronomy.

The syllabus for NSEJS is broadly equivalent to secondary school level (up to Class X) of CBSE. All the basic subjects of science (Physics, Chemistry, Biology) and Mathematics will have roughly equal emphasis.

The schedule for the NSEs is described herewith.

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

Date of exam : 27th November 2011 (Sunday)

Time of exam : 09.30 am – 11.30 am

Last Date of Enrollment : 15th September 2011

Part A 50 multiple choice questions consisting of

(A1) 40 questions, each with only one of the four options correct, and

(A2) 10 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.

Part B 5 or 6 short answer- type questions or problems.

Language English (However, NSEP question papers may be available in Hindi and some other regional languages provided there are at least 300 students opting for that language. Please see the IAPT website: http://www.iapt.org.in in this connection.)

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

Date of exam : 27th November 2011 (Sunday)

Time of exam : 12.30 pm – 02.30 pm

Last Date of Enrollment : 15th September 2011

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 : 27th November 2011 (Sunday)

Time of exam : 03.00 pm – 05.00 pm

Last Date of Enrollment : 15th September 2011

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 Astronomy (NSEA)

Date of exam	:	27th November 2011 (Sunday)
Time of exam	:	03.00 pm – 05.00 pm
Last Date of Enrollment	:	15th September 2011

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	:	27th November 2011 (Sunday)
Time of exam	:	03.00 pm – 05.00 pm
Last Date of Enrollment	:	15th September 2011

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

Language: : English only

For full details please see the IAPT website: **http://www.iapt.org.in**

To Enroll 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, enroll 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

For students in India	Rs. 75/- per student per subject.
For overseas students	US $ 15 per student per subject.

- Fee is to be paid to the co-ordinator of the centre where you have enrolled your name. No direct remittance to IAPT.
- 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 NSEP, NSEC, NSEB, NSEA and NSEJS or if you have any difficulty in getting enrolled for these examinations, you should contact the following persons.

Prof. M. L. Oglapurkar
Co-ordinator (NSEP)
IAPT Office, I.I.E. Campus,
128/2, J. P. Naik Marg, Kothrud,
Pune – 411 038
Tel: 020 - 25420163 (O),
E-mail: iapt@vsnl.net

Prof. R. M. Dharkar
Chief Co-ordinator
(IAPT Examinations)
E-mail: rmdharkar@gmail.com

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

For each subject, the top 300 students on the basis of the merit list of NSE qualify to appear for the stage II examinations i.e. Indian National Olympiad Examinations (INOs). In the event there is a tie at the last position in the merit list, all students with the same marks at the last position will qualify to appear for the INO in the concerned subjects.

Candidates who have represented India in the International Olympiad (IPhO, IChO, IBO, IAO, IOAA and IJSO) need not appear for the first stage NSE examination in the respective subject. They may be allowed on 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).

Stage II Indian National Olympiad Examinations

Indian National Olympiads will be held in physics, chemistry, biology, astronomy and junior science. They will be organized by HBCSE. These examinations are held at about 15 centres in the country. The dates and schedule of these examinations will be communicated in the first week of January to the eligible students selected from Stage I examinations. They will also be announced on the website: http://www.olympiads.hbcse.tifr.res.in. Please note that hard copy of the selection letter sent by postal communication (normally speed post) is to be taken as official and not the announcement on the website. HBCSE will not be responsible for postal delays or delays due to incomplete, illegible/incorrect addresses provided by students, or any other reasons beyond HBCSE's control. As far as possible the National Olympiads in different subjects are held on separate days/timings so that a student who is eligible to appear for more than one subject can do so. Students appearing for INPhO/INChO/INBO/INAO/INJSO are eligible for TA/DA as per the norms of the programme.

INDIAN NATIONAL PHYSICS OLYMPIAD EXAMINATION (INPhO)

INPhO Duration 3 hours

The syllabus for INPhO is broadly equivalent to NSEP.

INDIAN NATIONAL CHEMISTRY OLYMPIAD EXAMINATION (INChO)

INChO Duration 3 hours

The syllabus for INChO is broadly equivalent to NSEC.

INDIAN NATIONAL BIOLOGY OLYMPIAD EXAMINATION (INBO)

INBO Duration 2 hours

The syllabus for INBO is broadly equivalent to NSEB.

INDIAN NATIONAL ASTRONOMY OLYMPIAD EXAMINATION (INAO)

INAO Duration 3 hours

The syllabus for INAO is broadly equivalent to the NSEA

INDIAN NATIONAL JUNIOR SCIENCE OLYMPIAD EXAMINATION (INJSO)

INJSO	Duration 3 hours The syllabus for INJSO is broadly equivalent to the NSEJS.

The above are broad syllabus guidelines. Questions and problems in National Olympiads are usually non-conventional and of high difficulty level, and comparable to the International Olympiads.

TENTATIVE DATES OF EXAMS

January 28, 2012 (Saturday):	09.00 a.m. - 12.00 noon (INAO)
January 28, 2012 (Saturday):	01.00 p.m. - 04.00 p.m. (INJSO)
January 28, 2012 (Saturday):	01.00 p.m. - 04.00 p.m. (INChO)
January 29, 2012 (Sunday):	09.00 a.m. - 12.00 noon (INPhO)
January 29, 2012 (Sunday):	01.00 p.m. - 03.00 p.m. (INBO)

For Orientation Cum Selection Camp (OCSC):

On the basis of performance in the Indian National Olympiads 35 students will be selected in each subject for the Orientation Cum Selection Camp (OCSC) in that subject.

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).

Stage III **Orientation Cum Selection Camps (OCSC)**

Physics, Chemistry and Biology

The selected group of students in different subjects will be invited to the Orientation Cum Selection Camps at HBCSE. The camps will be of two to three weeks duration in each subject. The camps include several theoretical and experimental tests. Orientation is provided to students especially for he experimental tests. The camp conclude 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 Rs. 5000/- 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

The selected group of students in Astronomy is invited together to the Orientation Cum Selection Camp at HBCSE. The camp will be of about three week's 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 will conclude with an award function where distinguished scientists will be 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 Rs. 5000 each in the form of book and cash. In addition there will be special prizes to recognize meritorious performance in theory, data analysis and observation.

The 5 special merit awardees will constitute the 5-member student team to represent India at the International Olympiad in Astronomy and Astrophysics (IOAA).

Junior Science:

The selected group of students from INJSO will be invited to the Orientation Cum Selection Camp at HBCSE. The camp will be of two to three weeks duration. The camp will include several theoretical and experimental tests. Orientation will be provided to students especially for the experimental tests. The camp will conclude with a valedictory function where distinguished scientists will be 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 Rs. 5000/- each in the form of books and cash. In addition there will be special prizes to recognize meritorious performance in theory and experiments.

The 6 special merit awardees will constitute the 6-member student team to represent India at the International Junior Science Olympiad.

TENTATIVE DATES OF OCSC

Physics	:	May 12 - May 23, 2012
Chemistry	:	May 24 - June 3, 2012
Biology	:	June 4 - June 13, 2012
Astronomy	:	April 24 - May 12, 2012
Junior Science	:	May 14 - June 2, 2012

To the extent possible care is taken that the camp dates do not overlap with the national level competitive exams, (e.g. IIT-JEE for physics and chemistry and astronomy students and AIIMS for biology students).

The selection of the members to the Indian teams (IPhO, IChO, IBO, IOAA, and IJSO) holds provided they satisfy required criteria such as age limit, medical fitness, parental consent, etc. In addition they must hold valid Indian passports as per the visa regulations of the host country by the end 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 at HBCSE for the 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's duration.

Stage V **Participation in International Olympiads**

The 5-member student team, two teacher leaders and one scientific observer will constitute the delegation to represent India at the International Physics Olympiad (IPhO). The 43rd IPhO will tentatively be held in Tartu and Tallinn, Estonia in July 2012.

The 4-member student team, two teacher leaders and one scientific observer will constitute the delegation to represent India at the International Chemistry Olympiad (IChO). The 44th IChO will tentatively be held in Washington, USA in July 2012.

The 4-member student team, two teacher leaders and one scientific observer will constitute the Indian delegation to the International Biology Olympiad (IBO). The 23rd IBO will tentatively be held in Singapore in July, 2012.

The 5-member student team and two teacher leaders and one scientific observer will constitute the Indian delegation to the 2012 International Olympiad on Astronomy and Astrophysics (IOAA). The 6th IOAA will tentatively be held in Rio de Janeiro, Brazil in July 2012.

The 6-member student team and three teacher leaders will constitute the Indian delegation to the International Junior Science Olympiad (IJSO). The 9th IJSO will tentatively be held in Busan, South Korea in December 2012.

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

All queries regarding Stage I examinations (NSEs) should be addressed to IAPT (Prof. M. L. Oglapurkar or Prof. R. M. Dharkar – see page 6).

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

Prof. M. N. Vahia
National Co-ordinator, 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 general queries regarding all Science (Physics, Chemistry and Biology) Olympiad programmes you may contact:

Prof. Vijay Singh
National Co-ordinator, Science Olympiads
Homi Bhabha Centre for Science Education (TIFR)
V. N. Purav Marg, Mankhurd, Mumbai 400 088.
Tel: 022-2507 2300; 022-2507 2322, 022-25482104
Fax: 022-2556 6635, 2556 6803
Email: nc_olympiad@hbcse.tifr.res.in

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

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

Books:

- Indian National Physics Olympiad - Theory Problems (1998 – 2005), *Prof. Vijay A. Singh* and *Mr. Shirish R. Pathare.*
  Price Rs. 60/- (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 100/-**

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

- Indian National Chemistry Olympiad - Theory Examination Papers (2002-2007), *Dr. Savita Ladage* and *Swapna Narvekar.*
  Price Rs. 150/- (Purchase in person from HBCSE) or by sending a **Demand Draft of Rs. 190/-**

- Experimental Problems in Chemistry, *Dr. Savita Ladage, Swapna Narvekar and Indrani Sen.*
  Price Rs. 130/- (Purchase in person from HBCSE) or can be obtained by enquiring an **email: hbcpub@hbcse.tifr.res.in** (postal charges extra)

- 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/-**

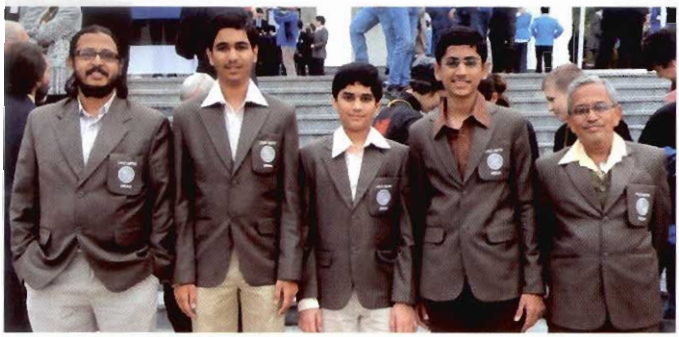
The Demand Draft includes postage charges for registered parcel and should be in favor of ***Homi Bhabha Centre for Science Education, payable at Mumbai*** and sent to:

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

List of Acronyms

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

International Astronomy Olympiad 2010 Medalists



Standing from left to right: Dr. Manojendu Choudhury (Leader), Mr. Pritish Patil (Silver), Mr. Rallabandi Sasibhushan Bharadwaj (Gold), Mr. Sharad Mirani (Gold), Mr. Hemant Mone (Leader). The IAO was held in Sudak (Crimea), Ukraine (October 16 - October 24 , 2010).

International Junior Science Olympiad 2010 Medalists

Standing from left to right: Ms. Harine Ravichandiran (Silver), Mr. Chandan Bhosale (Leader), Mr. N. Bharath Sivaram (Silver), Mr. Yash Gupta (Gold), Mr. Ashwin Sreenivas (Gold), Dr. P.K. Joshi (Leader), Mr. Aayush Sharma (Gold), Mr. Sai Akhil Suggu (Gold) and Dr. Ritesh Khunyakari (Leader). The IJSO was held in Abuja, Nigeria (December 2 - December 11, 2010).

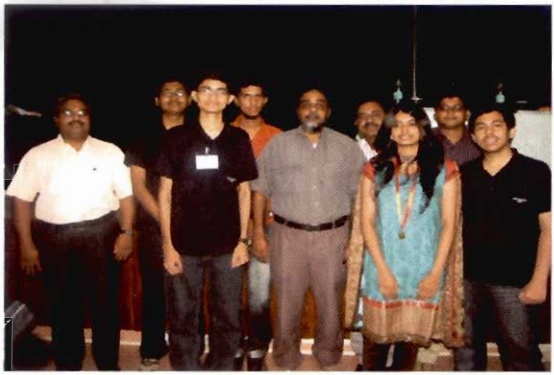
International Olympiad on Astronomy and Astrophysics 2010 Medalists

Standing from left to right: Mr. Pradip Dasgupta (Leader), local team guide, Mr. Kottur Satwik (Bronze), Prof. H. C. Pradhan (Observer), Mr. Shantanu Agarwal (Bronze), Mr. Chirag Modi (Gold), Mr. Aniruddha Bapat (Gold), Mr. Nitesh Kumar Singh (Gold), Dr. Aniket Sule (Leader). The IOAA was held in Beijing, China (September 12- September 20, 2010).

International Chemistry Olympiad 2010 Medalists

Standing from left to right: Prof. P. Deota (Observer), Prof. Radha Jayaram (Mentor), Mr. Nikunj Saunshi (Silver), Mr. Surendra Kotra (Silver), Mr. Diptarka Hait (Silver), Mr. Amit Panghal (Bronze) and Dr Lakshmy Ravishankar (Head Mentor). The IChO was held in Tokyo, Japan (July 19 - July 28, 2010).

International Physics Olympiad 2010 Medalists



Standing from left to right: Dr. Raghavendra M. K. (Observer), Mr. Vipul Singh (Silver), Mr. Mehul Kumar (Silver), Mr. Sanchar Sharma (Bronze), Prof. Vijay Singh (National Co-ordinator), Dr. Pramendra Ranjan Singh (Leader), Ms. Aakanksha Sarda (Gold), Shri A. M. Shaker (Leader), Mr. Shivam Handa (Silver). The IPhO was held in Zagreb, Croatia (July 17 - July 25, 2010).

International Biology Olympiad 2010 Medalists

Standing from left to right: Dr. Sasikumar Menon (Leader), Mr. Apoorv Singh Yadav (Silver), Mr. Syed Mustafa Hashmi (Silver), Mr. Sahal Kaushik (Gold), Mr. Preet Hathi (Silver), Dr. Rekha Vartak (Leader), Dr. Ansuman Chattopadhyay (Observer). The IBO was held in Changwon, Korea (July 11 - July 18, 2010).