# HOMI BHABHA CENTRE FOR SCIENCE EDUCATION
## TATA INSTITUTE OF FUNDAMENTAL RESEARCH
### and
## NATIONAL BOARD FOR HIGHER MATHEMATICS
## DEPARTMENT OF ATOMIC ENERGY
## GOVERNMENT OF INDIA

## 2018 - 2019

**Mathematical Olympiad Programme in India**

**Leading to participation in**
**International Mathematical Olympiad**

**Homi Bhabha Centre for Science Education**
**Tata Institute of Fundamental Research**
V. N. Purav Marg, Mankhurd
Mumbai - 400 088, INDIA
Tel : (022) 2557 5622 (Telefax), (022) 2507 2207
Email: matholy@hbcse.tifr.res.in

URL: http://olympiads.hbcse.tifr.res.in

Information in this brochure
is subject to revision
in the event of unforeseen circumstances.
¤¤¤
May 2018

# MATHEMATICAL OLYMPIAD PROGRAMME IN INDIA AND RELATED ACTIVITIES

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 mathematics and science.

The principal aim of the mathematical olympiad and other math competitions is to stimulate love and enthusiasm for mathematics. It is a healthy competitive activity that facilitates the learning of mathematical concepts, and the teaching of major strategies for problem solving. More than everything else, the purpose is to foster mathematical creativity and ingenuity, and the thrill of meeting challenges. Although a good performance in these competitions inspire a student to follow mathematics as a career, they do not substitute for regular curricula and, do not play a detrimental role in the careers of those who are not successful in the math olympiads.

The Mathematical Olympiad Programme in India is organized by the Homi Bhabha Centre for Science Education (HBCSE) on behalf of the National Board for Higher Mathematics (NBHM) of the Department of Atomic Energy (DAE), Government of India.
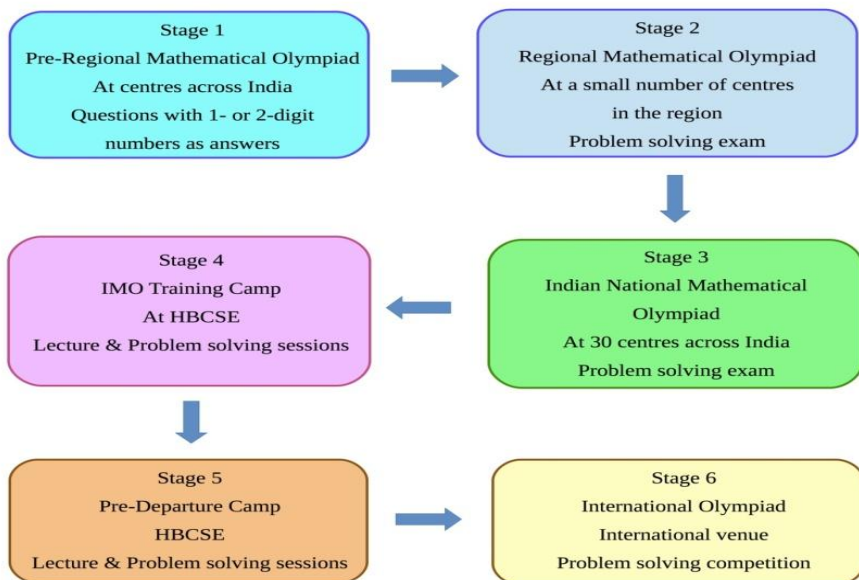
Apart from the International Mathematical Olympiad (IMO), in which India has been participating since 1989, it has also started participating in two more international Olympiad events: the European Girls' Mathematical Olympiad (EGMO) and Asia Pacific Mathematics Olympiad (APMO)

since 2015. The process for selection of students for participation in the events have been merged, taking into account the requirements of the individual tests.

## <u>Team Selection and Training Process</u>

For the purpose of training and selection of students for the Olympiad contest, 25 regions all over the country have been designated and each assigned a Regional Coordinator. Additionally, two groups of schools: Jawahar Navodaya Vidyalayas (JNV)and Kendriya Vidyalayas (KV) are also treated as separate regions and have a 'Regional Coordinator' each.

The MOP in India consists of six stages as outlined below.

| Stage 1 | Stage 2 |
|---|---|
| Pre-Regional Mathematical Olympiad | Regional Mathematical Olympiad |
| At centres across India | At a small number of centres |
| Questions with 1- or 2-digit | in the region |
| numbers as answers | Problem solving exam |

| Stage 4 | Stage 3 |
|---|---|
| IMO Training Camp | Indian National Mathematical |
| At HBCSE | Olympiad |
| Lecture & Problem solving sessions | At 30 centres across India |
| | Problem solving exam |

| Stage 5 | Stage 6 |
|---|---|
| Pre-Departure Camp | International Olympiad |
| HBCSE | International venue |
| Lecture & Problem solving sessions | Problem solving competition |

The stages are described below and will also apply to participation in the EGMO and APMO as indicated.

**Stage 1, Pre- Regional Mathematical Olympiad (PRMO):** The pre-Regional Mathematical Olympiad (PRMO) is a three hour examination with 30 questions. The answer to each question is either a single digit number or a two digit number and will need to be marked on a machine readable OMR response sheet. The PRMO question paper will be available in English and Hindi versions. Students who require the Hindi version will need to indicate their choice at the time of registration for PRMO.

**On the basis of performance in PRMO, up to 300 students from Classes 8,9,10,11 and up to 60 students from class 12 will be selected to participate in RMO from each of the regions other than KV and JNV.**

**If in any region the enrolment for PRMO 2018 is less than 300, then up to a maximum of 50 students will be selected to write RMO 2018 from that region. Among those selected to write RMO 2018 from that region up to $1/6^{th}$ can be from class 12.**

**For KV and JNV, up to 5 per cent top performers from Classes 8, 9, 10, 11 and up to 1 per cent from Class 12 will be selected to participate in RMO.**

**In the case of all regions other than KV and JNV, the region to which a student belongs will be determined by the postal address of the school in which the student is studying. Any false information provided at the time of registration in this regard will be treated extremely seriously and will lead to immediate disqualification of the student from all subsequent stages.**

**Students studying in non-KV and non-JNV schools affiliated to CBSE will belong to their respective geographical regions.**

**The PRMO will be held on Sunday, August 19, 2018 between 10.00 am and 1.00 pm.**

**Candidates born on or after August 1, 1999 and are studying in Class 8, 9, 10, 11 or 12, are eligible to write PRMO 2018. Further candidates must be Indian citizens. Provisionally, students with OCI cards are eligible to write the PRMO subject to conditions as explained in the para appearing under "Stage 4". The INMO 2018 Merit Certificate**

holders are not eligible to appear for PRMO 2018 and RMO 2018. They may appear directly for INMO 2019.

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

The organizational responsibility for conducting the PRMO exam is jointly with the Indian Association of Physics Teachers (IAPT: http://www.iapt.org.in) and the Mathematics Teachers Association (MTA: http://www.mtai.org.in)

PLEASE DO NOT CONTACT HBCSE IN CONNECTION WITH ANY QUERIES CONCERNING THE PRMO 2018 EXAMINATION. ALL QUERIES MAY BE SENT TO THE CHIEF EXAMINATION CO-ORDINATOR, MTA, PREFERABLY BY EMAIL AT mtaprmo@gmail.com OR AT THE FOLLOWING ADDRESS.

Prof. B. J. VENKATACHALA
DEPT. OF MATHEMATICS
INDIAN INSTITUTE OF SCIENCE
BANGALORE - 560012

The details of the process of registration for PRMO will be published on the MTA and HBCSE websites.

**Stage 2, Regional Mathematical Olympiad (RMO):** The RMO is a three hour written test with six problems. On the basis of the performance in RMO, up to 30 students from Classes 8,9,10,11 and up to 6 students from Class 12 from each region are selected for Stage 3 (INMO). To break ties for the closing ranks, the PRMO score shall be applied by the regional coordinator. In case ties cannot be broken by PRMO scores also, the final list will include all candidates in the tied position.

As a special case, up to 5 students studying in non–KV CBSE schools *outside India* and upto 5 students studying in KV schools *outside India* may be selected to appear directly for the INMO examination. The selection of these students will be done by CBSE and KVS respectively.

In the context of participation in EGMO it is decided that up to five girls be additionally selected ONLY FROM AMONG STUDENTS STUDYING IN CLASSES 8, 9, 10 and 11, apart from the general quota of 30 students for each region. This provision is independent of the number of girls who may be part of the list of 30 students from the region. Girl students studying in Class 12 will not be eligible for the additional girls' quota.

**The RMO will be held in all the regions on Sunday, 7th October 2018 between 1.00 p.m. and 4.00 p.m.**

**The results of RMO for all the regions are to be declared centrally by HBCSE on or before 6th December, 2018. Therefore the regional coordinators should send the final results to HBCSE by 30th November, 2018. The regional coordinators shall not declare the results in their respective regions prior to that date.**

**Stage 3, Indian National Mathematical Olympiad (INMO):** The INMO will be held on the **third Sunday of January (January 20, 2019) from 12.00 noon to 4.00 p.m.** Only those students who are selected in RMO 2018 and those who have received an INMO certificate of merit in 2018 are eligible to appear for the INMO 2019. This contest is a four hour written test.

On the basis of the INMO, the top 30 students from Classes 8, 9, 10, 11 and the top 6 students from Class 12 in merit from all over the country will be chosen as INMO awardees. **The INMO 2018 Merit Certificate holders who will be in class XII at the time of writing INMO 2019 will be eligible to qualify as an INMO Awardee in the class 12 quota.** In addition to INMO awardees, the next 45 students who have performed well in INMO, but have not qualified as INMO awardees, are awarded INMO certificates of merit. These students will be eligible to appear for INMO 2020 directly without qualifying through PRMO 2019 and RMO 2019.

In addition to the INMO awardees, up to five girl students (outside the INMO awardees list) will be chosen based on the performance in INMO, for training and possible selection in the EGMO 2020 team. Girl students studying in Class 12 will not be eligible for the additional girls' quota.

All INMO awardees, the selected girl students as above and all the students designated as senior students of IMOTC 2018 will be eligible to write APMO. The APMO tests will be held in the respective regions.

**The INMO results will be declared in the last week of February.**

**Stage 4, International Mathematical Olympiad Training Camp (IMOTC):** The INMO awardees and the girls selected from INMO for training are invited to a month long training camp in April-May each year at the Homi Bhabha Centre for Science Education (HBCSE), Mumbai. Besides, the INMO awardees from the previous years and the selected girl students of the previous year's who are eligible for IMO-2018/EGMO-2019 and have gone through postal tuition throughout the year satisfactorily are invited to the training camp as senior students.

The junior students will receive the INMO certificate and a prize in the form of books. The senior students will receive a prize in the form of books and cash.

On the basis of a number of selection tests during the Camp, a team of the best six students is selected from the combined pool of junior and senior batch participants as the IMO 2019 Team.

A team of upto four girl students will be selected for participation in EGMO 2020, based on the performance of girl students from the combined pool at IMOTC 2019.

**As per the orders of the Madras High Court, students with OCI status will not be eligible for selection to the Indian team in the International Mathematical Olympiad. However, such students are provisionally eligible for selection at ALL prior stages, up to and including the IMOTC provided they fulfill all other criteria. They are also provisionally eligible to write the selection tests at the IMOTC. This policy is subject to revision without prior notice depending on any further orders issued by the courts, or by a competent Government authority.**

**Stage 5, Pre-Departure Training Camps:** The selected team of six students goes through another final round of training and orientation for

about ten days prior to departure for IMO. A Pre-departure camp will also be arranged for girl students selected for participation in EGMO 2019, at a suitable time.

## Policy regarding participation in IMOTC/OCSC

The following procedure will be applied for selection of students for IMOTC.

In a given year, a student can participate in the orientation/ training/selection of only one subject including the IMOTC and the Orientation-Cum-Selection-Camp (OCSC) for the five science subjects, according to a preference order decided by the student herself/himself. A student who qualifies in more than one subject (on the basis of her/his performance in INMO or the Indian National Olympiads (INO) in the five science subjects, will be invited to the IMOTC/OCSC that is ranked highest in her/his preference list.

The procedure is as follows:

- Before INMO/INO: A student who qualifies to appear in more than one subject in INMO/INO will be asked to arrange the subjects in order of preference of attending the IMOTC/OCSC (and therefore competing for selection in the international team). This will not affect in any way the evaluation of her/his INMO/INO performance in any subject.

- After INMO/INO: A target number of students will be invited to the IMOTC/OCSC camp of each subject. The students in each subject will be assigned a rank according to her/his performance in the respective INMO/INO. If a student obtains qualifying marks in INMO/INO in multiple subjects, she/he will be included only in the IMOTC/OCSC for the subject which figures highest in her/his preference list among the subjects in which she/he has obtained qualifying marks. Her/his name will not be considered for IMOTC/OCSC 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 IMOTC/OCSC, the student will receive a Certificate of Merit in every subject in which her/his score is equal to or higher than the score of the last selected student in that subject.

## Some Details Concerning the Tests

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

The selection of the members of the Indian team for IMO will be subject to their fulfilling criteria such as age limit, medical fitness, parental consent, etc., as may be applicable. In particular, the selected students need to have a valid Indian passport meeting the visa regulations of the host country.

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

Students aiming to go through the Mathematical Olympiad programme leading to international participation (IMO) should note that PRMO is the first essential step for the programme.

**European Girls Mathematical Olympiad (EGMO):** A team of at most four girl students selected at the end of IMOTC accompanied by a leader, a deputy leader and an observer represent the country at the EGMO, held in April each year in a different European country. The EGMO contest consists of two written tests held on two consecutive days. On each day of the contest the test consists of three problems and lasts for four and half hours. India has been participating in the EGMO since 2015.

The selection of the members of the Indian team for EGMO will be subject to their fulfilling criteria such as age limit, medical fitness, parental consent, etc., as may be applicable. In particular, the selected students need to have a valid Indian passport meeting the visa regulations of the host country.

Students aiming to go through the Mathematical Olympiad programme leading to participation in EGMO should note that PRMO is the first essential step for the programme.

**Asia Pacific Mathematics Olympiad (APMO).** APMO is a contest specifically held for students in Asian countries and the countries in the rim of Pacific Ocean. There is a senior coordinating country which coordinates this examination. The advantage of this contest is that one can participate in it being in her/his country. India has started participating in it from 2015. The contest consists of solving 5 problems in four hours.

The requirement for participation in APMO is like IMO: one should not have entered university and should be below the age of 20 years. Besides, the contestants should have been selected through a national selection process. In view of this, all the INMO-2019 awardees and all the senior batch students for the year 2019 are eligible to write APMO 2019. Generally, the APMO exam is held on the second Monday of March and the following Tuesday in some countries. (For the exact date and timings of the contest, see HBCSE website.)

The students can take their examination in their respective regions. The regional coordinator will conduct the test in her/his region.

**Syllabus for Mathematical Olympiad:** The syllabus for Mathematical Olympiad (pre-regional, regional, national and international) is pre-degree college mathematics. The areas covered are arithmetic of integers, geometry, quadratic equations and expressions, trigonometry, co-ordinate geometry, system of linear equations, permutations and combination, factorisation of polynomial, inequalities, elementary combinatorics, probability theory and number theory, finite series and complex numbers and elementary graph theory. The syllabus does not include calculus and statistics. The major areas from which problems are given are algebra, combinatorics, geometry and number theory. The syllabus is in a sense

spread over Class XI to Class XII levels, but the problems under each topic involve high level of difficulty and sophistication. The difficulty level increases from PRMO to RMO to INMO to IMO.

A good idea of what is expected of students in mathematical Olympiad can be had from the question papers of earlier years (which are available at

http://olympiads.hbcse.tifr.res.in/subjects/mathematics/previous-question-papers-and-solutions) and the following books:

1. **Problem Primer for Olympiads**
   C. R. Pranesachar, B. J. Venkatachala and C. S. Yogananda (Prism Books Pvt. Ltd., Bangalore).

2. **Challenge and Thrill of Pre-College Mathematics**
   V. Krishnamurthy, C. R. Pranesachar, K. N. Ranganathan and B. J. Venkatachala (New Age International Publishers, New Delhi).

3. **An Excursion in Mathematics**
   Editors: M. R. Modak, S. A. Katre and V. V. Acharya and V. M. Sholapurkar (Bhaskaracharya Pratishthana, Pune).

4. **Problem Solving Strategies**
   A  Engel (Springer-Verlag, Germany).

5. **Functional Equations**
   B. J. Venkatachala (Prism Books Pvt. Ltd., Bangalore).

6. **Inequalities an approach through problems** (texts & readings in mathematics), B. J. Venkatachala (Hindustan Book Agency)

7. **Mathematical Circles**
   Fomin and others (University Press, Hyderabad).
   Many other interesting references may also be found in the book **An Excursion in Mathematics** mentioned above.

**INMO Scholarship.** The INMO awardees successfully completing IMOTC, who pursue B.Sc., or other courses adjudged by the Board to be on the same footing, with mathematics as one of the principal subjects of study, are eligible to receive a scholarship of NBHM, which is at present Rs. 4,000 per month, through the period of their undergraduate studies (subject to satisfactory progress). An enhanced scholarship would be available for pursuing masters studies in mathematics.

# Results

## EGMO 2018
## European Girl's Mathematical Olympiad

| No. | Students Name | Region | Medal |
|-----|---------------|--------|-------|
| 1. | Urshita Pal | Delhi | Bronze |
| 2. | Haimoshri Das | West Bengal | Bronze |

## IMO 2017
## International Mathematical Olympiad

| No. | Students Name | Region | Medal |
|-----|---------------|--------|-------|
| 1 | Shubham Saha | Jharkhand | Bronze |
| 2 | Anant Mudgal | Delhi | Bronze |
| 3 | Yash Sanjeev | Uttar Pradesh | Bronze |
| 4 | Aditya Prakash | Karnataka | Honourable Mention |
| 5 | Tarush Goyal | Punjab | Honourable Mention |
| 6 | Sutanay Bhattacharya | West Bengal | Honourable Mention |

# APMO 2017
## Asian Pacific Mathematics Olympiad

| No. | Students Name | Region | Medal |
|---|---|---|---|
| 1 | Sutanay Bhattacharya | West Bengal | Silver |
| 2 | Shubham Saha | Jharkhand | Silver |
| 3 | Anant Mudgal | Delhi | Silver |
| 4 | Sauditya Jaiswal | Delhi | Bronze |
| 5 | Galav Kapoor | Delhi | Bronze |
| 6 | Navneel Singhal | Delhi | Bronze |
| 7 | Pulkit Sinha | Delhi | Bronze |
| 8 | Sarthak Behera | Orissa | Honourable Mention |
| 9 | Shubham Jain | Mumbai | Honourable Mention |
| 10 | Aneesh Garg | Punjab | Honourable Mention |

**Contact Addresses for inquiries about Mathematical Olympiad Programme**

| | |
|---|---|
| Prof. K. Subramaniam<br>Centre Director<br>Homi Bhabha Centre for<br>Science Education,<br>Near Anushaktinagar Bus Depot,<br>V. N. Purav Marg, Mankhurd,<br>Mumbai – 400 088<br>Ph.:   (022) 2557 5622 (Telefax)<br>       (022) 2507 2207<br>e-mail: matholy@hbcse.tifr.res.in | Member Secretary<br>National Board for Higher<br>Mathematics<br>Department of Atomic Energy<br>Anushakti Bhavan,<br>CSM Marg, Mumbai – 400 001<br>Ph.:   (022) 22022533 (O)<br>Fax:   (022) 22028972<br>e-mail: msnbhm@dae.gov.in |

Queries should be sent by email only. In general, queries will not be responded to individually but via FAQs on the HBCSE mathematics olympiad webpages.

## Mathematical Olympiad Programme

| | |
|---|---|
| **National Co-ordinator**<br>Prof. B. Sury<br>Stat Math Unit,<br>Indian Statistical Institute<br>8th Mile Mysore Road<br>Bangalore 560059<br>Email: matholympiadnc@gmail.com | **Deputy National Co-ordinator**<br>Dr. Prithwijit De<br>Homi Bhabha Centre for<br>Science Education,<br>Near Anushaktinagar Bus Depot,<br>V. N. Purav Marg, Mankhurd,<br>Mumbai – 400 088<br>Ph.:   (022) 2557 5622 (Telefax)<br>       (022) 2507 2207<br>e-mail: dymathnc@hbcse.tifr.res.in |

| List of Regional Coordinators | | |
|---|---|---|
| **No.** | **Regional coordinator** | **Region** |
| **North Zone** | |
| 1 | **Dr. Anil Kumar**<br>**Principal**<br>Delhi Public School, Sector-19,<br>Faridabad, Haryana-121001<br>Office: 0129-2280522, 2290522<br>e-mail:info@dpsfsis.com,<br>principal@dpsfsis.com<br>website: http://rmonorthzone.com/ | Delhi |
| 2 | **Prof. Santosha Pattanayak**<br>**Asst. Professor,**<br>Department of Mathematics and Statistics<br>IIT Kanpur<br>Kanpur – 208016<br>Phone: 08004666602<br>email: santosha@iitk.ac.in | Uttar Pradesh |
| 3 | **Dr. Mahesh C. Joshi**<br>Department of Mathematics<br>Kumaun University, DSB Campus<br>Nainital 263 001<br>Uttarakhand<br>Ph: (05942) 237825 (Off)<br>e-mail: mcjoshi69@gmail.com | Uttarakhand |

| 4 | **Prof. V K Grover**<br>#1479, Pushpak Complex,<br>Sector- 49-B<br>Chandigarh 160 017<br>Ph.: (0172) 2632479, 09888486387<br>e-mail: grovervk@pu.ac.in,<br>     vk_gvr@yahoo.com<br>Website: http://www.maths.puchd.ac.in<br><br>**Dr. Suman Bala**<br>(Joint Coordinator)<br>Asst Professor<br>Department of Mathematics<br>Panjab University, Chandigarh 160014<br>Ph.: (0172) 2534526 (O)<br>email: sumanl_75@pu.ac.in | North Western States |
| --- | --- | --- |
| 5 | **Prof. S. D. Sharma**<br>Professor &Head, Department of<br>Mathematics,<br>Central University of Jammu,<br>E-Ext. Sainik Colony, Jammu-180011.<br>Mob; 09419173577,<br>Landline(R):01912555099.<br>e-mail: somdatt_jammu@yahoo.co.in,<br>     somdattjammu@gmail.com<br><br>**Dr. Pavinder Singh**<br>(Joint Co-ordinator)<br>Department of Mathematics<br>Central University of Jammu,<br>Rahyasuchani (Bagla)<br>Dist: Samba<br>Jammu 181143<br>Mob.:+919419254867<br>e-mail: pavinders@gmail.com | Jammu |

| | | |
|---|---|---|
| 6 | **Prof. Bashir A. Zargar**<br>Department of Mathematics<br>University of Kashmir<br>Srinagar, Hazratbal 190 006<br>Mob.: 9906 936 392<br>e-mail: zargarba3@yahoo.co.in<br>bazargar@gmail.com | Kashmir |
| **West Zone** | | |
| 7 | **Dr. Prithwijit De**<br>Homi Bhabha Centre for Science Education<br>Near Anushaktinagar Bus Depot<br>V. N. Purav Marg, Mankhurd<br>Mumbai – 400 088<br>Ph.:(022) 2557 5622 (Telefax), (022) 2507 2207<br>e-mail: rcmumbai@hbcse.tifr.res.in | Mumbai |
| 8 | **Mr. Prashant Sohani**<br>C/o Bhaskaracharya Pratishthan<br>56/14, Erandwane, Damle Path<br>Off Law College Road<br>Pune – 411004<br>Ph: 020-25434547 / 25410724<br>e-mail: prashant.sohani@gmail.com<br>website: www.rmomah.org<br><br>**Dr. Vikas Jadhav**<br>(Joint Co-ordinator)<br>C/o Bhaskaracharya Pratishthan<br>56/14, Erandwane, Damle Path<br>Off Law College Road<br>Pune – 411004<br>Ph: 020-25434547 / 25410724<br>e-mail: svikasjadhav@gmail.com | Maharashtra & Goa |

| 9 | **Dr. Udayan Prajapati**<br>Head, Department of Mathematics,<br>St. Xavier's College, Navrangpura<br>Ahmedabad – 380 009.<br>Mob: (0) 9426383343<br>e-mail: ganit_spardha@yahoo.co.in<br>Website: www.sites.google.com/site/rmogujrat | Gujarat, Diu, Daman & DNH |
|---|---|---|
| 10 | **Dr. Vipul Kakkar**<br>Department of Mathematics<br>Central University of Rajasthan<br>NH-8, Bandar Sindri, Kishangarh<br>Dist-Ajmer-305817,<br>Rajasthan<br>Mob: 9956105353<br>e-mail: vipulk@curaj.ac.in | Rajasthan |

| Central Zone | | |
|---|---|---|
| 11 | **Dr. Rajesh Pande, Principal** <br> HSPSM Campus <br> Ghanta Ghar Road <br> Civil Line <br> Near Collectorate, Jabalpur <br> Madhya Pradesh 482001 <br> mobile: 09926339996 <br> e-mail: drrpande@gmail.com <br><br> **Dr. Shanti Tembhare** <br> (Joint Co-ordinator) <br> Varisth Adhyapak <br> Department of Mathematics <br> Govt College of Education <br> IASE (PSM College) <br> Near Collectorate Jabalpur 487001 <br> mobile: 08989127697 <br> e-mail: drstembhre@gmail.com | Madhya Pradesh |
| 12 | **Dr. V. K. Pathak** <br> Head Department of (Mathematics) <br> Govt. P.G. College, Dhamtari <br> Chattisgarh 493773 <br> Ph.: (0772) 2237933 (O), 237424 <br> e-mail: vkpath21162@yahoo.co.in | Chattisgarh |

| 13 | **Prof. Md. Azhar Hussain**<br>RMO Office, N. Bihar &Patna Region<br>New Azimabad Colony<br>West Sanichara<br>P.O. Mahendru, Patna 800 006<br>Mob.: (0)9430891391, 9431267154<br>e-mail: azharhu@gmail.com<br>Website: rmonbpat.org<br><br>**Dr. Md. Aslam Nazri**<br>(Joint Co-ordinator)<br>Govt.Ambedkar S.C Residential High School, Muhrari,<br>Harnaut Dist – Nalanda,Bihar<br>phone: 9431493010<br>e-mail: aslam.nazri@gmail.com<br><br>**Dr. Kumar Gaurav**<br>(Joint Co-ordinator)<br>House No. 234, Pragati Nagar Colony<br>Hajipur, Dist. Vaishali 844101<br>Mob: 9780109041<br>e-mail: kgaurav.maths@gmail.com | North Bihar & Patna |
| 14 | **Prof R K Das**<br>Rama niwas, Lal Bagh,<br>Tilakamanjhi<br>Bhagalpur 812 001, Bihar<br>Ph.: (0641) 2611236/ (0)<br>Mob.: (0) 9431875389<br>email: rkdas_hod@yahoo.com | South Bihar (Bhagalpur) |

| 15 | **Dr. K. C. Prasad**<br>Kali Mandir Lane<br>Sukhdeo Nagar – Ratu Road<br>P.O. Hehal<br>Ranchi – 834005<br>Ph: (0651) 2280994 (R)<br>Mob: 9430377722 / 9304016852<br>e-mail: kcprasad1@rediffmail.com,<br>        kcprasad46@gmail.com<br><br>**Dr. Manohar Lal**<br>(Joint Coordinator)<br>Principal<br>Guru Nanak Higher Secondary School<br>Pee-Pee Compound<br>Ranchi 834001<br>Jharkhand<br>Ph 0651 2331007 (0), 09835143657 (M)<br>e-mail : ml.midha@gmail.com | Jharkhand |
|---|---|---|

| East Zone | | |
|---|---|---|
| 16 | **Dr. Mridul Nandi**<br>Associate Professor<br>Applied Statistics Unit<br>Indian Statistical Institute<br>203, B.T. Road,<br>Kolkata 700 108<br>e-mail: mridul.nandi@gmail.com<br>Mob:919830727979<br>Website: www.isical.ac.in/rmo<br><br>**Dr. Goutam Paul**<br>(Joint Coordinator)<br>Assistant Professor<br>Cryptology and Security Research Unit<br>R.C. Bose Centre for Cryptology and Security<br>Indian Statistical Institute<br>203, B.T. Road,<br>Kolkata 700 108<br>Mob: 919433321887<br>e-mail: goutam.k.paul@gmail.com | West Bengal |
| 17 | **Prof. Hadibandhu Pattanayak**<br>A2, Rashmi Towers<br>Nageswar Tangi, Old Town<br>Bhubaneswar-751002<br>Odihsa, India<br>Mobile No:-9337124910<br>e-mail: h.pattnayak@gmail.com<br>Website: www.omsonnet.com | Orissa |

| | | |
|---|---|---|
| 18 | **Dr. Prabin Das**<br>Retd. Associate Professor,<br>P. G. Department of Mathematics<br>Arya Vidyapeeth College<br>P. O. Gopinath Nagar, Kamrup (Metro)<br>Assam - 781016<br>Mob: 9435732811<br>e-mail: prabin1955@gmail.com | Assam |
| 19 | **Dr. Deiborlang Nongsiang**<br>Dept of Mathematics<br>North-Eastern Hill University<br>Mawlai, Umshing<br>Shillong, Meghalaya - 793022<br>Mob: 09774594369/ 7085852949<br>e-mail: ndeiborlang@yahoo.in<br><br>**Prof. M. B. Rege**<br>(Joint Coordinator)<br>Dept of Mathematics<br>North-Eastern Hill University<br>Permanent Campus, Mawlai<br>Shillong, Meghalaya - 793 022<br>Mob.:(0)9436104071 / 07005046717 / 09436165938<br>e-mail: mb29rege@yahoo.co.in | Meghalaya |
| 20 | **Mr. K. Chettri**<br>Department of Mahemactics<br>Sikkim Government College,<br>Tadong, Gangtok,<br>East Sikkim - 737102<br>Mob: 07872976164<br>e-mail: chabi.12.in@gmail.com | Sikkim |

| | | |
|---|---|---|
| 21 | **Dr. Sharmistha Bhattacharya Halder**<br>Reader, Dept of Mathematics<br>Tripura University (A Central University)<br>Tripura - 799022<br>Agartala<br>Phone: 09862676027<br>email: halder_731@rediffmail.com<br>website: http://www.tms-in.org/<br><br>**Dr. Shouvik Bhattacharya**<br>(Joint Co-ordinator)<br>Department of Mathematics,<br>Tripura University( A Central University)<br>Tripura-799022, Agartala<br>phone: 09774550178<br>e-mail: shouvik.bagla@gmail.com | Tripura |
| **South Zone** | | |
| 22 | **Mr. K. M. Sastry**<br>Retd, Hod, Dept. of Mathematics,<br>Andhra Loyola College, Vijayawada<br>Address:  31-10-10C,<br>Dr. Viswanadha Satyanarayana St.,<br>Machavaram,<br>Vijayawada 520004<br><br>**Ms. Sudha Devi**<br>(Joint Co-ordinator)<br>Head, PG Department of Mathematics<br>Maris Stella College<br>Vijayawada 520 008<br>Mob: (0) 9246660660<br>e-mail: rmoandhra@gmail.com<br>Website: http://www.rmoandhra.co.in | Coastal  AP &<br>Rayalaseema |

| 23 | **Prof. T. Amaranath**<br>School of Mathematics and<br>Statistics,University of Hyderabad,<br>Prof. C. R. Rao Road,<br>Gachibowli, Hyderabad 500 042<br>e-mail: math.olympiad.telangana@gmail.com<br>Website: http://www.math-olympiad-telangana.in | Telangana |
|---|---|---|
| 24 | **Dr. Manish Kumar**<br>Stat-Math Unit, Indian Statistical Institute,<br>8th Mile Mysore Road,<br>Bangalore-560059.<br>Mobile:9916986725<br>e-mail: manish@ms.isibang.ac.in<br>Website: http://www.isibang.ac.in | Karnataka |
| 25 | **Dr. Noufal Asharaf**<br>Asst. Professor<br>Department of Mathematics,<br>Cochin University of Science &Technology,<br>Cochin- 682022, Kerala<br>Mob: 09447327154<br>e-mail: noufalasharaf@gmail.com<br><br>**Dr. A. A. Ambily**<br>(Joint Co-ordinator)<br>Asst. Professor<br>Department of Mathematics,<br>Cochin University of Science &Technology,<br>Cochin- 682022, Kerala<br>Mob: 09496530225<br>e-mail: aaambily@gmail.com | Kerala* |

| 26 | **Prof. K. N. Ranganathan**<br>C1, Srinidhi Apartment<br>16 A, Giri Road, T Nagar<br>Chennai - 600 017<br>Mob.: (0) 96000 82365<br>e-mail: knranga@gmail.com<br><br>**Dr. S. Muralidharan**<br>(Joint Co-ordinator)<br>18, Phase 4, Wood Creek County,<br>Near Chennai Trade Center<br>St. Thomas Mount P.O., Chennai-600016<br>Mob: 6223131/ 2368080-4607/ 8754472146<br>e-mail: drsmuralidharan@gmail.com | Tamilnadu** |

  * **Lakshadweep under Kerala region.**
** **Andaman and Nicobar under Tamilnadu region.**

| Other Centers | | |
|---|---|---|
| 27 | **Shri. Tajjudin Shaik**<br>Assistant Commissioner<br>KVS Head Quarter (Acad)<br>Phone No. 011-26965168,<br>Mobile No. 8826786667<br>e-mail: acacadkvs@gmail.com | KVS |
| 28 | **Mr. Jugal Kishor /Ms. Kusum Kumari Singh**<br>Dy. Commissioner Academic<br>Navodaya Vidyalaya of<br>Navodaya Vidyalaya Samiti<br>B-15, Institutional Area, Sector – 62<br>Noida 201309<br>Ph: 0120-2405929<br>e-mail: dcacadnvs@gov.in<br>dcacadnvs3@gmail.com<br>ac3acad.nvs.gov.in | NVS |

# Indian Delegation for the
# International Girls Mathematical Olympiad (EGMO) 2018



**From Left to Right:** Guide**,** Ms. Haimoshri Das, Ms Urshita Pal, Ms. Pranjal Warade (Observer), Shri. Sahil Mhaskar (Deputy Leader), Dr. Prithwijit De  (Leader)

**Indian Delegation for the**
**58<sup>th</sup> International Mathematical Olympiad (IMO) 2017**



**From Left to Right**: Dr. M. A. Prasad (Observer A), Mr. Shubham Sinha (Observer B), Aditya Prakash, Sutanay Bhattacharya, Anant Mudgal, Shubham Saha, Yash Sanjeev, Tarush Goyal, Prof. K. Subramaniam (Centre Director HBCSE), Prof. C. R. Pranesachar (Leader), Dr. Vaibhav Vaish (Deputy Leader)

**The
Mathematical Olympiad programme
is a major initiative undertaken
by the National Board for Higher Mathematics.
Its main purpose is to spot and
encourage mathematical
talent among pre-university students in the
country.
The programme leads to participation of Indian
students at the
International Mathematical Olympiad.**

**These are the only Olympiads that lead to
participation in the International
Mathematical Olympiads (IMOs). No other
contests are recognised for this purpose.**

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

*Do India proud at the International Mathematical Olympiad 2019*

*Enroll for Pre-Regional Mathematical Olympiad (PRMO) now*