



# HOMI BHABHA NATIONAL INSTITUTE



## ANNUAL REPORT 2006-2007

Reg. Off. : Knowledge Management Group  
Bhabha Atomic Research Centre  
Central Complex, Mumbai - 400 085.

# HOMI BHABHA NATIONAL INSTITUTE

ANNUAL REPORT 2006-2007



Knowledge Management Group,  
Bhabha Atomic Research Centre,  
Central Complex, Mumbai-400 085.



## **1. Constituent Institutions (CIs) of the Institute**

1. BHABHA ATOMIC RESEARCH CENTRE (BARC), MUMBAI
2. INDIRA GANDHI CENTRE FOR ATOMIC RESEARCH (IGCAR) , KALPAKKAM
3. RAJA RAMANNA CENTRE FOR ADVANCED TECHNOLOGY (RRCAT), INDORE
4. VARIABLE ENERGY CYCLOTRON CENTRE (VECC), KOLKATA
5. SAHA INSTITUTE OF NUCLEAR PHYSICS (SINP), KOLKATA
6. INSTITUTE FOR PLASMA RESEARCH (IPR), GANDHINAGAR
7. INSTITUTE OF PHYSICS (IOP), BHUBANESWAR
8. HARISH-CHANDRA RESEARCH INSTITUTE (HRI) , ALLAHABAD
9. TATA MEMORIAL CENTRE (TMC), MUMBAI
10. INSTITUTE OF MATHEMATICAL SCIENCE (IMSC.), CHENNAI

## 2. From the Director

This is the second annual report of the Homi Bhabha National Institute. The first year was devoted to creating the basic set up so as to initiate the academic programmes and the programmes commenced during the second year. While details are described in subsequent part of the report, here I will like to share some of my thoughts with you.

“Our scientific knowledge base is exploding in all directions”<sup>1</sup>. This has been expressed in different ways by different individuals. One way has been to say that half life of knowledge imparted in a typical university degree programme is coming down over the years. This is happening in all disciplines: scientific as well as technical. In addition, technical methods are becoming more and more science based. To quote Walter E. Theuerkauf<sup>2</sup>, “The half-life of technical knowledge is decreasing in the same manner as this is experienced for other disciplines. Technical know-how is exploding as intervals between inventions, discoveries and developments are becoming shorter and shorter.”

Theuerkauf continues, “The scientification of technical methods is a relatively recent phenomenon, which employs mathematics as well as the natural sciences as methods to generate scientific insights. The process of scientification eventually produced such specific disciplines as information and communication technology, as well as biotechnology and genetic engineering, environmental technology, energy technology, material technology, aviation and space technology, traffic engineering, micro technology, laser and plasma technology, medical engineering and building engineering, which may affect the reality of life of each individual. It is worth noting at this point that there is an increasingly higher level of interconnection, both between the different technical sciences, and between the technical sciences and the natural sciences and mathematics (e.g. mechatronics, biotechnology). Information technology, in addition, plays an important role as a basic technology for all technical sciences.”

Another way of expressing the same could be that “the medical industry doubles its knowledge base every four years, and the technology industry renews itself every twelve to eighteen months.”<sup>3</sup> While the knowledge base is expanding fast, “universities are lumbering institutions and change tends to take place at a glacial rate. Businesses need better training now. Rather than wait for universities to catch up, some have raced ahead in their own way. Many are now offering not only their own training programmes, which they have done for years. They’re also establishing their own in-house universities and awarding their own degrees.”<sup>4</sup>

There are several messages in what is stated in the preceding three paragraphs: (i) take cognizance of rate of expansion of knowledge and set up a system that can respond fast, (ii) in a knowledge intensive discipline like nuclear engineering, education has to have a very strong

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<sup>1</sup> “Revolutionary Wealth”, Alvin and Heidi Toeffler, Page 10, Alfred A Knopf, New York, 2006.

<sup>2</sup> Walter E Theuerkauf, “Technology Development and technology Education”, Proceedings of 2006 IJME-INTERTECH Conference, Session IT 304-068.

<sup>3</sup> [www.trainingpressreleases.com/newsstory.asp?NewsID=2875](http://www.trainingpressreleases.com/newsstory.asp?NewsID=2875)

<sup>4</sup> Ken Robinson, “Out of our Minds, page 89, Wiley India Private Limited, 2001.

science component, (iii) work at the interface of disciplines is very important due to a high level of interconnections between emerging disciplines.

Let us examine what we have done by setting up HBNI. We decided to create an Institute having the status of a university to expand the avenues in India for imparting education, for training in research in nuclear science and engineering and allied subject areas, and do it in a manner that is able to respond fast to changes of all types. While setting up, we felt that it is a unique institute. It brings together academic programmes of ten institutions devoted to research and development under a single umbrella. It plans to encourage student scholars to work at the interface of basic research and technology development and a scheme called "DAE-Graduate Fellowship Scheme for Ph.D." was specifically created for this purpose. It caters to the human resource development needs of the DAE by providing opportunities to employees to upgrade their knowledge while entering the Department and during the career.

A corporate university is able to respond fast to the changing requirements both in terms of number of students and content of education. BARC Training School was started way back in 1956 and what started as a one year orientation programme in nuclear science and engineering for young graduates, has now evolved into a M.Tech./ M.Phil. programme of HBNI. We have thus created a system that is able to respond fast and the syllabi of various engineering disciplines emphasize science base of nuclear engineering.

HBNI brings together ten Constituent Institutions. The Graduate University for Advanced Studies (Called by its Japanese abbreviation "Sokendai") was founded in 1988 and brings together eighteen national academic research institutes of Japan. The academic institutes are called "Inter-University Research Institutes". Sokendai lays emphasis on advanced scientific fields that transcend the boundaries of existing scientific disciplines. Sokendai offers "dispersed" as well as "integrated" programmes of research and the integrated programme can be compared to DGFS launched by DAE for HBNI. There are similarities between HBNI and Sokendai with regard to issues related to faculty as well. It will be worthwhile for the readers to have a look at the homepage of Sokendai and see how similar its structure is to HBNI.

A programme similar to DGFS has been running in California, USA as well where State university system and national laboratories located in the state have been collaborating to enable the research students to work under the guidance of a university professor and a technology advisor from one of the national labs.

Now when we have set up the Institute and look around, it is satisfying to note that there are examples of similar initiatives elsewhere. As we go along we can draw comparisons and take steps to imbibe good practices, from wherever they are available.

The concept of HBNI combines several good ideas such as that of a corporate university and that of "Sokendai". It is going to build on the tradition of research over the past several decades in ten well established institutions, and in addition, HBNI has signed agreement of cooperation with Tata Institute of Fundamental Research, Mumbai, Indian Institute of Technology, Bombay and Indian Institute of Technology, Madras. With this pedigree, one can be sure that HBNI will emerge to be one of the successful institutions.

(R B Grover)

### 3. Annual Report 2006-2007

#### **Composition of various bodies**

Institute functioned as per the decisions taken by various bodies of the Institute. Composition of various bodies is given in the Annex-1. It also lists officers of the Institute.

#### **Commencement of Academic Activities**

The academic activities of HBNI commenced from the academic year beginning August 2006. These include the ongoing academic programmes at the Constituent Institutions (CIs) and M.Sc. (Engg.) programme. The ongoing programmes which were adopted as the academic programmes of HBNI include Ph.D. at all the Constituent Institutions (CIs), the BARC Training School programme, Diploma in Medical Radio-Isotope Techniques at Radiation Medicine Centre of BARC and Diploma in Radiological Physics at BARC. A brief description of the background of these programmes is as follows:

1. Till becoming a part of HBNI, the CIs of HBNI were conducting the Ph.D. programme for their employees as well as for students under the aegis of universities located nearby. It was conducted under the supervision of qualified researchers at the CIs who were accorded recognition as PhD guides by the concerned Universities. The Ph.D. programme at the CIs of HBNI has now been delinked from the universities. It is now being conducted as per the rules of HBNI under the supervision of HBNI recognized Faculty.
2. Diploma in Medical Radio-Isotope Techniques (DMRIT), a one year Post Graduate Diploma course, was being conducted at Radiation Medicine Centre of BARC under the aegis of University of Mumbai. It has now been adopted by HBNI.
3. The Training School (TS) at Bhabha Atomic Research Centre (BARC), Mumbai has been conducting one year Orientation Course for Engineering Graduates and Science Post Graduates (OCES) since 1957. In order to meet emerging scientific and technological demands for implementing the mandate of the Department of Atomic Energy (DAE), the BARC Training Schools have since been established at other locations, each devoted to developing expertise in a chosen specialization. The location and major areas of specialization of the BARC Training Schools are presently as follows:
  - (i) The TS at BARC, Mumbai is for building expertise in R&D in nuclear technology and basic and applied research in nuclear and allied sciences,
  - (ii) The TS at RRCAT, Indore, is for specialization in laser and accelerator technology,
  - (iii) The TS at NFC, Hyderabad is for specialization in fuel cycle facilities including heavy water production facilities,
  - (iv) The TS at Nuclear Training Centres of Nuclear Power Corporation of India Ltd (NPCIL) at Kaiga, Kalpakkam, Kudankulam, Rawatbhata and Tarapur are for specialization in operation and maintenance of nuclear power plants,

(v) The TS at IGCAR, Kalpakkam is for specialization in fast reactor technology.

The course contents of OCES were examined by the relevant Boards of Studies of HBNI and, after appropriate revisions, were recommended as suitable for the award of Post Graduate Diploma as well as fulfilling course work requirements for M.Tech./M.Phil. The Academic Council approved the recommendation and adopted the OCES programme for the award of the Post Graduate Diploma. It also approved OCES as one year course work for the two-year M.Tech./ M.Phil. programme, with the second year to be devoted to the project work.

4. The Diploma in Radiological Physics (Dip.R.P.) is being conducted in BARC for over four decades under the aegis of University of Mumbai. It has now been adopted by HBNI.

BARC TS has been in existence since 1956 and till the setting up of HBNI, the programme was not accredited to any university. As a result, participants in the programme acquired the requisite knowledge, but didn't have the benefit of getting any degree from a university. On survey, it was found that some of the graduates of the previous batches were keen to get a degree like M.Tech. To take care of their interests, it was decided to launch M.Sc. (Engg.) programme. It comprises of course work of about one semester essentially to tackle obsolescence arising out of the fact that the candidate graduated from TS a few years back and one-and-a-half-year of project work. It has also been extended to those employees who are not from TS. However, they have to go through one year of course work. It may be noted that Indian Institute of Science, Bangalore has been running an M.Sc. (Engg.) programme for the past several years and many employees of BARC have completed M.Sc. (Engg.) based on their research in BARC under joint supervision from faculty in IISc. and BARC.

The status of admission in various programmes is summarized in Annex-2.

### ***Appointment of Deans Academic at the CIs***

The task of coordination of the academic programmes at the CIs has been entrusted to the faculty members designated as Deans-Academic. A CI can have more than one Dean-Academic to cater to different disciplines. A Standing Committee of the Deans-Academic has been constituted to enable the Deans exchange their views on all aspects of the conduct of the academic programmes. First meeting of the Standing Committee of the Deans was held on August 24, 2006 in the Registered Office of HBNI in BARC.

### ***Adoption of Logo***

*The logo of HBNI was adopted* and is given on the front and back cover pages of this Report. It has the picture of atomic orbits symbolizing nuclear science, resting on the wings attached to two letters below it. Those letters are the first letters of the word Bhabha written in Devnagari and Roman scripts. The space between the wings and the letters is of the shape of an arrow pointing upward. The logo thus depicts skyward rise of nuclear science on the wings of HBNI. Moreover, the combination of the wings with the letters underneath gives visual impression of a Kalash which is an auspicious symbol of prosperity in Indian tradition and culture.

The logo might also be visualized as symbolizing HBNI providing a mechanism for upward movement of the career of individuals.

***Launching of Website***

The HBNI website was launched under the domain name www.hbni.ac.in.

***Memoranda of Understanding***

Another novel initiative taken during the year was the signing of agreements for collaboration with reputed institutions in the country from whose expertise HBNI could benefit and who could benefit from the expertise in HBNI. Three such agreements were signed during the year and these are with Indian Institute of Technology-Bombay (IIT-B), Tata Institute of Fundamental Research (TIFR), Mumbai and Indian Institute of Technology-Madras (IIT-M). The copies of those Memoranda are enclosed as Annex-3 to 5.

***Membership of Joint Entrance Screening Test***

A rigorous selection process is a necessary requirement for maintaining high standards of the academic programmes. The selection process for admission to HBNI academic programmes consists of screening of the candidates by a written examination of high standing followed by interview of the candidates screened in. The written examinations approved for the purpose of admission to the academic programmes of HBNI by the Academic Council are Graduate Aptitude Test in Engineering (GATE), Written Test conducted by BARC Training School, Joint Entrance Screening Test (JEST), and the test in mathematics conducted by National Board for Higher Mathematics (NBHM). While GATE and BARC Written Test are in Science as well as in Engineering disciplines, JEST is for the graduates and post graduates in Physics. Since access to JEST score is restricted to its participating members, HBNI became a participating member of JEST beginning JEST-2006.

Further details of the activities during the year are given in two parts below. Part-1 summarizes the decisions taken in the meetings of Council of Management, and the Academic Council while Part-2 is a brief report on the conduct of academic programmes.

### 3.1 Part 1

#### **A. Following meetings of Council of Management (CoM) were held during the period:**

1. Second meeting on June 21, 2006 at BARC, Mumbai.
2. Third meeting on December 2, 2006 at Anushakti Bhavan, Mumbai.

#### **B. Following meetings of Academic Council were held at BARC during the period:**

1. Third meeting on April 5, 2006.
2. Fourth meeting on August 25, 2006.
3. Fifth meeting on September 23, 2006.

Important decisions taken in these meetings are summarized below.

#### **A. Important decisions taken in the meetings of the CoM**

##### ***Second meeting: June 21, 2006***

1. The amendments to the Memorandum of Association (MoA) and Rules of HBNI carried in its first meeting were approved.
2. The criteria recommended by the Academic Council for recognizing staff working in Constituent Institutions (CIs) as Post Graduate teachers of HBNI were approved with certain amendments.
3. It approved the Ordinances adopted by the Academic Council by stipulating certain relaxations for the CIs where the faculty strength is yet to pick up in the provision requiring Chairman of Monitoring/Doctoral Committee of a PhD student to be a Professor.
4. In order to cater to matters requiring strict compliance with the Academic Calendar which at times may need urgent endorsement of CoM, in the interest of smooth functioning of the Institute, the CoM constituted a Standing Committee under Rule 6 (i) of HBNI.
5. The Council endorsed the decision of the Academic Council according approval for adopting the following ongoing academic programmes at the CIs as the programmes of HBNI: Ph.D. programmes at all the CIs; DRM and DMRIT at RMC, BARC; integrated M.Sc.-Ph.D. programmes at HRI and IMSc.
6. The CoM approved the nomenclatures for the courses at the BARC Training Schools as follows:

##### **For BARC Training School at BARC, Mumbai:**

PG Diploma/M.Tech. in {name of engineering discipline} with specialization in Nuclear Engineering.

PG Diploma/M.Phil. in {Name of Science discipline} with specialization in Nuclear Science.

**For BARC Training School at Nuclear Training Centres of NPCIL**

PG Diploma/M.Tech. in {name of engineering discipline} with specialization in Nuclear Power Plant Engineering and Management.

**For BARC Training School at RRCAT, Indore:**

PG Diploma/M.Tech. in {Engineering Physics} with specialization in Accelerators and Lasers.

**For BARC Training Schools at NFC, Hyderabad:**

PG Diploma/M.Tech. in {name of engineering discipline} with specialization in Design, Operation and Maintenance of Nuclear Fuel Cycle Facilities.

***Third meeting: December 2, 2006***

1. Detailed fee for various programmes was fixed as per the broad guidelines laid down in its second meeting.
2. Honorarium to be paid to experts for evaluating M.Tech. and Ph.D. thesis was fixed.
3. The Assistant Dean and Administrative Officer of HBNI were nominated.
4. Decision regarding opening of bank account was taken and officers authorized to operate it were named.
5. Logo of HBNI was approved.
6. Keeping in view the communication received in this regard from UGC, it approved the decision of the Academic Council that there is no need for HBNI to seek prior approval of AICTE for Technical Programmes and reiterated its commitment to maintain highest academic standards in HBNI.
7. The Council advised the Dean to propose a scheme of Visiting Professorship for approval by the Chairman CoM.

***B. Important decisions taken in the meetings of the Academic Council***

***Third meeting: April 5, 2006***

1. The Council approved the Ordinances of HBNI.
2. The Council constituted a Standing Committee comprising Deans-Academic from the CIs to carry out functions listed at Rules 8(b)(d) to 8(b)(i) and 8(b)(o) to 8(b)(q) and other routine activities.
3. Council short listed names of eminent persons for consideration as its three outside nominees.

4. The Council approved the recommendation of the Board of Studies in Engineering Sciences for adoption of the restructured syllabi of BARC Training Schools at NFC, Hyderabad and at Nuclear Training Centres of NPCIL at Kaiga, Kalpakkam, Rawatbhata and Tarapur as suitable for the award of Post Graduate Diploma and adequate for course requirements of M.Tech. programme of HBNI.
5. It formulated procedure and criteria for bestowing on the faculty at the CIs the academic titles like Professor, Associate Professor and Assistant Professor.
6. To implement the advice given by the Advisory Committee regarding entering MoUs with Universities and reputed academic institutes, the Council identified the institutes and universities with which the MoUs could be signed and the issues that the MoUs must address.
7. It agreed to enroll in HBNI the PhD students admitted to the PhD programmes at the CIs prior to the formation of HBNI provided they, as per an examination conducted by the concerned Board of Studies on a case to case basis, fulfilled the following norms:
  - The procedure by which the student was selected should be acceptable
  - The student must have taken the course work of desired standard relevant to the programme
  - The performance of the student should have been satisfactory
  - The work already done must be of high standard

For such students, the requirement of minimum time of two years for submission of Ph.D. thesis after their admission to HBNI may be waived on the advice of the Board of Studies.

#### ***Fourth meeting: August 25, 2006***

1. A new Board of Studies named the Board of Strategic Studies was constituted.
2. The Council considered the communication from UGC which stated that "Deemed Universities do not need to get prior approval of the Regulatory Authority but they need to maintain the prescribed Norms and the Standards of the Regulatory Authority". In view of this, the Academic Council revised its earlier decision and decided that there was no need to get approval of AICTE for conducting M.Tech. programme in HBNI. It, however, reiterated its commitment to maintaining highest academic standards in HBNI.

#### ***Fifth meeting: September 23, 2006***

The Academic Council considered and approved the recommendations of the Board of Studies in Engineering, Physical, Life and Chemical Sciences on the applications received from the Scientific Staff of the Constituent Institutions for recognition as Post Graduate Guide/ Subject Teachers for various programmes of HBNI.

Annex-6 lists approved faculty.

### **3.2 Part 2 - Report on the conduct of Academic programmes**

1. As per the decision of the Council of Management, each CI nominated one or more Deans-Academic to coordinate the academic programmes of HBNI at its end.
2. The approval of Medical Council of India was obtained to transfer the Post graduate Diploma in Radiation Medicine (DRM) from Mumbai University to HBNI.
3. The syllabi of various academic programmes to be conducted under the auspices of HBNI were prepared by the CIs and submitted for approval of Boards of Studies. After due deliberations, the Board of Studies submitted the syllabi approved by them for the consideration of the Academic Council.
4. Process of inviting applications from the staff at the CIs for recognition as M.Tech./Ph.D. guides and Post graduate teachers of HBNI was initiated. The concerned Boards of Studies examined the applications in the light of the relevant criteria recommended by the Academic Council.
5. The academic programmes of HBNI commenced from the academic session beginning August/ September 2006. The academic session at the grant-in-aid Institutions (HRI, IMSc, IoP, IPR, SINP and TMC) begins in August whereas it begins in September in other CIs. The programmes which commenced in 2006 by admitting fresh students included Ph.D., integrated M.Sc.-Ph.D. in various engineering and science disciplines and the Post Graduate Diploma (PG Dip.) at the BARC Training Schools. In addition, Ph.D. and M.Sc. (Engg.) programme for employees were also instituted. The number of students admitted in the academic year 2006-07 in various programmes at each CI is shown in Annex-2.
6. In order to facilitate the conduct of the Academic programmes at the R&D institutions (BARC, IGCAR, RRCAT and VECC) of HBNI, a provision for constituting Standing Committees has been made in the Ordinances. Accordingly these R&D institutions constituted the Standing Committees (Annex-7).

**4. Receipt & Payments for the  
financial year sending on  
31.3.2007**



**Receipt & Payment Account**  
**For the financial year ending on 31.03.2007**

<b>Payment</b>	<b>Amt. (Rs.)</b>	<b>Amt. (Rs.)</b>	<b>Receipt</b>	<b>Amt. (Rs.)</b>	<b>Amt. (Rs.)</b>
Excess of Income over Expenditure (represented by bank balance in A/C 3012832251-2 as on 31.3.07)		357,950.00	Receipt / Admission / Registration Fees		357,950.00
		357,950.00			357,950.00



## **Annexure 1**

### **Composition of the Bodies of the Institute**



## Council of Management

Dr. Anil Kakodkar Chairman, AEC	Chairman
Shri A.K. Jha Member Finance, AEC	Member
Shri Sudeep Banerjee Secretary, Dept of Secondary & Higher Education, MHRDD	Member
Prof. Arun Nigavekar Raja Ramanna Fellow & Trustee & Senior Advisor, Science & Technology Park, University of Pune	Member
Dr. Baldev Raj Director, IGCAR	Member
Dr. S. Banerjee Director, BARC	Member
Dr. K.A. Dinshaw Director, TMC	Member
Dr. R.B. Grover Director HBNI	Member
Dr. Bikash Sinha Director, SINP	Member
Dr. R.R. Puri Dean HBNI	Member-Secretary

## Academic Council

Prof. R.B. Grover	Chairman
Prof. S.K. Apte	Convener Board of Studies in Life Sciences
Prof. D. Balasubramanian	Director, Eye Research Foundation, Hyderabad
Prof. R. Balasubramanian	Director, IMSc
Prof. Baldev Raj	Director, IGCAR
Prof. S. Banerjee	Director, BARC
Prof. K.A. Dinshaw	Director, TMC

Prof. B.K. Dutta	Convener Board of Studies in Engineering Sciences
Prof. Dipan Ghosh	IIT-Bombay
Prof. P.K. Kaw	Director, IPR
Prof. E.D. Jemmis	IISc, Bangalore
Prof. S.K. Kulshreshtha (till Dec 06)	Convener Board of Studies in Chemical Sciences
Prof. V. Venugopal (from Jan 07)	Convener Board of Studies in Chemical Sciences
Prof. Gangan Prathap Computer Simulation, Bangalore.	CSIR Centre for Mathematical Modeling and
Dr. K.L. Ramakumar	Convener Board of Strategic Studies
Prof. A. Raychaudhuri	Director, HRI
Prof. V.C. Sahni	Director, RRCAT
Prof. Abhijit Sen	Convener Board of Studies in Physical Sciences
Prof. Bikash Sinha	Director, SINP and Director, VECC
Prof. V.S. Sunder	Convener Board of Studies in Mathematical Sciences
Dr. R.K. Choudhury (till Mar 06)	Director, IoP
Prof. Y.P. Viyogi (from Apr 06)	Director, IoP
Prof. R.R. Puri	Member Secretary

### **Advisory Committee**

Dr. Anil Kakodkar Chairman, AEC	Chairman
Prof. R. Balasubramanian Director, IMSc	Member
Dr. Baldev Raj Director, IGCAR	Member
Dr. S. Banerjee Director, BARC	Member
Prof. S. Bhattacharya Director, TIFR	Member

Dr. R.K. Choudhury (till Mar 06) Director, IoP	Member
Prof. Y.P. Viyogi (from April 06) Director, IoP	Member
Dr. K.A. Dinshaw Director, TMC	Member
Dr. R.B. Grover Director, HBNI	Member
Prof. P.K. Kaw Director, IPR	Member
Prof. A. Raychaudhury Director, HRI	Member
Dr. V.C. Sahni Director, RRCAT	Member
Dr. Bikash Sinha Director, VECC and Director, SINP	Member
Dr. R.R. Puri Dean, HBNI	Member-Secretary
Dr. C.V. Anandabose JS (R&D)	Invitee

## Board of Studies of HBNI

### ***Physical Sciences***

- |     |   |          |
|-----|---|----------|
| 1.  | Dr. Abhijit Sen (IPR)                         | Convener |
| 2.  | Dr. Praveen Chaddah (RRCAT)                   |          |
| 3.  | Dr. B.K. Godwal (BARC)/ Dr. V.M. Datar (BARC) |          |
| 4.  | Dr. C.S. Sunder (IGCAR)                       |          |
| 5.  | Dr. Dinesh Srivastava (VECC)                  |          |
| 6.  | Dr. Avinash Khare (IOP)                       |          |
| 7.  | Dr. P.D. Gupta (RRCAT)                        |          |
| 8.  | Prof. A. Raychaudhari (HRI)                   |          |
| 9.  | Dr. Kamles Kar (SINP)                         |          |
| 10. | Dr. Gautam Menon (IMSc)                       |          |

**Chemical Sciences**

1. Dr. S.K. Kulshreshtha (BARC) till Dec 06 Convener
2. Dr. V. Venugopal (BARC) after Jan 07 Convener
3. Dr. J.V. Yakhmi (BARC)
4. Dr. V.K. Manchanda (BARC)
5. Dr. Swapan Ghosh (BARC)
6. Dr. K.S. Viswanathan (IGCAR)
7. Dr. T. Gnanasekaran (IGCAR)
8. Dr. V.K Jain (BARC)

**Life Sciences**

1. Dr. S.K. Apte (BARC) Convener
2. Dr. K. Mohandas (TMC)
3. Dr. (Mrs.) S.M. Zingde (TMC)
4. Dr. S.F. D'Souza (BARC)
5. Prof. J.K. Dattagupta (SINP)
6. Dr. N. Nair (RMC) Invitee

**Engineering Sciences**

1. Dr. V.S. Raghunathan(IGCAR)/ Prof. B.K. Dutta(BARC) Convener
2. Dr. S.B. Koganti (IGCAR)
3. Dr. V.K. Suri (BARC)
4. Dr. D. Sathiyamoorthy (BARC)
5. Dr. A.P. Tiwari (BARC)
6. Dr. A. K. Suri (BARC)
7. Dr. Kamachi Mudali (IGCAR)
8. Dr. M.S. Bhatia (BARC)
9. Dr. P.V. Varde (BARC)
10. Dr. Debranjana Sarkar (VECC)

**Mathematical Sciences**

1. Prof. V.S. Sunder (IMSc) Convener
2. Prof. S. Kesavan (IMSc)
3. Prof. S.D. Adhikari (HRI)
4. Dr. R.R. Puri (BARC)

5. Prof. R. Ramanujam (IMSc)
6. Dr. N. Raghwendra (HRI)

### **Strategic Studies**

1. Dr. K.L. Ramakumar (BARC) Convener
2. Dr. A.K. Kohli (BRIT)
3. Dr. Subhash Chandra (DAE)
4. Dr. B.B. Singh (ex-BARC and Scientific Advisor,  
High Court Mumbai)
5. Prof. Rangan Banerjee (IIT-Bombay)

## **Officers of the Institute**

### **Academic**

Prof. R.B. Grover	Director
Prof. R.R. Puri	Dean
Dr. Avichal Kapoor	Assistant Dean

### **Administrative and Accounts**

Dr. G.D. Pungle	Finance Officer
Shri D. Ramesh	Administrative officer
Shri Mahabir Singh	Accounts Officer

### **Deans-Academic at the CIs BARC**

Prof. S.K. Apte – Life Sciences  
 Prof. B.K. Dutta – Engineering Sciences  
 Prof. V.M. Datar – Physical Science  
 Prof. Swapan Ghosh – Chemical Sciences

### **IGCAR**

Prof. K.S. Viswanathan

### **RRCAT**

Dr. S.C. Mehendale

### **VECC**

Dr. P. Barat

**SINP**

Prof. Parthasarathi Majumdar

**IPR**

Prof. Abhijit Sen

**IoP**

Prof. Avinash Khare

**TMC**

Dr. K.M. Mohandas

**IMSc**

Prof. S. Kesavan - Mathematical Sciences

Prof. R. Jagannthan - Physical Sciences

**HRI**

Prof. Biswarup Mukhopadhyaya

## **Annexure 2**

# **Enrollment Statistics**



**HOMI BHABHA NATIONAL INSTITUTE**  
ENROLMENT STATISTICS  
2006-2007

SNo.	CI	PGDEng	PGDSc	PGDRM	PGDMRIT	DipRP	MScEng	PhDEng	PhDPhy	PhDCh	PhDLife	PhDM	IPhDPhy	IPhDM	TOTAL
1	BARC	81	38	10	9	0	2	0	1	38	10	0	0	0	189
2	IGCAR	20	0	0	0	0	0	0	0	0	0	0	0	0	20
3	RRCAT		17	0	0	0	0	0	2	0	0	0	0	0	19
4	VECC	0	0	0	0	0	0	0	2	0	0	0	0	0	2
5	SINP	0	0	0	0	0	0	0	1	0	0	0	0	0	1
6	IPR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	IOP	0	0	0	0	0	0	0	38	0	0	0	0	0	38
8	HRI	0	0	0	0	0	0	0	22	0	0	10	6	1	39
9	TMC	0	0	0	0	0	0	0	0	0	11	0	0	0	11
10	IMSc	0	0	0	0	0	0	0	15	0	0	27	10	7	59
11	BARCTSHyd	14	0	0	0	0	0	0	0	0	0	0	0	0	14
12	BARCTSTRK	37	0	0	0	0	0	0	0	0	0	0	0	0	37
13	<b>TOTAL</b>	<b>152</b>	<b>55</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>81</b>	<b>38</b>	<b>21</b>	<b>37</b>	<b>16</b>	<b>8</b>	<b>429</b>

Notes:

CI: Constituent Institution

BARCTSHyd: Bhabha Atomic Research Centre Training School, Hyderabad

BARCTSTRK: Bhabha Atomic Research Centre Training School, Tarapur, Rawatbhata, Kalpakkam, Kudamkulam, Kaiga

PGD: Post Graduate Diploma in Engineering, Science; Radiation Medicine; Medical Radio Isotope Techniques

DipRP: Diploma in Radiological Protection

MScEng.: M. Sc. Engineering

PhD: Engineering; Physical; Chemical; Life; Mathematical Sciences

IPhd: Integrated PhD Physical; Mathematical Sciences



**Annexure 3**

**MoU With IIT Bombay**



**MEMORANDUM OF UNDERSTANDING**  
**BETWEEN**  
**HOMI BHABHA NATIONAL INSTITUTE**  
**AND**  
**INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY**

**1. Preamble**

The Indian Institute of Technology, Bombay (hereafter referred to as IITB) is a premier educational institution in science and technology and the Homi Bhabha National Institute (hereafter referred to as HBNI), a Deemed to be University, is a newly established institute under the aegis of the Department of Atomic Energy (hereafter referred to as DAE), Government of India. For the purpose of academic programmes, the following units of DAE are the Constituent Institutions {CIs} of HBNI:

1. Bhabha Atomic Research Centre (BARC), Mumbai
2. Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam
3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore
4. Variable Energy Cyclotron Centre (VECC), Kolkata
5. Saha Institute of Nuclear Physics (SIMP), Kolkata
6. Institute of Plasma Research (IPR), Gandhinagar
7. Institute of Physics (IOP), Bhubaneswar
8. Harish-Chandra Research Institute (HRI), Allahabad
9. Tata Memorial Centre (TMC), Mumbai
10. Institute of Mathematical Science (IMSc), Chennai

RECOGNISING the long standing collaboration and cooperation between IITB and some of the CIs of HBNI through programmes such as collaborative research supported by extra-mural funding through the Board of Research in Nuclear Sciences (BRNS), a body under DAE, or directly through allocation under five year plans; pursuit of M.Tech. provided they fulfill eligibility criteria set by IITB under the DAE Graduate Fellowship Scheme (DGFS) wherein the candidates assigned for employment in some of the CIs of HBNI study in an IIT, including IITB, and carry the projects under the joint supervision of the faculty from the IITs and the scientists from the CIs of HBNI; lectures by IITB faculty at BARC Training School and by BARC scientists at IITB, and

RECOGNISING that certain collaborative programmes are ongoing because of individual initiative such as pursuit of research leading to Ph.D. by employees of BARC and some other CIs under the external registration programme of IITB and co-supervision of Ph.D. students at IITB by the scientists of BARC and the faculty of IITB, and

RECOGNISING that, in view of the establishment of HBNI, while continuing the existing programmes as of present, there is scope of further expansion of the existing collaboration and cooperation, the IITB and HBNI, collectively referred to as "Partner Institutes"

HEREBY agree to create a long-term institutional partnership in education and research, including the possibility of enhanced funding from BRNS for research in the areas of mutual interest, according to the broad framework set forth in this Memorandum of Understanding (MoU).

## 2. Objective

To enhance collaborative research in the areas of mutual interest, both in extent and scope, by using the medium of research students enrolled in the Partner Institutes.

## 3. Modalities of cooperation

- 3.1 A student registered under a supervisor for M.Tech./Ph.D. in one Partner Institute (hereafter referred to as Parent Institute) can have a co-supervisor from the other Partner Institute. To that end, the supervisor from the Parent Institute of the student will identify and seek concurrence of a faculty member from the Partner Institute to take up the responsibility of being a co-supervisor. The arrangement will come into effect after the supervisor and the co-supervisor obtain approval for the same from their respective institute.
- 3.2 The Ph.D. students in "one Partner Institute may carry a part of the course work in the other Partner Institute with credit transfer. In particular,
  - 1) The credits to be awarded to the student for attending a course in the Partner Institute will be determined by the Parent Institute of the student.
  - 2) To facilitate the process of a student attending a course in the Partner Institute, the supervisor of the student will put up the proposal (*in consultation with appropriate academic bodies of the Department*) to the Dean, AP (IITB/Dean (HBNI) - as the case may be.
- 3.3 The Parent Institute shall be responsible for paying to the Partner Institute the tuition fee, if any, for participation of its students in the course work conducted at the Partner Institute,
- 3.4 The ongoing exchange of faculty for lectures and research for short periods shall be further strengthened,
- 3.5 A mechanism shall be formulated to identify the research areas of mutual interest and for possible funding for the same from BRNS.
- 3.6 The issues related with the Intellectual Property Right (IPR) with regard to the outcomes of the collaborative research and the outcomes of projects/thesis work carried under the





**Annexure 4**  
**MoU With TIFR**



**MEMORANDUM OF UNDERSTANDING  
BETWEEN  
HOMI BHABHA NATIONAL INSTITUTE  
AND  
TATA INSTITUTE OF FUNDAMENTAL RESEARCH, MUMBAI**

### **1. Preamble**

The Tata Institute of Fundamental Research, Mumbai (hereafter referred to as TIFR), a grant-in-aid institution of the Department of Atomic Energy, Government of India (hereafter referred to as DAE) and a Deemed to be university, is a premier research institution in fundamental sciences, and the Homi Bhabha National Institute (hereafter referred to as HBNI), a Deemed to be University, is a newly established institute under the aegis of the DAE. For the purpose of academic programmes, the following units of DAE are the Constituent institutions (CIs) of HBNI:

1. Bhabha Atomic Research Centre (BARC), Mumbai
2. Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam
3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore
4. Variable Energy Cyclotron Centre (VECC), Kolkata
5. Saha Institute of Nuclear Physics (SINP), Kolkata
6. Institute for Plasma Research (IPR), Gandhinagar
7. Institute of Physics (IOP), Bhubaneswar
8. Harish-Chandra Research Institute (HRI), Allahabad
9. Tata Memorial Centre (TMC), Mumbai
10. Institute of Mathematical Science (IMSc), Chennai

RECOGNISING that, being part of DAE, TIFR and CIs of HBNI have long-standing collaboration and strong linkages, and

RECOGNISING that, in view of the establishment of HBNI, while maintaining the existing linkages and continuing collaborations between TIFR and the CIs of HBNI as of present, there is a scope of establishing linkages in academic programmes, the TIFR and HBNI, collectively referred to as "Partner Institutes", HEREBY agree to create a long-term institutional partnership in academic programmes according to the broad framework set forth in this Memorandum of Understanding (MoU).

### **2. Objective**

To collaborate in academic programmes through the medium of research students and faculty in the Partner Institutes.

### **3. Modalities of cooperation**

- 3.1 A student registered under a supervisor for Ph.D. in one Partner Institute (hereafter referred to as Parent Institute) can have a co-supervisor from the other Partner Institute. To that end, the supervisor from the Parent Institute of the student will identify and seek

concurrence of a faculty member from the Partner Institute to take up the responsibility of being a co-supervisor. The arrangement will come into effect after the supervisor and the co-supervisor obtain approval for the same from their respective institutes.

3.2 The Ph.D. students in one Partner Institute may carry a part of the course work in the other Partner Institute, In particular,

3.2.1 The credits to be awarded to the student for attending a course in the Partner Institute will be determined by the Parent Institute of the student.

3.2.2 To facilitate the process of a student attending a course in the Partner Institute, the supervisor of the student in the Parent Institute will get in touch with the designated contact person in the Partner Institute. In case of HBNI, each CI has one or more Dean - Academic and they will be the contact persons for the purpose of this MoU. In case of TIFR, the contact person will be Dean, Graduate Studies. Further details will be communicated by the HBNI to TIFR and TIFR to HBNI by exchange of letters.

3.3 Exchange of faculty for teaching shall be encouraged.

#### 4. Implementation

4.1 This MoU becomes effective from the date it is signed by the Partner Institutes and will be valid for an initial period of five years. The agreement may be extended by mutual consent. In case one Partner Institute wishes to cancel the MoU, written intent to that effect will have to be communicated by June of that year. The MoU in that event will cease to be operative from the end of the year i.e. from December 31 of the year in question. However, the commitments already made under this MoU before its lapse or termination will be fulfilled

4.2 For implementation of this MoU, the following will be the contact persons

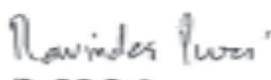
- From HBNI-Dean, HBNI
- From TIFR - Dean, Graduate Studies, TIFR

Signed on 20th day of June 2006

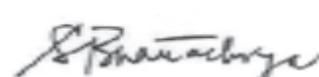
For and on behalf of  
Homi Bhabha National Institute

  
[R.B. Grover]  
Director, HBNI  
डॉ. अरु. बी. गेवर्कर / Dr. R. B. GROVER  
निदेशक / DIRECTOR  
होमी भाभा राष्ट्रीय संस्थान  
HOMI BHABHA NATIONAL INSTITUTE

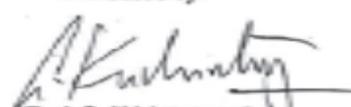
Witnessed by:

  
(Dr. R.L. Puri)  
Head, HRDD and  
Dean, HBNI

For and on behalf of  
Tata Institute of Fundamental Research

  
[S. Bhattacharya]  
निदेशक / DIRECTOR, TIFR  
डॉ. सुकुम भट्टाचार्य / Dr. S. BHATTACHARYA  
TATA INSTITUTE OF FUNDAMENTAL RESEARCH  
एम्प्लॉयमेंट / DEEMED UNIVERSITY  
1, होमी भाभा रोड / HOMI BHABHA ROAD  
मुंबई / COLABA, मुंबई / MUMBAI-400 005

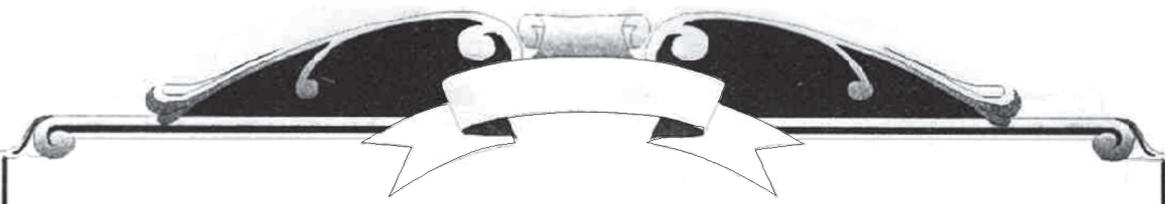
Witnessed by:

  
Dean, Graduate Studies  
Tata Institute of Fundamental Research  
Homi Bhabha Road, Mumbai - 400 005  
P. G. Krishnamoorthy  
Dean,  
Graduate Studies, TIFR

## **Annexure 5**

### **MoU With IIT, Madras**





**MEMORANDUM OF UNDESTANDING  
BETWEEN  
HOMI BHABHA NATIONAL INSTITUTE  
AND  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS**

**1. Preamble**

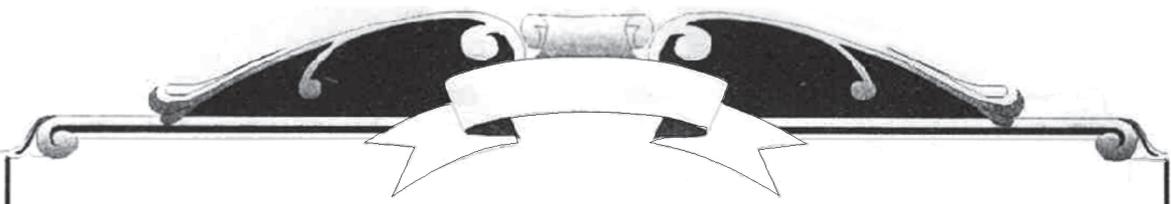
The Indian Institute of Technology Madras, Chennai (hereafter referred to as IITM) is a premier educational institution in science and technology and the Homi Bhabha National Institute (hereafter referred to as HBNI), a Deemed to be University, is an institute established under the aegis of the Department of Atomic Energy (hereafter referred to as DAE), Government of India. For the purpose of academic programmes, the following units of DAE are the Constituent Institutions (CIs) of HBNI:

1. Bhabha Atomic Research Centre (BARC), Mumbai
2. Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam
3. Raja Ramanna Centre for Advanced Technology (RRCAT), Indore
4. Variable Energy Cyclotron Centre (VECC), Kolkata
5. Saha Institute of Nuclear Physics (SINP), Kolkata
6. Institute of Plasma Research (IPR), Gandhinagar
7. Institute of Physics (IoP), Bhubaneswar
8. Harish-Chandra Research Institute (HRI), Allahabad
9. Tata Memorial Centre (TMC), Mumbai
10. Institute of Mathematical Sciences (IMSc), Chennai

RECOGNISING the long standing collaboration and cooperation between IITM and the CIs of HBNI through programmes such as collaborative research through the Board of Research in Nuclear Sciences (BRNS), a body under DAE; pursuit of M.Tech programme under the DAE Graduate Fellowship Scheme (DGFS); Continuing Education Programs (CEP) and while continuing the existing programmes as of present, in view of the establishment of HBNI, there is scope for further expansion of the existing collaboration and cooperation, between IITM and HBNI, collectively referred to as "Partner Institutes"

HEREBY agree to create a long-term institutional partnership in education and research, including the possibility of enhanced funding from BRNS for research in the areas of





mutual interest, according to the broad framework set forth in this Memorandum of Understanding (MoU).

## **2. Objective**

2.1 To enhance collaborative research in the areas of mutual interest, both in extent and scope, by participation of research students enrolled in the Partner Institutes.

2.2 Exchange of Faculty for Research and Continuing Education The ongoing exchange of faculty for lectures and research for short periods shall be further strengthened.

2.3 Identification of Research Areas

A mechanism shall be formulated to identify the research areas of mutual interest and for possible funding of the same from BRNS.

## **3. Implementation**

3.1 The modalities of cooperation shall form Annexure to the MoU

3.2 Intellectual Property Right (IPR) Issues

The issues related with the Intellectual Property Right (IPR) with regard to the outcomes of the collaborative research and the outcomes of projects/ thesis work carried under the joint supervision of the faculty from the Partner Institutes shall be governed by the IPR regulations of the Government of India.

3.3 This MoU becomes effective from the date it is signed by the Partner Institutes and will be valid for an initial period of five years, The agreement may be extended by mutual consent. In case one Partner Institute wishes to cancel the MoU, written intent to that effect will have to be communicated by June of that year. The MoU in that event will cease to be operative from the end of the year i.e. from December 31 of the year in question. However, the commitments already made under this MoU before its lapse or termination will be fulfilled.

3.4 For implementation of this MoU, the following will be the contact persons

- From HBNI-Dean, HBNI
  - From IITM - Dean, Academic Research
- 

Signed on twenty second day of February 2007

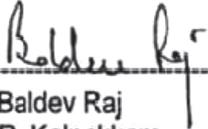
For and on behalf of  
Homi Bhabha National Institute

For and on behalf of Indian  
Institute of Technology Madras

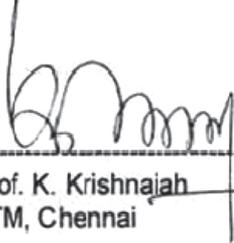
  
\_\_\_\_\_  
(R.B. Grover)  
Director, HBNI

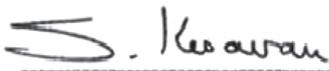
  
\_\_\_\_\_  
(M.S. Ananth)  
Director, IITM

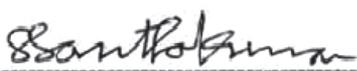
*Witness*

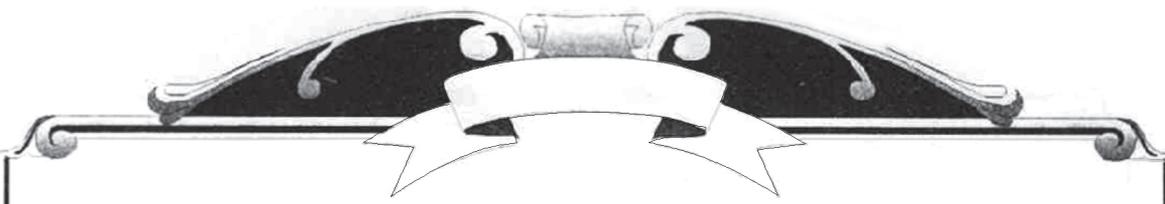
  
\_\_\_\_\_  
1. Prof. Baldev Raj  
IGCAR, Kalpakkam

*Witness*

  
\_\_\_\_\_  
1. Prof. K. Krishnajah  
IITM, Chennai

  
\_\_\_\_\_  
2. Prof. S. Kesavan  
IMSc, Chennai

  
\_\_\_\_\_  
2. Prof. S. Santhakumar  
IITM, Chennai



## ANNEXURE

### Modalities of cooperation

1. A Student registered under a supervisor for Postgraduate Programs in one Partner Institute (hereafter referred to as Parent Institute) can have a supervisor from the other Partner Institute. To that end, the supervisor from the Parent Institute of the student will identify and seek concurrence of a faculty member from the Partner Institute to take up the responsibility to be a supervisor. The arrangement will come into effect after the concerned faculty obtains approval for the same from their respective institute.
2. The Postgraduate students in one Partner Institute may carry a part of the course work in the other Partner Institute with credit transfer, In particular.
  - (a) The credits to be awarded to the student for attending a course in the Partner Institute will be determined by the Parent Institute of the student.
  - (b) To facilitate the process of a student attending a course in the Partner Institute, the supervisor of the student in the Parent Institute will put up the proposal to the Dean, AR, IITM / Dean, HBNI as the case may be for consideration by the appropriate academic bodies of the institutes.
3. The Parent Institute shall arrange for paying to the Partner Institute the tuition fee, if any, for participation of its students in the course work conducted at the Partner Institute.

## **Annexure 6**

### **Faculty List 2007 (Up to March 2007)**



**BARC****Chemical Sciences**

1. Achutan P.V.
2. Agarwal S.K.
3. Arunachalam J.
4. Bajaj P.N.
5. Banerjee (Smt.) S.
6. Bharadwaj (Smt.) S.R.
7. Chattopadhyay A.
8. Chattopadhyay S.
9. Chaurasia S.C.
10. Das D.
11. Dash S.
12. Deo M.N.
13. Ghosh S.K.
14. Ghosh Swapan
15. Goswami A.
16. Jaikumar Sunil
17. Jain V.K.
18. Jha S.K.
19. Kalsi P.C.
20. Kapoor Sudhir
21. Kayasth S.R.
22. Krishnamurthy N.
23. Kshirsagar R.J.
24. Kulshreshtha S.K.
25. Manchanda V.K.
26. Meera Venkatesh (Smt.)
27. Mohapatra P.K.
28. Mukherjee S.K.
29. Mukherjee T.
30. Naik D.B.
31. Naik P.D.
32. Narasimhan S.V.
33. Natrajan V.

34. Nayak S.K.
35. Padmanabhan P.V.A.
36. Pal H.D.
37. Palit D.K.
38. Pandit Gouri G.
39. Parathasarthy V.
40. Pillai C.G.S.
41. Priyadarshini (Smt.) K.I.
42. Pujari P.K.
43. Ramakumar K.L.
44. Rangarajan S.
45. Reddy A.V.R.
46. Sabharwal Sunil
47. Samanta S.K.
48. Sarkar S.K.
49. Tomar B.S.
50. Tripathi R.M.
51. Tyagi A.K.
52. Varshney Lalit
53. Vatsa R.K.
54. Velmurugan S.
55. Venkataramani B.
56. Venkateswaran G.
57. Venugopal V.
58. Yakhmi J.V.

**Engineering Sciences**

1. Awasthi A.
2. Badodkar D.N.
3. Balasubramaniam R.
4. Banerjee S.
5. Bhatia M.S.
6. Bidaye A.C.
7. Chakraborty S.P.
8. Chattopadhyay J.
9. Chkaravarthy J.K.

10. Das R.
11. Dey G.K.
12. Dutta B.K.
13. Gantayet L.M.
14. Ghosh A.K.
15. Gopika Vinod
16. Grover R.B.
17. Hubli R.C.
18. Kain V.
19. Kale G.B.
20. Kapoor Rajiv
21. Kar D.C.
22. Khan K.B.
23. Krishnan J.
24. Kulkarni U.D.
25. Kutty T.R.G.
26. Madan V.K.
27. Maheswari N.K.
28. Nagesh K.V.
29. Nayak A.K.
30. Pande D.P.
31. Patankar V.H.
32. Prasad G.J.
33. Ramanathan S.
34. Rami Reddy G.
35. Ravindranath S.V.G.
36. Sathiyamoorthy D.
37. Sengupta A.K.
38. Singh R.K.
39. Suri A.K.
40. Suri V.K.
41. Taliyan S.S.
42. Tewari P.K.
43. Tiwari A.P.
44. Topkar Amita V.
45. Vaidya P.P.

46. Varde P.V.
47. Vijayan P.K.
48. Vinod Kumar A.

### **Life Sciences**

1. Apte S.K.
2. Bandekar J.R.
3. Bhagwat S.G.
4. Chaubey R.C.
5. D'Souza S.F.
6. Devasagayam T.P.A.
7. Gopalakrishna T.
8. Jawali Narendra
9. Joshi (Smt.) V.P.
10. Kale S.P.
11. Kamat J.P.
12. Malini (Smt.) Krishna
13. Misra Hari S.
14. Poduval T.B.
15. Rao T.S.
16. Sainis (Smt.) J.K.
17. Sainis K.B.
18. Seshadri M.
19. Sharma A.K.
20. Susan (Smt.) Eapen
21. Venugopalan V.P.

### **Physical Sciences**

1. Bhanumurthy K.
2. Biswas D.
3. Chaplot S.L.
4. Degweker S.B.
5. Godbole S.V.
6. Godwal B.K.
7. Kulkarni U.D.
8. Panakkal J.P.

9. Puri R.R.
10. Raju V.S.
11. Sundararaman M.

### ***Strategic Studies***

1. Grover R.B.
2. Ramakumar K.L.

### **HRI**

#### ***Physical Sciences***

1. Bagla J.S.
2. Choubey (Smt.) Sandhya
3. Das Tapas Kumar
4. Datta A.
5. David Justin R.
6. Gandhi Raj
7. Ghoshal Debashis
8. Gopakumar Rajesh
9. Gopalakrishnan Manoj
10. Goswami S.
11. Jatkar Dileep P.
12. Majumdar Pinaki
13. Mukhopadhyaya B.
14. Naik S.
15. Panda Sudhakar
16. Pareek T.P.
17. Rao (Smt.) Sumathi
18. Ravindran V.
19. Raychaudhuri Amitava
20. Sen Ashoke
21. Sen Prasenjit
22. Sriramkumar L.

#### ***Mathematical Sciences***

1. Adhikari Sukumar Das
2. Batra Punita

3. Chakraborty Kalyan
4. Dalawat Chandan Singh
5. Dey Rukmini
6. Raghavendra N.
7. Ramakrishnan B.
8. Ratnakumar P.K.
9. Surya Ramana D.
10. Thangadurai R.

### **IGCAR**

#### ***Chemical Sciences***

1. Anthonysamy S.
2. Gnanasekaran T.
3. Kamachi Mudali (Smt.) U.
4. Mallika(Smt.) C.
5. Nagrajan K.
6. Panigrahi B.S.
7. Sai Baba M.
8. Srinivasan T.G.
9. Vasudeo Rao P.R.
10. Viswanathan K.S.
11. Viswanathan R.

#### ***Engineering Sciences***

1. Anand Babu C.
2. Baldev Raj
3. Bhaduri A.K.
4. Chellapandi P.
5. Jayakumar T.
6. Kamachi Mudali
7. Purna Chandra Rao B.
8. Sivaprasad P.V.
9. Velusamy K.
10. Venugopal S.

**Physical Sciences**

1. Amarendra G.
2. Arora A.K.
3. Bharathi A.
4. Indira (Smt.) R.
5. John Philip
6. Keshavamurthy R.S.
7. Mohanakrishnan P.
8. Mohankumar N.
9. Murthy K.P.N.
10. Nair Muraleedharan K.G.
11. Panigrahi B.K.
12. Reddy C.P.
13. Sahu Ch. P.
14. Sahu H.K.
15. Sunder C.S.
16. Tata B.V.R.
17. Tyagi Ashok Kumar
18. Vijayalakshmi M.

**IMSc****Engineering Sciences**

1. Mahajan Meena B.
2. Subramanian C.R.
3. Venkatesh Raman

**Mathematical Sciences**

1. Arvind V.
2. Balasubramanian R.
3. Chakraborty Partha Sarathi
4. Iyer (Smt.) Jaya N.
5. Kesavan S.
6. Kodiyalam Vijay
7. Krishna M.
8. Lodaya Kamal

9. Mahajan Meena
10. Nagaraj D.S.
11. Paranjape Kapil
12. Prasad Amritanshu
13. Raghavan K.N.
14. Ramanujam R.
15. Sankaran Parameswaran
16. Srivivas K.
17. Subramanian C.R.
18. Sunder V.S.
19. Venkatesh Raman

**IPR****Engineering Sciences**

1. Chaturvedi Shashank
2. Pathak Surya Kumar

**Physical Sciences**

1. Anurag Shyam
2. Bora Dhiraj
3. Chaturvedi Shashank
4. Das (Smt.) Amita
5. Kaw P.K.
6. Mukherjee Subroto
7. Rajaraman Ganesh
8. Raole P.M.
9. Reddy Chenna D.
10. Sen Abhijit

**IoP****Physical Sciences**

1. Agrawal Pankaj
2. Bhattacharjee Somendra M.
3. Dev Bhupendra Nath
4. Jayannavar A.M.
5. Khare Avinash

6. Mahapatra Durga Prasad
7. Mukherji Sudipta
8. Patra Suresh Kumar
9. Sahu P.K.
10. Sahu S.N.
11. Satyam Parlapalli V.
12. Sekhar Biju R.
13. Som Tapobrata
14. Srivastava Ajit M.
15. Tripathy Gautam
16. Varma Shikha
17. Viyogi Y.P.

## **RRCAT**

### **Chemical Sciences**

1. Das K.

### **Life Sciences**

1. Dube Alok
2. Sharma (Smt.) Mrinalini

### **Physical Sciences**

1. Banerjee Arup
2. Chakrabarti (Smt.) Aparna
3. Chattopadhyay M.K.
4. Ganesamoorthy S.
5. Ghosh Harnath
6. Gupta P.K.
7. Gupta, P.D.
8. Gupta S.M.
9. Krishnagopal S.
10. Kukreja L.M.
11. Lodha G.S.
12. Mehandale S.C.
13. Naik P.A.
14. Nath Ashish K.

15. Rai V.N.
16. Rawat H.S.
17. Roy S.B.
18. Sahni V.C.
19. Shailendra Kumar
20. Tiwari V.S.

### **Engineering Sciences**

1. Chatterjee Sanjil
2. Nath A.K.

## **SINP**

### **Chemical Sciences**

1. Basu Samita
2. Bhattacharya Dhananjay
3. Chakraborti Abhijit
4. Ganguly Bichitra
5. Lahiri Sushanta
6. Nayak (Smt.) Dalia

### **Engineering Sciences**

1. Mukhopadhyay Supratik

### **Life Sciences**

1. Dattagupta J.K.
2. Chakrabarti Abhijit
3. Bhattacharya Dhananjay

### **Physical Sciences**

1. Agrawal Bijay Kumar
2. Bandyopadhyay Debades
3. Basu Chinmay
4. Bhattacharjee Pijushpani
5. Bhattacharyya Gautam
6. Chakrabarti Nikhil
7. Chattopadhyay Sukalyan

8. De Asit K.
9. Ganguly Bichitra
10. Ghosh Amit
11. Gupta Sankar Kumar
12. Ghoshal Ambar
13. Harindranath A.
14. Kar Kamles
15. Kundu Anjan
16. Majumdar Debasish
17. Majumdar Harashit
18. Majumdar Nayana
19. Majumdar Parthasarathi
20. Mathews Prakash
21. Menon K.S.R.
22. Mitra Parthasarathi
23. Nambissan P.M.G.
24. Nandy Maitreyee
25. Ranganathan R.
26. Ray Nihar Ranjan
27. Roy Shibaji
28. Samanta Chhanda
29. Singh Harvendra
30. Sinha Bikash

## **TMC**

### **Chemical Sciences**

1. Pakhale S.S.

### **Life Sciences**

1. Chandan Kumar
2. Chiplunkar (Smt.) S.V.
3. Dalal S.N.
4. Desai (Smt.) Sangeeta B.
5. Dinshaw K.A.
6. Gude Rajiv
7. Gupta Sanjay

8. Joshi Narendra N.
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15. Mukhopadhyaya Rabindranath
16. Naik(Smt.) Nishigandha R.
17. Rai (Smt.) Rekha
18. Sarin Rajiv
19. Shirsat (Smt.) Neelam V.
20. Teni Tanuja R.
21. Vaidya Milind M.
22. Zingde (Smt.) S.M.

## **VECC**

### **Chemical Sciences**

1. Sen Pintu
2. Sarkar D.

### **Engineering Sciences**

1. Mukherjee Paramita

### **Physical Sciences**

1. Bandyopadhyay S.K.
2. Banerjee S.R.
3. Banerjee G.N.
4. Basu D.N.
5. Bhattacharaya (Smt.) Chandana
6. Bhattacharya S.
7. Chakrabarti Alok
8. Chaudhuri A.K.
9. De Udayan
10. Jan-e Alam
11. Mukherjee G.

12. Pal Santanu
13. Pandit Vijay S.
14. Ray Amlan
15. Sarma P.R.
16. Srivastava Dinesh
17. Zubeyer Ahammed

## **VECC**

### ***Chemical Sciences***

1. Sen Pintu
2. Sarkar D.



## **Annexure 7**

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