

# JEE (Advanced) 2016



Information Brochure

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# Part-I

# THE INSTITUTES

## 1. INSTITUTES

Indian Institutes of Technology (IITs) are institutions of national importance established through Acts of Parliament for fostering excellence in education. Over the years, IITs have created a world class educational platform that is dynamically sustained through quality teaching and internationally acclaimed research with excellent infrastructure and the best available minds. The faculty and alumni of IITs occupy key positions in academia and industry, both in India and abroad, and continue to make a considerable impact in all sections of the Society. At present, there are eighteen IITs located across the country.

The Indian School of Mines (ISM), Dhanbad, is one of the oldest institutions in India and is known for its immense contributions towards society at large, and science and technology in particular.

The primary objectives of IITs and ISM are as follows:

- To create an environment that encourages freedom of thought and pursuit of excellence, and inculcates the necessary vision and self-discipline to achieve excellence.
- To build a solid foundation of scientific and technical knowledge and to prepare competent and motivated engineers and scientists.
- To kindle an entrepreneurial spirit among the students.
- To prepare the students to become outstanding professionals and contribute to nation-building.

Admission into various undergraduate programmes (see **2. ACADEMIC PROGRAMS**) across IITs and ISM is through the Joint Entrance Examination (Advanced).

**NAMES, LOCATIONS AND ABBREVIATIONS OF THE EIGHTEEN INDIAN INSTITUTES OF TECHNOLOGY**

Indian Institute of Technology (Banaras Hindu University)	Varanasi	IIT(BHU)
Indian Institute of Technology Bhubaneshwar	Bhubaneshwar	IITBBS
Indian Institute of Technology Bombay	Mumbai	IITB*
Indian Institute of Technology Delhi	New Delhi	IITD*
Indian Institute of Technology Gandhinagar	Gandhinagar	IITGN
Indian Institute of Technology Guwahati	Guwahati	IITG*
Indian Institute of Technology Hyderabad	Hyderabad	IITH
Indian Institute of Technology Indore	Indore	IITI
Indian Institute of Technology Jodhpur	Jodhpur	IITJ
Indian Institute of Technology Kanpur	Kanpur	IITK*
Indian Institute of Technology Kharagpur	Kharagpur	IITKGP*
Indian Institute of Technology Madras	Chennai	IITM*
Indian Institute of Technology Mandi	Mandi	IITMandi
Indian Institute of Technology Palakkad	Palakkad	IITPKD
Indian Institute of Technology Patna	Patna	IITP
Indian Institute of Technology Roorkee	Roorkee	IITR*
Indian Institute of Technology Ropar	Ropar	IITRPR
Indian Institute of Technology Tirupati	Tirupati	IITTP

\* Zonal IITs which will conduct JEE (Advanced) 2016 examination.

## 2. ACADEMIC PROGRAMS

Through JEE (Advanced), IITs and ISM offer admission into undergraduate courses leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Science, Architecture, or Pharmaceutics. Both Bachelor's and Master's degrees are awarded to candidates enrolled in the dual degree programs upon successful completion of the course curriculum. In a few of the IITs, students enrolled into the 4-year Bachelor's program have the option to convert to B.Tech.(Honors) and/or B.Tech. with Minors. The types of academic programs offered at IITs and ISM and their minimum duration are given in the next page.

However, not all programs and courses are available in all the institutes. The relevant programs and courses offered in 2015 are given in **Annexure-III: COURSES OFFERED IN 2015**. The courses that will be offered in 2016 will be announced at the time of seat allocation (i.e., filling-in of choices for admission).

The programs are credit-based and thus offer the flexibility to progress at one's own pace. A minimum level of performance is essential for satisfactory progress. The medium of instruction is English.

All Indians and foreign nationals who satisfy the eligibility criteria (see **Section 10**) can appear in JEE (Advanced). The successful candidates meeting the Class XII performance criterion (see **Section 25**) are eligible for admission into IITs/ISM. While allotting seats, certain policies are followed depending on candidates' category and/or nationality.

**TYPES OF ACADEMIC PROGRAMS OFFERED AT IITs AND ISM, AND THEIR MINIMUM DURATION<sup>¶</sup>**

B.Tech.	Bachelor of Technology	4 years
B.S.	Bachelor of Science	4 years
B.Pharm.	Bachelor of Pharmaceutics	4 years
B.Arch.	Bachelor of Architecture	5 years
Dual Degree B.Tech.-M.Tech.	Dual Degree Bachelor of Technology and Master of Technology	5 years
Dual Degree B.S.-M.S.	Dual Degree Bachelor of Science and Master of Science	5 years
Integrated Dual Degree M.Pharm.	Integrated Dual Degree Master of Pharmaceutics	5 years
Integrated M.Tech.	Integrated Master of Technology	5 years
Integrated M.Sc.	Integrated Master of Science	5 years

<sup>¶</sup>Only those academic programs for which admission is based on JEE (Advanced) examination are shown here. These Institutes also have other academic programs (B.Des., M.Tech., M.Sc., M.Des., Ph.D., etc.) with different admission criteria.

### 3. RESERVATION OF SEATS

Indian nationals belonging to certain categories are admitted under the seats reserved for them in accordance with the rules of the Government of India.

The categories and the extent of reservation are as follows:

- Other Backward Classes belonging to the Non-Creamy Layer (OBC-NCL) – 27% of seats in every course. The backward class should be in the current updated central list of OBCs ([www.ncbc.nic.in](http://www.ncbc.nic.in)).

Candidates belonging to the creamy layer of OBC are **NOT** entitled for reservation. Such candidates are treated as belonging to the general (GEN), i.e., unreserved category, and they will be eligible only for the OPEN seats – *the seats for which everyone is eligible*.

- Scheduled Caste (SC) – 15% of seats in every course.
- Scheduled Tribe (ST) – 7.5% of seats in every course.

The benefit of reservation will be given only to those castes and tribes that are mentioned in the respective central list of corresponding states published by the Government of India (<http://socialjustice.nic.in/sclist.php> and <http://tribal.nic.in/Content/list%20of%20Scheduled%20Tribes%20in%20India.aspx>).

- Persons with Disability (PwD) – 3% seats in each of OPEN, OBC-NCL, SC and ST category seats.

Benefit would be given to those who have at least 40% impairment irrespective of the type of disability i.e., locomotor, visual or dyslexic.

Leprosy-cured candidates who are otherwise fit to pursue the courses are also included in this sub-category.



Candidates belonging to the OBC-NCL, SC, ST and PwD categories will be declared as qualified on the basis of a relaxed criterion (see **21. RANK LISTS**).

Unfilled seats reserved under OBC-NCL category will be de-reserved to OPEN category seats. Whereas, seats remaining vacant under the SC and ST categories shall **NOT** be de-reserved to any category. The reservation for PwD candidates is horizontal and hence, unfilled seats will be de-reserved to the respective categories i.e., unfilled SC-PwD seats will be converted to the SC category seats and so on.

The category of a candidate as entered in the database, which will be made available by the JEE Apex Board [which conducts JEE (Main) 2016 examination], will be final and requests for change of category will NOT be entertained.

#### **4. DEFENCE SERVICE CANDIDATES**

Defence Service (DS) candidates are children of defence / paramilitary personnel killed or permanently disabled in action during war or peacetime operations. Two seats are available for preferential allotment in each Institute for DS candidates. To avail of this preferential allotment, a DS candidate must be in the Common Rank List of JEE (Advanced) 2016 (see **21. RANK LISTS**).

#### **5. FOREIGN NATIONALS**

Candidates who are **NOT** citizens of India (by birth or naturalized) at the time of registering for JEE (Advanced) 2016 are treated as foreign nationals. Seats allotted to foreign nationals are supernumerary with a cap of 10% of total number of seats in every course.

Foreign nationals are outside the ambit of reservation of seats under the OBC-NCL, SC, ST and PwD categories as specified herein.

## **6. OTHER INSTITUTES**

Other institutes have used JEE (Advanced) ranks in the past. These include:

- Indian Institute of Science, Bangalore (IISc)
- Indian Institutes of Science Education and Research (IISERs) located in Bhopal, Mohali, Kolkata, Pune and Thiruvananthapuram
- Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram
- Rajeev Gandhi Institute of Petroleum Technology (RGIPT), Bareilly

Candidates should contact these institutes directly for additional information.

# Part-II

# THE EXAMINATION

## 7. THE EXAMINATION

The Joint Entrance Examination (Advanced) 2016 [JEE (Advanced) 2016] will be conducted by the seven zonal IITs under the guidance of the Joint Admission Board (JAB) 2016. The performance of a candidate in this examination will form the basis for admission to the Bachelor's, Integrated Master's and Dual Degree programs (entry at the 10+2 level) in all the IITs and the ISM. The decisions of the JAB 2016 will be final in all matters related to JEE (Advanced) 2016 and admission to IITs and ISM.

## 8. SCHEDULE OF JEE (ADVANCED) 2016

The examination consists of two papers, Paper 1 and Paper 2, each of three hours duration and will be held as per the following schedule:

<b>Day, date</b>	Sunday, 22 May 2016
<b>Time</b>	Paper 1 09:00 to 12:00 IST
	Paper 2 14:00 to 17:00 IST

**Both the papers are compulsory.**

NOTE: The schedule will remain the same even if 22 May 2016 is declared a public holiday. Candidates using the services of a scribe (see **13. SERVICES OF A SCRIBE**) will get one hour compensatory time i.e., the end time will be 13:00 IST for Paper 1 and 18:00 IST for Paper 2.

## 9. JEE (MAIN) 2016

Candidates who wish to appear in JEE (Advanced) 2016 must write Paper-1 of JEE (Main) 2016 which will be held in the month of April 2016. Candidates may visit the website [www.jeemain.nic.in](http://www.jeemain.nic.in) for information about JEE (Main) 2016.

## 10. ELIGIBILITY CRITERIA FOR APPEARING IN JEE (ADVANCED) 2016

All the candidates, including foreign nationals, must fulfil each and every one of the following five criteria to appear in JEE (Advanced) 2016.

Criterion 1 – Performance in JEE (Main) 2016: Candidates should be among the top 2,00,000 (including all categories) by scoring positive marks in Paper-1 of JEE (Main) 2016.

The percentages of various categories are: 27% for OBC-NCL, 15% for SC, 7.5% for ST and the remaining 50.5% is OPEN for all. Within each of these four categories, 3% horizontal reservation is available for PwD (including Dyslexic) candidates.

As shown in the following table, the usual order will be followed while choosing top 2,00,000 candidates in various categories who have scored positive marks in JEE (Main) 2016.

### Category-wise distribution of top 2,00,000 candidates (Criterion 1)

ORDER	CATEGORY	Number of “Top” candidates	
1	OPEN	97,970	Total 1,01,000
2	OPEN-PwD	3,030	
3	OBC-NCL	52,380	Total 54,000
4	OBC-NCL-PwD	1,620	
5	SC	29,100	Total 30,000
6	SC-PwD	900	
7	ST	14,550	Total 15,000
8	ST-PwD	450	

Criterion 2 – Age limit: Candidates should have been born on or after October 1, 1991. Five years relaxation is given to SC, ST and PwD candidates, i.e., these candidates should have been born on or after October 1, 1986.

Criterion 3 – Number of attempts: A candidate can attempt JEE (Advanced) a maximum of two times in consecutive years. Therefore, candidates who appeared in JEE (Advanced) 2015 for the first time are also eligible.

Criterion 4 – Appearance in Class XII (or equivalent) examination: A candidate should have appeared for the Class XII (or equivalent) examination for the first time in all the subjects in either 2015 or 2016.

Candidates who appeared for the Class XII (or equivalent) examination in 2015 and wish to re-appear in the same in 2016 (either for improvement or because they failed in one or more subjects), will have to re-appear in all the subjects in 2016.

Those who appeared for the first time in their Class XII (or equivalent) examination in 2014 or earlier are **NOT** eligible. However, candidates whose Class XII (or equivalent) examination Board results for the academic year 2013-14 were declared after June 2014 are eligible to appear in JEE (Advanced) 2016.

Criterion 5 – Earlier admission at IITs/ISM: A candidate should **NOT** have been admitted in an IIT/ISM (irrespective of whether or not he/she continued in the program) **OR** accepted the IIT/ISM seat by reporting at a reporting centre in the past. The candidates whose admission at IITs or ISM was cancelled are also **NOT** eligible.

Candidates who have been admitted to a preparatory course in any of the IITs for the first time in 2015 can appear in JEE (Advanced) 2016. The candidates who have paid seat acceptance fee but not accepted the seat by reporting at the reporting centre during joint seat allocation in 2015 are also eligible.

## 11. REGISTRATION FOR JEE (ADVANCED) 2016

**Eligibility:** The candidate should satisfy each and every one of the five eligibility criteria [see **10. ELIGIBILITY CRITERIA FOR APPEARING IN JEE (ADVANCED) 2016**]. Registration will be cancelled if, at a later date, it is found that the candidate does not meet any of these five eligibility criteria.

**Registration Portal:** Candidates should register for appearing in JEE (Advanced) 2016. Registration is only through the online portal where detailed instructions will be provided.

Online registration portal	<a href="http://www.jeeadv.ac.in">www.jeeadv.ac.in</a>
Online registration begins	Friday, April 29, 2016 10:00 IST
Online registration closes	Wednesday, May 4, 2016 17:00 IST

**Registration Procedure:** The procedure consists of three basic steps.

Step-1: After login, provide the basic data including the choice of the language of question paper (English or Hindi), the choices of the cities for the examination [See **18. CITIES AND TOWNS WHERE JEE (ADVANCED) 2016 WILL BE HELD**].

Step-2: Upload the scanned copies of all requisite documents [See **14. DOCUMENTS REQUIRED FOR REGISTRATION**].

Step-3: Pay registration fee [See **12. REGISTRATION FEE FOR JEE (ADVANCED) 2016**]. Registration fee is **NEITHER** refundable **NOR** transferable.

## **12. REGISTRATION FEE FOR JEE (ADVANCED) 2016**

<b>Examination centres in India</b>	
Female Candidates	: ₹ 1000
SC, ST, PwD Candidates	: ₹ 1000
All Other Candidates	: ₹ 2000
<b>Examination centre in Dubai</b>	
All Candidates	: USD 220

- The registration fee shown above DOES NOT INCLUDE service charges, processing fees and any other charges that the banks may charge.
- Detailed instructions related to the payment of registration fee will be given on the online registration portal.

## **13. SERVICES OF A SCRIBE**

- The services of a scribe (amanuensis) are available to candidates who are visually impaired, dyslexic, have disability in the upper limbs or have lost fingers / hands thereby preventing them from bubbling the optical response sheet (ORS).
- To avail of this benefit, the candidate should request the Chairman, JEE (Advanced) 2016, of the respective zonal IIT in the prescribed format (FORM-SCRIBE). The requisition, along with a copy of the PwD certificate (FORM-PwD [II/III/IV, whichever is applicable]) OR a copy of the certificate of Dyslexic candidate (FORM-DYSLEXIC), whichever is applicable, should be uploaded at the time of online registration for JEE (Advanced) 2016. The



formats for the request letter and PwD/Dyslexic certificate are given in **Annexure-II: CERTIFICATE FORMATS.**

- Zonal IITs will make arrangements, through the Presiding Officer (PO) of the Examination Center, to provide a panel of scribes (amanuenses). Scribes will be students of Class XI from the science stream with Mathematics as one of the subjects. The PwD/dyslexic candidate has to choose a scribe from this panel. The candidates will **NOT** be allowed to bring their own scribes.
- The candidate will be allowed to meet the scribe one day prior to the examination i.e., on Saturday, 21 May 2016, in the presence of the IIT Representatives (IRs), Presiding Officer (PO) and an Invigilator.
- If it is found that a candidate has used the services of a scribe, and consequently one extra hour, but does not possess the extent of disability that warrants the use of a scribe, he/she will be excluded from the process of evaluation, ranking and admission. If the candidate has already been admitted, his/her admission will be cancelled.

#### **14. DOCUMENTS REQUIRED FOR REGISTRATION**

Given below is a list of certificates whose scanned copies are to be uploaded at the time of online registration for JEE (Advanced) 2016. The formats of the certificates, which are indicated in the brackets, are given in **Annexure-II: CERTIFICATE FORMATS.**

##### **All candidates**

- (1) Class X certificate if the date of birth is mentioned in it OR birth certificate.

(2) Class XII (or equivalent examination) certificate (for those who appeared for this examination in 2015).

(3) If the name is not same as in the Class X certificate, gazette notification showing the change of name.

### **Candidates seeking admission under the OBC-NCL category**

OBC-NCL certificate (FORM-OBC-NCL) issued on or after June 1, 2015 and conforming to the latest guidelines of the Government of India. Visit [www.ncbc.nic.in](http://www.ncbc.nic.in) for latest guidelines and updates of the Central List of State-wise OBCs.

### **Candidates seeking admission under the SC or ST category**

Caste (for SC) or tribe (for ST) certificate (FORM-SC/ST).

### **Candidates seeking admission under the PwD category**

Disability certificate (FORM-PwD [II/III/IV, whichever is applicable]) issued by the notified medical authority. Dyslexic candidate needs to submit FORM-DYSLEXIC instead of FORM-PwD.

### **Candidates needing the services of a scribe**

Request letter to the Chairman of the respective zonal IIT (FORM-SCRIBE).

### **Candidates seeking admission under the DS category**

Certificate (FORM-DS) issued by a competent authority in the Directorate of Resettlement and Rehabilitation, New Delhi under the Ministry of Defence or the Ministry of Home Affairs, Govt. of India.

**Candidates whose Class XII examination Board is outside India or not listed in section 24. EXAMINATIONS CONSIDERED AS EQUIVALENT TO CLASS XII**

A certificate from the Association of Indian Universities to the effect that the examination qualified by the candidates is equivalent to the Class XII examination.

**15. ADMIT CARD**

- Candidates who successfully registered for JEE (Advanced) 2016 can download the admit card from the online registration portal: [www.jeeadv.ac.in](http://www.jeeadv.ac.in)
- The admit card will bear the following details of the candidate: Name, Roll number for JEE (Advanced) 2016, photograph, signature, date of birth, address for correspondence, category and language of the question paper.
- In addition, the admit card will have the name and address of the examination centre allotted to the candidate.
- Candidates should carefully examine the entries in the admit card and in case of any discrepancy, contact the Chairman, JEE (Advanced) 2016 of the respective zonal IIT.
- In case the admit card is not available for downloading, the candidate should contact the Chairman, JEE (Advanced) 2016 of the respective zonal IIT.
- A copy of the downloaded admit card should be produced at the time of examination. The original admit card will be issued to the candidate during the Paper 1 examination. **This original admit card must be retained safely till all the formalities of admission are complete.**

Portal for downloading admit card	<a href="http://www.jeeadv.ac.in">www.jeeadv.ac.in</a>
Admit card downloading	Wednesday, May 11, 2016, 10:00 IST to Sunday, May 22, 2016, 09:00 IST

## 16. QUESTION PAPERS

- There are two question papers: Paper 1 and Paper 2 of three hours duration each. Both papers are compulsory.
- Each question paper will consist of three separate sections, viz., Physics, Chemistry and Mathematics. The syllabi are given in **Annexure-I: SYLLABI**.
- The question papers will consist of objective type (multiple choice and numerical answer type) questions designed to test comprehension, reasoning and analytical ability of candidates.
- Negative marks will be awarded for incorrect answers to some of the questions.
- The candidates must carefully read and adhere to the detailed instructions given in the question paper.
- The question paper will be in either English or Hindi. Candidates must exercise the choice of question paper language while registering for JEE (Advanced) 2016. Change of question paper language will **NOT** be entertained after the registration.

## 17. OPTICAL RESPONSE SHEET (ORS)

- The answer sheet of each paper of JEE (Advanced) 2016 is a machine-readable ORS.

- The ORS has two pages with the same lay-out. The first page of the ORS is machine readable. It is designed so as to leave impressions of the responses on the second page.
- Candidates should not separate or disturb the alignment of the two pages of the ORS at any stage and under any circumstance.
- The answers to all the questions should be marked on the first page of the ORS by darkening the appropriate bubble or bubbles (as per the instructions given in the question paper).
- Candidates should use BLACK BALL POINT pen for darkening the bubbles.
- Candidates should apply adequate pressure to ensure that a proper impression is made on the second page of the ORS. Other instructions for darkening the bubbles will be printed on the question paper and candidates must strictly adhere to these instructions.
- The second page of the ORS will be handed over to the candidates by the invigilator at the end of the examination.

#### **18. CITIES AND TOWNS WHERE JEE (ADVANCED) 2016 WILL BE HELD**

JEE (Advanced) 2016 will be held in select cities and towns in India and in Dubai, United Arab Emirates. Except those who opt for Dubai city, candidates should compulsorily choose three cities / towns from a zone of their choice at the time of online registration. Efforts will be made to allot the city / town of the candidate's choice but a different city / town in the same zone may be allotted under exceptional circumstances. Request for change of city / town will **NOT** be entertained under any circumstance.

**CITIES AND TOWNS WHERE JEE (ADVANCED) 2016 WILL BE HELD**

**IIT BOMBAY ZONE**

**City/Town Code**

**GOA**

Panaji 101

**GUJARAT**

Ahmedabad 102  
Rajkot 103  
Surat 104  
Vadodara 105

**MAHARASHTRA**

Mumbai 106  
Nagpur 107  
Navi Mumbai 108  
Pune 109

**RAJASTHAN**

Ajmer 110  
Jaipur 111  
Jodhpur 112

**IIT DELHI ZONE**

**City/Town Code**

**DELHI**

Delhi (East) 201  
Delhi (West) 202  
Delhi (North) 203  
Delhi (South) 204  
Delhi (Central) 205

**HARYANA**

Faridabad 206  
Gurgaon 207

**JAMMU and KASHMIR**

Jammu 208

**MADHYA PRADESH**

Indore 209

**RAJASTHAN**

Sikar 210  
Udaipur 211

**UTTAR PRADESH**

Aligarh 212  
Mathura 213

**IIT GUWAHATI ZONE**

**City/Town Code**

**ARUNACHAL PRADESH**

Itanagar 301

**ASSAM**

Guwahati 302  
Jorhat 303  
Silchar 304

**BIHAR**

Gaya 305  
Katihar 306  
Muzaffarpur 307  
Patna 308

**MANIPUR**

Imphal 309

**MEGHALAYA**

Shillong 310

**WEST BENGAL**

Siliguri 311

**UAE**

Dubai 312

**IIT KANPUR ZONE**

**City/Town Code**

**MADHYA PRADESH**

Bhopal 401  
Gwalior 402  
Jabalpur 403

**UTTARAKHAND**

Haldwani 404

**UTTAR PRADESH**

Agra 405  
Allahabad 406  
Gorakhpur 407  
Jhansi 408  
Kanpur 409  
Lucknow 410

**IIT KHARAGPUR ZONE**

**City/Town Code**

**ANDAMAN & NICOBAR ISLANDS**

Port Blair 501

**ANDHRA PRADESH**

Visakhapatnam 502

**CHATTISGARH**

Bhilai 503  
Bilaspur 504  
Raipur 505

**JHARKHAND**

Bokaro 506  
Dhanbad 507  
Jamshedpur 508  
Ranchi 509

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<b>ORISSA</b>		<b>KARNATAKA</b>		<b>HIMACHAL PRADESH</b>	
Bhubaneshwar	510	Bengaluru	605	Palampur	706
Rourkela	511	Mangaluru	606	Shimla	707
<b>SIKKIM</b>		<b>KERALA</b>		<b>PUNJAB</b>	
Gangtok	512	Kochi	607	Amritsar	708
		Kozhikode	608	Bathinda	709
<b>TRIPURA</b>		Thiruvananthapuram 609		Jalandhar	710
Agartala	513	<b>PUDUCHERRY</b>		Ludhiana	711
<b>WEST BENGAL</b>		Puducherry 610		Patiala	712
Durgapur	514	<b>TAMIL NADU</b>		<b>UTTARAKHAND</b>	
Kharagpur	515	Chennai 611		Dehradun	713
Kolkata (North)	516	Madurai 612		Haridwar	714
Kolkata (Salt Lake)	517			Roorkee	715
Kolkata (South)	518			<b>UTTAR PRADESH</b>	
Malda	519	<b>IIT ROORKEE ZONE</b>		Bareilly	716
<b>IIT MADRAS ZONE</b>		<b>City/Town</b>	<b>Code</b>	GautamBudh Nagar (Noida)	717
<b>City/Town</b>	<b>Code</b>	<b>CHANDIGARH</b>		Ghaziabad	718
		Chandigarh 701		Meerut	719
<b>ANDHRA PRADESH</b>		<b>HARYANA</b>		Moradabad	720
Nellore	601	Ambala 702		Varanasi	721
Vijayawada	602	Kurukshetra 703			
<b>TELENGANA</b>		Panipat 704			
Hyderabad	603	Rohtak 705			
Warangal	604				

N.B.: Some more cities/towns may be included. The exhaustive list will be available on the web portal of JEE (Advanced) 2016.

## 19. IMPORTANT INSTRUCTIONS

- Candidates must carry a printed copy of the downloaded admit card and their original photo identity card for the examination. Only candidates having a valid admit card will be allowed to write the examination. The candidates will be given the original admit card upon identity verification during the examination.
- The candidate's identity will be verified by invigilators as well as IIT representatives. If the identity of the candidate is in doubt, the candidate may not be allowed to appear in the examination. However, the authorities at their discretion may permit the candidate to appear in the examination after completing certain formalities. No extra time will be allowed for completing the examination in lieu of the time taken for completing these formalities.
- Impersonation in the examination is a serious offence and will lead to disqualification of the candidate from JEE (Advanced) 2016.
- Candidates will **NOT** be allowed to carry any electronic devices (e.g. mobile phones, smart phones, calculators, iPad, tabs, electronic watches, etc.), abacus, slide rule, log books, study material of any type, geometry box, written or white (blank) paper/piece of paper, wallets, etc. to the examination hall. **Only BLACK ball point pens, downloaded admit card and an original photo identity card are allowed to be taken inside the examination hall.**
- Candidates must report to the examination centres well in advance. Candidates arriving after 30 minutes of commencement of the examination in each paper will not be allowed.



- Candidates have to remain in the examination hall for the entire duration in each paper, i.e., candidates **CANNOT** leave the examination hall before 12:00 IST for Paper 1 and before 17:00 IST for Paper 2.
- Both Paper 1 and Paper 2 are compulsory. Therefore, the ORS of ONLY those candidates who have appeared in both Paper 1 and Paper 2 will be evaluated/graded.

## 20. ONLINE DISPLAY OF ORS AND ANSWER KEYS

- The ORS will be graded and scrutinized with extreme care. The ORS of all candidates who have appeared for both Paper 1 and Paper 2 will be displayed on the online portal, along with the machine-read responses.
- In case of perceived discrepancy, candidates can seek review of the machine-read responses. The requests should be submitted online. In addition, candidates should pay review-fee at the rate of ₹ 500 per question to be reviewed. Detailed instructions and the mode of payment will be given on the online portal.
- The answer keys for both Paper 1 and Paper 2 will be displayed on the online portal.

Portal for display of ORS and scanned responses	<a href="http://www.jeeadv.ac.in">www.jeeadv.ac.in</a>
<ul style="list-style-type: none"> <li>• Online display of ORS and scanned responses</li> <li>• Request from candidates for review of scanned responses</li> </ul>	Wednesday, June 1, 2016, 10:00 IST to Saturday, June 4, 2016, 17:00 IST
Display of answer keys	Sunday, June 5, 2016, 10:00 IST
Receiving feedback from candidates on answer keys	Sunday, June 5, 2016, 10:00 IST to Tuesday, June 7, 2016, 17:00 IST

## 21. RANK LISTS

- Only candidates who appear in both Paper 1 and Paper 2 will be considered for ranking.
- The marks obtained by a candidate in Physics in JEE (Advanced) 2016 will be equal to the marks scored in Physics part of Paper 1 plus the marks scored in Physics part of Paper 2. Marks obtained in Chemistry and Mathematics will be calculated in the same way.
- The aggregate marks obtained by a candidate in JEE (Advanced) 2016 is the sum of the marks awarded to him/her in Physics, Chemistry and Mathematics.
- Rank lists will be prepared based on the aggregate marks in JEE (Advanced) 2016.
- If the aggregate marks scored by two or more candidates are same, then the following tie-break policy will be used for awarding ranks:
  - Higher rank will be assigned to the candidate who has obtained higher marks in Mathematics. If this does not break the tie, higher rank will be assigned to the candidate who has obtained higher marks in Physics. If there is a tie even after this, candidates will be assigned the same rank.
- Rank lists for preparatory courses (see section **27. PREPARATORY COURSES**) will be prepared for SC, ST candidates and PwD candidates in all categories who satisfy the prescribed relaxed criteria given below.
- A candidate who qualifies in more than one category will be considered in all the categories to which he/she belongs for the purpose of ranking.
- There will be no waiting list for ranking.

- Only candidates who score the minimum prescribed marks in each subject and in aggregate will be included in the rank list. The minimum prescribed marks varies with the category. These are as shown in the following table.

**Minimum percentage of marks prescribed for inclusion in the rank list**

<b>Rank List</b>	<b>Minimum percentage of marks in each subject</b>	<b>Minimum percentage of aggregate marks</b>
Common rank list (CRL)	10.0	35.0
OBC-NCL rank list	9.0	31.5
SC rank list	5.0	17.5
ST rank list	5.0	17.5
Common-PwD rank list (CRL-PwD)	5.0	17.5
OBC-NCL-PwD rank list	5.0	17.5
SC-PwD rank list	5.0	17.5
ST-PwD rank list	5.0	17.5
Preparatory course rank lists	2.5	8.75

**NB: CRL is the rank list in which all candidates (across all categories) will be given ranks.**

## **22. RESULTS OF JEE (ADVANCED) 2016**

- Results will be declared on Sunday, June 12, 2016 10:00 IST. Category-wise All India Ranks (AIR) of successful candidates will be available on the online portal after the results are declared.
- Individual rank cards will **NOT** be sent to candidates.
- Obtaining a rank in JEE (Advanced) 2016 does not guarantee admission to IITs or ISM.

### 23. ARCHITECTURE APTITUDE TEST FOR B. ARCH. PROGRAM

- Candidates desirous of joining the B. Arch. (Architecture) courses will have to PASS in the Architecture Aptitude Test (AAT). Only those candidates who have qualified in JEE (Advanced) 2016 are eligible to appear in AAT in 2016.
- Syllabus for AAT is given in **Annexure-I: SYLLABI**.
- Candidates desirous of opting for the B. Arch. program available at IIT Kharagpur and IIT Roorkee (as one of the choices while filling-in their choices during joint seat allotment) must appear in AAT.
- Candidates must register online at the JEE (Advanced) 2016 online portal for AAT.
- AAT will be conducted only at the seven zonal IITs.
- The test will consist of one paper of three hours duration.
- The question paper for AAT will be available only in English language.
- No separate admit card will be issued for AAT. The original admit card of JEE (Advanced) 2016 should be produced in the AAT examination hall.
- Candidates should bring their own drawing and colouring aids.
- The Joint Implementation Committee of JEE (Advanced) 2016 will decide the cut-off marks for passing AAT.
- Results of AAT will be declared on the JEE (Advanced) 2016 online portal.
- Candidates securing marks above the cut-off will be declared PASS in the test. There is no separate ranking in the AAT. There is no separate cut-off for students of any category.

- Allotment of seat will be solely based on the category-wise All India Rank in the JEE (Advanced) 2016.

Portal for AAT registration	<a href="http://www.jeeadv.ac.in">www.jeeadv.ac.in</a>
Registration for AAT	Sunday, June 12, 2016, 10:00 IST to Monday, June 13, 2016, 17:00 IST
Architecture Aptitude Test	Wednesday, June 15, 2016 09:00 to 12:00 IST
Declaration of results of AAT	Sunday, June 19, 2016

# Part-III

# ADMISSION

## 24. EXAMINATIONS CONSIDERED AS EQUIVALENT TO CLASS XII

- The final examination of the 10+2 system, conducted by a Central or State Board recognized by the Association of Indian Universities ([www.aiuweb.org](http://www.aiuweb.org)).
- Intermediate or two-year Pre-University examination conducted by a Board or University recognized by the Association of Indian Universities.
- Final examination of the two-year course of the Joint Services Wing of the National Defence Academy.
- Senior Secondary School Examination conducted by the National Institute of Open Schooling with a minimum of five subjects.
- Any Public School, Board or University examination in India or in a foreign country recognized as equivalent to the 10+2 system by the Association of Indian Universities (AIU).
- H.S.C. vocational examination.
- A Diploma recognized by the All India Council for Technical Education ([www.aicte-india.org](http://www.aicte-india.org)) or a State Board of Technical Education of at least 3 years duration.
- General Certificate Education (GCE) examination (London, Cambridge or Sri Lanka) at the Advanced (A) level.
- High School Certificate Examination of the Cambridge University or International Baccalaureate Diploma of the International Baccalaureate Office, Geneva.

Candidates who have completed Class XII (or equivalent) examination outside India or from a Board not specified above should produce a certificate from the

Association of Indian Universities to the effect that the examination they have passed is equivalent to the Class XII examination.

In case the Class XII examination is not a public examination, the candidate must have passed at least one public (Board or Pre-University) examination earlier.

## 25. PERFORMANCE IN CLASS XII (OR EQUIVALENT) BOARD EXAMINATION

- The candidates should satisfy at least one of the following two criteria for admission to IITs and ISM:
  - (1) Must have secured at least 75% aggregate marks in the class XII (or equivalent) Board examination. The aggregate marks for SC, ST and PwD candidates should be at least 70%.
  - (2) Must be within the category-wise top 20 percentile of successful candidates in their respective Class XII (or equivalent) board examination.
- The marks scored in the following five subjects will be considered for calculating the aggregate marks and the cut-off marks for fulfilling the top 20 percentile criterion: (1) Physics, (2) Chemistry, (3) Mathematics, (4) a language (if the candidate has taken more than one language, then the language with the higher marks will be considered), and (5) any subject other than the above four (the subject with the higher marks will be considered).
- For calculation of the total marks for five subjects, if the marks awarded in a subject is **NOT** out of 100, then the marks will be scaled (up or down) to 100 so that the total aggregate marks is out of 500.



- If a Board awards only letter grades without providing an equivalent percentage of marks on the grade sheet, the candidate should obtain a certificate from the Board specifying the equivalent marks and submit it at the time of acceptance of the allocated seat. In case such a certificate is not provided, the decision taken by the Joint Implementation Committee of JEE (Advanced) 2016 will be final.
- In case any of the subjects Physics, Chemistry, Mathematics and Language are not evaluated in the final year (e.g., in a 3-year diploma course), then the marks for the same subject from the previous year will be used for calculating the top 20 percentile cut-off and percentage of aggregate marks.
- Candidates who appeared in the Class XII (or equivalent) examination for the first time in 2015 and wish to (or has to) reappear in 2016, should reappear in all the subjects.
- For candidates who appeared in the Class XII (or equivalent) Board examination in 2015 but reappeared in all subjects in 2016, the best of the two performances will be considered.
- If a Board gives aggregate marks considering both Class XI and Class XII examinations (in the 10+2 system), then only the Class XII marks will be considered. If a Board gives aggregate marks considering the results of all three years of a 3-year diploma or courses of equivalent duration, then only the marks scored in the final year will be considered. Similarly, for Boards which follow a semester system, the marks scored in the final two semesters will be considered.
- If a Board does not give marks scored in individual subjects but gives only the aggregate marks, then the aggregate marks given by the Board will be considered as such.

- The criteria, as specified above, is applicable “in toto” to all the candidates including foreign nationals.

**Regarding the cut-off marks for the top 20 percentile**

- The category-wise cut-off marks for the top 20 percentile are calculated based on the marks scored by all the “successful” candidates in their respective boards in the particular year.
- The cut-off marks for PwD candidates will be the same as the lowest of the cut-off marks for GEN, OBC-NCL, SC and ST categories.
- The top 20 percentile cut-off marks of the respective Boards in 2016 will be considered for candidates who pass the Class XII (or equivalent) examination in 2016.
- The top 20 percentile cut-off marks of the respective Boards in 2015 will be considered for candidates who passed the Class XII (or equivalent) examination in 2015, provided the candidate does not reappear in the Class XII (or equivalent) examination in 2016 in any of the subjects.
- In case a Board does not provide information about the cut-off for the top 20 percentile, the candidate will have to produce a certificate from the respective Board stating that he/she falls within the top 20 percentile of successful candidates. If the candidate fails to do so, then the cut-off marks for the CBSE will be used.

**Regarding the aggregate marks of 75% (or 70%)**

- The marks scored by a candidate in the 2015 Class XII (or equivalent) Board examination will be considered provided the candidate does not reappear in the Class XII (or equivalent) examination in 2016 in any of the subjects.

- The marks scored in the 2016 Class XII (or equivalent) Board examination will be considered for candidates who pass the Class XII examination in 2016.

## **26. JOINT SEAT ALLOCATION**

- The seats across IITs, ISM, NITs, IIITs and other Govt. Funded Technical Institutes (GFTIs) will be allocated by the Joint Seat Allocation Authority (JoSAA).
- All the candidates who are eligible for admission will have to participate in the joint seat allocation process by filling in their choices of the courses. The detailed instructions for filling-in the choices and the seat allotment procedure will be made available by JoSAA through Seat Allotment Brochure.
- The schedule of the joint seat allocation will be announced separately by JoSAA 2016.
- The list of courses that will be offered by the IITs and ISM for admission for the academic year 2016-17 will be made available at the time of online filling-in of choices.

## **27. PREPARATORY COURSES**

- The vacant seats reserved for SC, ST and PwD candidates will be allotted to the candidates of respective categories for admission to a preparatory course of one-year duration on the basis of relaxed admission criteria (see **21. RANK LISTS**).
- Admission is given to the candidates in the preparatory course provided (i) the seats reserved for the respective category are vacant, (ii) candidates

satisfy minimum norms, and (iii) candidates have not undergone the preparatory course earlier.

- All the IITs and ISM will run preparatory courses of one year duration for SC, ST and PwD candidates intended to prepare them to pursue the academic program (for session 2017-18) to which they have been allocated. At the end of this course, the candidate is declared as 'pass' or 'fail'.
- On successful completion of the course, the students will be offered direct admission in July 2017 (Academic Year 2017-18) to the already allotted undergraduate course.
- Candidates admitted to the preparatory course are also eligible to appear in JEE (Advanced) 2017 subject to fulfilling other eligibility criteria.
- Filling-in of choices for preparatory courses is also through the same online portal.

## **28. ADDITIONAL REQUIREMENTS FOR CERTAIN COURSES**

- Those who opt for Mining Engineering, Mining Machinery Engineering, Integrated M.Sc. program in Geology or Geophysics, or Petroleum Engineering should not have any form of colour blindness. A certificate to this effect from a registered medical practitioner has to be produced at the time of seat acceptance.
- The standards of visual acuity with or without glasses will be adhered to strictly for candidates seeking admission to Mining Engineering as per DGMS Circular 14 of 1972. Persons with one-eyed vision are not permitted to work underground. Candidates with these limitations are not allowed to opt for admission to Mining Engineering and Mining Machinery Engineering.

## 29. GENDER RESTRICTION FOR MINING COURSES

- Section 46 (1) of the Mines Act, 1952 states that

*“No woman shall, notwithstanding anything contained in any other law, be employed*

*(a) in any part of a mine which is below ground,*

*(b) in any mine above ground except between 6:00 and 19:00 hrs.”*

Hence, “female” candidates are not admitted to Mining Engineering or Mining Machinery Engineering at ISM, Dhanbad. The corresponding courses at IIT Kharagpur and IIT (BHU) do **NOT** have such a restriction.

## 30. LIST OF COURSES OFFERED BY IITs AND ISM IN 2015

The relevant courses offered by IITs and ISM Dhanbad in 2015 are given in **Annexure – III**. Some of the courses have additional requirements and these are marked as AR.

The courses to be offered by the various Institutes in 2016 may vary. A few of the courses offered in 2015 may not be offered at all or may be modified (course title and/or content). It is also possible that a few new courses will be offered. The additional requirements may also change. The final list will be made available at the time of filling-in of the choices for seat allocation.

# **Annexure-I**

# **SYLLABI**

## CHEMISTRY

### Physical chemistry

General topics: Concept of atoms and molecules; Dalton's atomic theory; Mole concept; Chemical formulae; Balanced chemical equations; Calculations (based on mole concept) involving common oxidation-reduction, neutralisation, and displacement reactions; Concentration in terms of mole fraction, molarity, molality and normality.

Gaseous and liquid states: Absolute scale of temperature, ideal gas equation; Deviation from ideality, van der Waals equation; Kinetic theory of gases, average, root mean square and most probable velocities and their relation with temperature; Law of partial pressures; Vapour pressure; Diffusion of gases.

Atomic structure and chemical bonding: Bohr model, spectrum of hydrogen atom, quantum numbers; Wave-particle duality, de Broglie hypothesis; Uncertainty principle; Qualitative quantum mechanical picture of hydrogen atom, shapes of *s*, *p* and *d* orbitals; Electronic configurations of elements (up to atomic number 36); Aufbau principle; Pauli's exclusion principle and Hund's rule; Orbital overlap and covalent bond; Hybridisation involving *s*, *p* and *d* orbitals only; Orbital energy diagrams for homonuclear diatomic species; Hydrogen bond; Polarity in molecules, dipole moment (qualitative aspects only); VSEPR model and shapes of molecules (linear, angular, triangular, square planar, pyramidal, square pyramidal, trigonal bipyramidal, tetrahedral and octahedral).

Energetics: First law of thermodynamics; Internal energy, work and heat, pressure-volume work; Enthalpy, Hess's law; Heat of reaction, fusion and vapourization; Second law of thermodynamics; Entropy; Free energy; Criterion of spontaneity.

Chemical equilibrium: Law of mass action; Equilibrium constant, Le Chatelier's principle (effect of concentration, temperature and pressure); Significance of  $\Delta G$  and  $\Delta G^0$  in chemical equilibrium; Solubility product, common ion effect, pH and buffer solutions; Acids and bases (Bronsted and Lewis concepts); Hydrolysis of salts.

Electrochemistry: Electrochemical cells and cell reactions; Standard electrode potentials; Nernst equation and its relation to  $\Delta G$ ; Electrochemical series, emf of galvanic cells; Faraday's laws of electrolysis; Electrolytic conductance, specific, equivalent and molar conductivity, Kohlrausch's law; Concentration cells.

Chemical kinetics: Rates of chemical reactions; Order of reactions; Rate constant; First order reactions; Temperature dependence of rate constant (Arrhenius equation).

Solid state: Classification of solids, crystalline state, seven crystal systems (cell parameters  $a, b, c, \alpha, \beta, \gamma$ ), close packed structure of solids (cubic), packing in fcc, bcc and hcp lattices; Nearest neighbours, ionic radii, simple ionic compounds, point defects.

Solutions: Raoult's law; Molecular weight determination from lowering of vapour pressure, elevation of boiling point and depression of freezing point.



Surface chemistry: Elementary concepts of adsorption (excluding adsorption isotherms); Colloids: types, methods of preparation and general properties; Elementary ideas of emulsions, surfactants and micelles (only definitions and examples).

Nuclear chemistry: Radioactivity: isotopes and isobars; Properties of  $\alpha$ ,  $\beta$  and  $\gamma$  rays; Kinetics of radioactive decay (decay series excluded), carbon dating; Stability of nuclei with respect to proton-neutron ratio; Brief discussion on fission and fusion reactions.

### **Inorganic chemistry**

Isolation/preparation and properties of the following non-metals: Boron, silicon, nitrogen, phosphorus, oxygen, sulphur and halogens; Properties of allotropes of carbon (only diamond and graphite), phosphorus and sulphur.

Preparation and properties of the following compounds: Oxides, peroxides, hydroxides, carbonates, bicarbonates, chlorides and sulphates of sodium, potassium, magnesium and calcium; Boron: diborane, boric acid and borax; Aluminium: alumina, aluminium chloride and alums; Carbon: oxides and oxyacid (carbonic acid); Silicon: silicones, silicates and silicon carbide; Nitrogen: oxides, oxyacids and ammonia; Phosphorus: oxides, oxyacids (phosphorus acid, phosphoric acid) and phosphine; Oxygen: ozone and hydrogen peroxide; Sulphur: hydrogen sulphide, oxides, sulphurous acid, sulphuric acid and sodium thiosulphate; Halogens: hydrohalic acids, oxides and oxyacids of chlorine, bleaching powder; Xenon fluorides.

Transition elements (3d series): Definition, general characteristics, oxidation states and their stabilities, colour (excluding the details of electronic transitions) and calculation of spin-only magnetic moment; Coordination compounds: nomenclature of mononuclear coordination compounds, cis-trans and ionisation isomerisms, hybridization and geometries of mononuclear coordination compounds (linear, tetrahedral, square planar and octahedral).

Preparation and properties of the following compounds: Oxides and chlorides of tin and lead; Oxides, chlorides and sulphates of  $\text{Fe}^{2+}$ ,  $\text{Cu}^{2+}$  and  $\text{Zn}^{2+}$ ; Potassium permanganate, potassium dichromate, silver oxide, silver nitrate, silver thiosulphate.

Ores and minerals: Commonly occurring ores and minerals of iron, copper, tin, lead, magnesium, aluminium, zinc and silver.

Extractive metallurgy: Chemical principles and reactions only (industrial details excluded); Carbon reduction method (iron and tin); Self reduction method (copper and lead); Electrolytic reduction method (magnesium and aluminium); Cyanide process (silver and gold).

Principles of qualitative analysis: Groups I to V (only  $\text{Ag}^+$ ,  $\text{Hg}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Bi}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Mn}^{2+}$  and  $\text{Mg}^{2+}$ ); Nitrate, halides (excluding fluoride), sulphate and sulphide.

## **Organic chemistry**

Concepts: Hybridisation of carbon;  $\sigma$  and  $\pi$ -bonds; Shapes of simple organic molecules; Structural and geometrical isomerism; Optical isomerism of compounds containing up to two asymmetric centres, (R,S and E,Z

nomenclature excluded); IUPAC nomenclature of simple organic compounds (only hydrocarbons, mono-functional and bi-functional compounds); Conformations of ethane and butane (Newman projections); Resonance and hyperconjugation; Keto-enol tautomerism; Determination of empirical and molecular formulae of simple compounds (only combustion method); Hydrogen bonds: definition and their effects on physical properties of alcohols and carboxylic acids; Inductive and resonance effects on acidity and basicity of organic acids and bases; Polarity and inductive effects in alkyl halides; Reactive intermediates produced during homolytic and heterolytic bond cleavage; Formation, structure and stability of carbocations, carbanions and free radicals.

Preparation, properties and reactions of alkanes: Homologous series, physical properties of alkanes (melting points, boiling points and density); Combustion and halogenation of alkanes; Preparation of alkanes by Wurtz reaction and decarboxylation reactions.

Preparation, properties and reactions of alkenes and alkynes: Physical properties of alkenes and alkynes (boiling points, density and dipole moments); Acidity of alkynes; Acid catalysed hydration of alkenes and alkynes (excluding the stereochemistry of addition and elimination); Reactions of alkenes with  $\text{KMnO}_4$  and ozone; Reduction of alkenes and alkynes; Preparation of alkenes and alkynes by elimination reactions; Electrophilic addition reactions of alkenes with  $\text{X}_2$ ,  $\text{HX}$ ,  $\text{HOX}$  and  $\text{H}_2\text{O}$  ( $\text{X}$ =halogen); Addition reactions of alkynes; Metal acetylides.

Reactions of benzene: Structure and aromaticity; Electrophilic substitution reactions: halogenation, nitration, sulphonation, Friedel-Crafts alkylation and acylation; Effect of *o*-, *m*- and *p*-directing groups in monosubstituted benzenes.

Phenols: Acidity, electrophilic substitution reactions (halogenation, nitration and sulphonation); Reimer-Tieman reaction, Kolbe reaction.

Characteristic reactions of the following (including those mentioned above):

Alkyl halides: rearrangement reactions of alkyl carbocation, Grignard reactions, nucleophilic substitution reactions; Alcohols: esterification, dehydration and oxidation, reaction with sodium, phosphorus halides,  $\text{ZnCl}_2/\text{concentrated HCl}$ , conversion of alcohols into aldehydes and ketones; Ethers: Preparation by Williamson's Synthesis; Aldehydes and Ketones: oxidation, reduction, oxime and hydrazone formation; aldol condensation, Perkin reaction; Cannizzaro reaction; haloform reaction and nucleophilic addition reactions (Grignard addition); Carboxylic acids: formation of esters, acid chlorides and amides, ester hydrolysis; Amines: basicity of substituted anilines and aliphatic amines, preparation from nitro compounds, reaction with nitrous acid, azo coupling reaction of diazonium salts of aromatic amines, Sandmeyer and related reactions of diazonium salts; carbylamine reaction; Haloarenes: nucleophilic aromatic substitution in haloarenes and substituted haloarenes (excluding Benzyne mechanism and Cine substitution).

Carbohydrates: Classification; mono- and di-saccharides (glucose and sucrose); Oxidation, reduction, glycoside formation and hydrolysis of sucrose.

Amino acids and peptides: General structure (only primary structure for peptides) and physical properties.

Properties and uses of some important polymers: Natural rubber, cellulose, nylon, teflon and PVC.

Practical organic chemistry: Detection of elements (N, S, halogens); Detection and identification of the following functional groups: hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketone), carboxyl, amino and nitro; Chemical methods of separation of mono-functional organic compounds from binary mixtures.

## **MATHEMATICS**

### **Algebra**

Algebra of complex numbers, addition, multiplication, conjugation, polar representation, properties of modulus and principal argument, triangle inequality, cube roots of unity, geometric interpretations.

Quadratic equations with real coefficients, relations between roots and coefficients, formation of quadratic equations with given roots, symmetric functions of roots.

Arithmetic, geometric and harmonic progressions, arithmetic, geometric and harmonic means, sums of finite arithmetic and geometric progressions, infinite geometric series, sums of squares and cubes of the first  $n$  natural numbers.

Logarithms and their properties.

Permutations and combinations, binomial theorem for a positive integral index, properties of binomial coefficients.

Matrices as a rectangular array of real numbers, equality of matrices, addition, multiplication by a scalar and product of matrices, transpose of a matrix, determinant of a square matrix of order up to three, inverse of a square matrix of order up to three, properties of these matrix operations, diagonal, symmetric and skew-symmetric matrices and their properties, solutions of simultaneous linear equations in two or three variables.

Addition and multiplication rules of probability, conditional probability, Bayes Theorem, independence of events, computation of probability of events using permutations and combinations.

### **Trigonometry**

Trigonometric functions, their periodicity and graphs, addition and subtraction formulae, formulae involving multiple and sub-multiple angles, general solution of trigonometric equations.

Relations between sides and angles of a triangle, sine rule, cosine rule, half-angle formula and the area of a triangle, inverse trigonometric functions (principal value only).

### **Analytical geometry**

Two dimensions: Cartesian coordinates, distance between two points, section formulae, shift of origin.

Equation of a straight line in various forms, angle between two lines, distance of a point from a line; Lines through the point of intersection of two given lines, equation of the bisector of the angle between two lines, concurrency of lines; Centroid, orthocentre, incentre and circumcentre of a triangle.

Equation of a circle in various forms, equations of tangent, normal and chord.

Parametric equations of a circle, intersection of a circle with a straight line or a circle, equation of a circle through the points of intersection of two circles and those of a circle and a straight line.

Equations of a parabola, ellipse and hyperbola in standard form, their foci, directrices and eccentricity, parametric equations, equations of tangent and normal.

Locus problems.

Three dimensions: Direction cosines and direction ratios, equation of a straight line in space, equation of a plane, distance of a point from a plane.

### **Differential calculus**

Real valued functions of a real variable, into, onto and one-to-one functions, sum, difference, product and quotient of two functions, composite functions, absolute value, polynomial, rational, trigonometric, exponential and logarithmic functions.

Limit and continuity of a function, limit and continuity of the sum, difference, product and quotient of two functions, L'Hospital rule of evaluation of limits of functions.

Even and odd functions, inverse of a function, continuity of composite functions, intermediate value property of continuous functions.

Derivative of a function, derivative of the sum, difference, product and quotient of two functions, chain rule, derivatives of polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions.

Derivatives of implicit functions, derivatives up to order two, geometrical interpretation of the derivative, tangents and normals, increasing and decreasing functions, maximum and minimum values of a function, Rolle's theorem and Lagrange's mean value theorem.

### **Integral calculus**

Integration as the inverse process of differentiation, indefinite integrals of standard functions, definite integrals and their properties, fundamental theorem of integral calculus.

Integration by parts, integration by the methods of substitution and partial fractions, application of definite integrals to the determination of areas involving simple curves.

Formation of ordinary differential equations, solution of homogeneous differential equations, separation of variables method, linear first order differential equations.



## **Vectors**

Addition of vectors, scalar multiplication, dot and cross products, scalar triple products and their geometrical interpretations.

## **PHYSICS**

### **General**

Units and dimensions, dimensional analysis; least count, significant figures; Methods of measurement and error analysis for physical quantities pertaining to the following experiments: Experiments based on using Vernier calipers and screw gauge (micrometer), Determination of  $g$  using simple pendulum, Young's modulus by Searle's method, Specific heat of a liquid using calorimeter, focal length of a concave mirror and a convex lens using  $u-v$  method, Speed of sound using resonance column, Verification of Ohm's law using voltmeter and ammeter, and specific resistance of the material of a wire using meter bridge and post office box.

### **Mechanics**

Kinematics in one and two dimensions (Cartesian coordinates only), projectiles; Uniform circular motion; Relative velocity.

Newton's laws of motion; Inertial and uniformly accelerated frames of reference; Static and dynamic friction; Kinetic and potential energy; Work and power; Conservation of linear momentum and mechanical energy.

Systems of particles; Centre of mass and its motion; Impulse; Elastic and inelastic collisions.

Law of gravitation; Gravitational potential and field; Acceleration due to gravity; Motion of planets and satellites in circular orbits; Escape velocity.

Rigid body, moment of inertia, parallel and perpendicular axes theorems, moment of inertia of uniform bodies with simple geometrical shapes; Angular momentum; Torque; Conservation of angular momentum; Dynamics of rigid bodies with fixed axis of rotation; Rolling without slipping of rings, cylinders and spheres; Equilibrium of rigid bodies; Collision of point masses with rigid bodies.

Linear and angular simple harmonic motions.

Hooke's law, Young's modulus.

Pressure in a fluid; Pascal's law; Buoyancy; Surface energy and surface tension, capillary rise; Viscosity (Poiseuille's equation excluded), Stoke's law; Terminal velocity, Streamline flow, equation of continuity, Bernoulli's theorem and its applications.

Wave motion (plane waves only), longitudinal and transverse waves, superposition of waves; Progressive and stationary waves; Vibration of strings and air columns; Resonance; Beats; Speed of sound in gases; Doppler effect (in sound).

### **Thermal physics**

Thermal expansion of solids, liquids and gases; Calorimetry, latent heat; Heat conduction in one dimension; Elementary concepts of convection and radiation; Newton's law of cooling; Ideal gas laws; Specific heats ( $C_v$  and  $C_p$  for monoatomic and diatomic gases); Isothermal and adiabatic processes, bulk modulus of gases; Equivalence of heat and work; First law of thermodynamics and its applications (only for ideal gases); Blackbody radiation: absorptive and emissive powers; Kirchhoff's law; Wien's displacement law, Stefan's law.

### **Electricity and magnetism**

Coulomb's law; Electric field and potential; Electrical potential energy of a system of point charges and of electrical dipoles in a uniform electrostatic field; Electric field lines; Flux of electric field; Gauss's law and its application in simple cases, such as, to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell.

Capacitance; Parallel plate capacitor with and without dielectrics; Capacitors in series and parallel; Energy stored in a capacitor.

Electric current; Ohm's law; Series and parallel arrangements of resistances and cells; Kirchhoff's laws and simple applications; Heating effect of current.

Biot-Savart's law and Ampere's law; Magnetic field near a current-carrying straight wire, along the axis of a circular coil and inside a long straight solenoid; Force on a moving charge and on a current-carrying wire in a uniform magnetic field.

Magnetic moment of a current loop; Effect of a uniform magnetic field on a current loop; Moving coil galvanometer, voltmeter, ammeter and their conversions.

Electromagnetic induction: Faraday's law, Lenz's law; Self and mutual inductance; RC, LR and LC circuits with d.c. and a.c. sources.

### **Optics**

Rectilinear propagation of light; Reflection and refraction at plane and spherical surfaces; Total internal reflection; Deviation and dispersion of light by a prism; Thin lenses; Combinations of mirrors and thin lenses; Magnification.

Wave nature of light: Huygen's principle, interference limited to Young's double-slit experiment.

### **Modern physics**

Atomic nucleus;  $\alpha$ ,  $\beta$  and  $\gamma$  radiations; Law of radioactive decay; Decay constant; Half-life and mean life; Binding energy and its calculation; Fission and fusion processes; Energy calculation in these processes.

Photoelectric effect; Bohr's theory of hydrogen-like atoms; Characteristic and continuous X-rays, Moseley's law; de Broglie wavelength of matter waves.

## **ARCHITECTURE APTITUDE TEST**

### **Freehand drawing**

This would comprise of simple drawing depicting the total object in its right form and proportion, surface texture, relative location and details of its component parts in appropriate scale. Common domestic or day-to-day life usable objects like furniture, equipment, etc., from memory.

### **Geometrical drawing**

Exercises in geometrical drawing containing lines, angles, triangles, quadrilaterals, polygons, circles, etc. Study of plan (top view), elevation (front or side views) of simple solid objects like prisms, cones, cylinders, cubes, splayed surface holders, etc.

### **Three-dimensional perception**

Understanding and appreciation of three-dimensional forms with building elements, colour, volume and orientation. Visualization through structuring objects in memory.

### **Imagination and aesthetic sensitivity**

Composition exercise with given elements. Context mapping. Creativity check through innovative uncommon test with familiar objects. Sense of colour grouping or application.

### **Architectural awareness**

General interest and awareness of famous architectural creations – both national and international, places and personalities (architects, designers, etc.) in the related domain.

# **Annexure-II**

# **CERTIFICATE FORMATS**

**OBC-NCL Certificate Format**

**FORM-OBC-NCL**

**FORM OF CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASSES (NCL)  
APPLYING FOR ADMISSION TO CENTRAL EDUCATIONAL INSTITUTIONS (CEIs),  
UNDER THE GOVERNMENT OF INDIA**

This is to certify that Shri/Smt./ Kum\* \_\_\_\_\_  
Son/Daughter\* of Shri/Smt.\* \_\_\_\_\_ of Village/Town\*  
\_\_\_\_\_ District/Division\* \_\_\_\_\_ in  
the State/Union Territory \_\_\_\_\_ belongs to the  
\_\_\_\_\_ community which is recognized as a backward  
class under Government of India\*\*, Ministry of Social Justice and Empowerment's Resolution  
No. \_\_\_\_\_ dtd. \_\_\_\_\_ \*\*\*.

Shri/Smt./Kum. \_\_\_\_\_ and / or  
his/her family ordinarily reside(s) in the \_\_\_\_\_ District/Division of the  
\_\_\_\_\_ State/Union Territory. This is also to certify that **he/she**  
**does NOT belong to the persons/sections (Creamy Layer)** mentioned in Column 3 of the  
Schedule to the Government of India, Department of Personnel & Training O.M. No. 36012/22/93-  
Estt.(SCT) dated 08/09/93 which is modified vide OM No. 36033/3/2004 Estt.(Res.) dated  
09/03/2004, further modified vide OM No. 36033/3/2004-Estt. (Res.) dated 14/10/2008, again further  
modified vide OM No.36036/2/2013-Estt(Res) dtd. 30/05/2014.

Dated:

District Magistrate /  
Deputy Commissioner /  
Any other Competent Authority

Seal

\* Please delete the word(s) which are not applicable.

\*\* As listed in the Annexure (for FORM-OBC-NCL)

\*\*\* The authority issuing the certificate needs to mention the details of Resolution of  
Government of India, in which the caste of the candidate is mentioned as OBC.

**NOTE:**

- (a) The term 'Ordinarily resides' used here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.
- (b) The authorities competent to issue Caste Certificates are indicated below:
- (i) District Magistrate / Additional Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / Ist Class Stipendiary Magistrate / Sub-Divisional magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner (not below the rank of Ist Class Stipendiary Magistrate).
- (ii) Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.
- (iii) Revenue Officer not below the rank of Tehsildar' and
- (iv) Sub-Divisional Officer of the area where the candidate and/or his family resides.

**ANNEXURE for FORM-OBC-NCL**

<b>Sl. No.</b>	<b>Resolution No.</b>	<b>Date of Notification</b>
1	No.12011/68/93-BCC(C)	13.09.1993
2	No.12011/9/94-BCC	19.10.1994
3	No.12011/7/95-BCC	24.05.1995
4	No.12011/96/94-BCC	09.03.1996
5	No.12011/44/96-BCC	11.12.1996
6	No.12011/13/97-BCC	03.12.1997
7	No.12011/99/94-BCC	11.12.1997
8	No.12011/68/98-BCC	27.10.1999
9	No.12011/88/98-BCC	06.12.1999
10	No.12011/36/99-BCC	04.04.2000
11	No.12011/44/99-BCC	21.09.2000
12	No.12015/9/2000-BCC	06.09.2001
13	No.12011/1/2001-BCC	19.06.2003
14	No.12011/4/2002-BCC	13.01.2004
15	No.12011/9/2004-BCC	16.01.2006
16	No.12011/14/2004-BCC	12.03.2007
17	No.12011/16/2007-BCC	12.10.2007
18	No.12018/6/2005-BCC	30.07.2010
19	No. 12015/2/2007-BCC	18.08.2010
20	No.12015/15/2008-BCC	16.06.2011
21	No.12015/13/2010-BC-II	08.12.2011
22	No.12015/5/2011-BC-II	17.02.2014



**FORM OF CERTIFICATE TO BE PRODUCED BY SCHEDULED CASTES (SC) AND SCHEDULED TRIBES (ST) CANDIDATES**

1. This is to certify that Shri/ Shrimati/ Kumari\* \_\_\_\_\_ son/daughter\* of \_\_\_\_\_ of Village/Town\* \_\_\_\_\_ District/Division\* \_\_\_\_\_ of State/Union Territory\* \_\_\_\_\_ belongs to the \_\_\_\_\_ Scheduled Caste / Scheduled Tribe\* under :-

- \* The Constitution (Scheduled Castes) Order, 1950
- \* The Constitution (Scheduled Tribes) Order, 1950
- \* **The Constitution (Scheduled Castes) (Union Territories) Order, 1951**
- \* The Constitution (Scheduled Tribes) (Union Territories) Order, 1951

[As amended by the Scheduled Castes and Scheduled Tribes Lists (Modification Order) 1956, the Bombay Reorganisation Act, 1960, the Punjab Reorganisation Act, 1966, the State of Himachal Pradesh Act, 1970, the North Eastern Areas (Reorganisation) Act, 1971, the Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 1976 and the Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 2002]

- \* The Constitution (Jammu and Kashmir) Scheduled Castes Order, 1956;
- \* The Constitution (Andaman and Nicobar Islands) Scheduled Tribes Order, 1959, as amended by the Scheduled Castes and Scheduled Tribes Order (Amendment) Act, 1976;
- \* **The Constitution (Dadara and Nagar Haveli) Scheduled Castes Order, 1962;**
- \* The Constitution (Dadara and Nagar Haveli) Scheduled Tribes Order, 1962;
- \* The Constitution (Pondicherry) Scheduled Castes Order, 1964;
- \* The Constitution (Uttar Pradesh) Scheduled Tribes Order, 1967;
- \* The Constitution (Goa, Daman and Diu) Scheduled Castes Order, 1968;
- \* The Constitution (Goa, Daman and Diu) Scheduled Tribes Order, 1968;
- \* The Constitution (Nagaland) Scheduled Tribes Order, 1970;
- \* The Constitution (Sikkim) Scheduled Castes Order, 1978;
- \* The Constitution (Sikkim) Scheduled Tribes Order, 1978;
- \* The Constitution (Jammu and Kashmir) Scheduled Tribes Order, 1989;
- \* The Constitution (Scheduled Castes) Order (Amendment) Act, 1990;
- \* The Constitution (Scheduled Tribes) Order (Amendment) Act, 1991;
- \* The Constitution (Scheduled Tribes) Order (Second Amendment) Act, 1991;

2. # This certificate is issued on the basis of the Scheduled Castes / Scheduled Tribes\* Certificate issued to Shri /Shrimati\* \_\_\_\_\_ father/mother\* of Shri /Shrimati /Kumari\* \_\_\_\_\_ of Village/Town\* \_\_\_\_\_ in District/Division\* \_\_\_\_\_ of the State State/Union Territory\* \_\_\_\_\_ who belong to the Caste / Tribe\* which is recognised as a Scheduled Caste / Scheduled Tribe\* in the State / Union Territory\* \_\_\_\_\_ issued by the \_\_\_\_\_ dated \_\_\_\_\_.

3. Shri/ Shrimati/ Kumari \* \_\_\_\_\_ and / or\* his / her\* family ordinarily reside(s)\*\* in Village/Town\* \_\_\_\_\_ of \_\_\_\_\_ District/Division\* of the State Union Territory\* of \_\_\_\_\_.

Signature: \_\_\_\_\_  
Designation \_\_\_\_\_  
(with seal of the Office)

Place: \_\_\_\_\_ State/Union Territory\* \_\_\_\_\_

Date: \_\_\_\_\_

\* Please delete the word(s) which are not applicable.

# Applicable in the case of SC/ST Persons who have migrated from another State/UT.  
IMPORTANT NOTES

The term "ordinarily reside(s)\*\*" used here will have the same meaning as in Section 20 of the Representation of the People Act, 1950.

Officers competent to issue Caste/Tribe certificates:

1. District Magistrate / Additional District Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / Ist Class Stipendiary Magistrate / City Magistrate / Sub-Divisional Magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner.
2. Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.
3. Revenue Officers not below the rank of Tehsildar.
4. Sub-divisional Officer of the area where the candidate and/ or his family normally reside(s).
5. Administrator / Secretary to Administrator / Development Officer (Lakshdweep Island).
6. Certificate issued by any other authority will be rejected.

Form-II

**Disability Certificate**

(In cases of amputation or complete permanent paralysis of limbs and in cases of blindness)

(See rule 4)

**(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)**

Recent PP size Attested Photograph (Showing face only) of the person with disability
---

Certificate No. \_\_\_\_\_

Date: \_\_\_\_\_

This is to certify that I have carefully examined

Shri/Smt./Kum. \_\_\_\_\_

son/wife/daughter of Shri \_\_\_\_\_ Date

of Birth (DD / MM / YY) \_\_\_\_ \_\_\_\_ \_\_\_\_ Age \_\_\_\_\_ years, male/female

Registration No. \_\_\_\_\_ permanent resident of House No. \_\_\_\_\_

Ward/Village/ Street \_\_\_\_\_ Post Office \_\_\_\_\_

District \_\_\_\_\_ State \_\_\_\_\_,

whose photograph is affixed above, and am satisfied that :

(A) he/she is a case of:

- locomotor disability
- blindness

(Please tick as applicable)

(B) the diagnosis in his/her case is \_\_\_\_\_

(A) He/ She has \_\_\_\_\_%(in figure) \_\_\_\_\_ percent (in words) permanent physical impairment/blindness in relation to his/her \_\_\_\_\_(part of body) as per guidelines (to be specified).

2. The applicant has submitted the following document as proof of residence:-

Nature of Document	Date of Issue	Details of authority issuing certificate

(Signature and Seal of Authorised Signatory of notified Medical Authority)

Signature/Thumb impression of the person in whose favour disability certificate is issued.
---

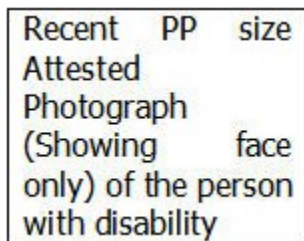
**Form-III**

**Disability Certificate**

**(In case of multiple disabilities)**

**(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)**

**(See rule 4)**



Certificate No. \_\_\_\_\_

Date: \_\_\_\_\_

This is to certify that we have carefully examined

Shri/Smt./Kum. \_\_\_\_\_

/son/wife/ daughter of Shri \_\_\_\_\_

Date of Birth (DD / MM / YY) \_\_\_\_\_ Age \_\_\_\_\_ years, male/female \_\_\_\_\_

Registration No. \_\_\_\_\_ permanent resident of House No. \_\_\_\_\_

Ward/Village/Street \_\_\_\_\_

Post Office \_\_\_\_\_ District \_\_\_\_\_ State \_\_\_\_\_,

whose photograph is affixed above, and are satisfied that:

(A) He/she is a Case of **Multiple Disability**. His/her extent of permanent physical impairment/disability has been evaluated as per guidelines (to be specified) for the disabilities ticked below, and shown against the relevant disability in the table below:

S. No.	Disability	Affected Part of Body	Diagnosis	Permanent physical impairment/mental disability (in %)
1	Locomotor disability	@		
2	Low vision	#		
3	Blindness	<b>Both Eyes</b>		
4	Hearing impairment	£		
5	Mental retardation	<b>X</b>		
6	Mental-illness	<b>X</b>		

(B) In the light of the above, his /her over all permanent physical impairment as per guidelines(to be specified), is as follows:-

In figures:- \_\_\_\_\_percent

In words:- \_\_\_\_\_percent

2. This condition is progressive/ non-progressive/ likely to improve/ not likely to improve.

3. Reassessment of disability is:

(i) not necessary,

**Or**

(ii) is recommended/ after \_\_\_\_\_ years \_\_\_\_\_ months, and therefore this certificate shall be valid till (DD / MM / YY) \_\_\_\_\_

**@ - e.g. Left/Right/both arms/legs**

**# - e.g. Single eye/both eyes**

**£ - e.g. Left/Right/both ears**

4. The applicant has submitted the following document as proof of residence:-

Nature of Document	Date of Issue	Details of authority issuing certificate

5. Signature and seal of the Medical Authority.

Name and seal of Member	Name and seal of Member	Name and seal of the Chairperson

Signature/Thumb impression of the person in whose favour disability certificate is issued.

Form-IV

FORM-PwD (IV)

**Disability Certificate**

(In cases other than those mentioned in Forms II and III)

(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)

(See rule 4)

Recent PP size Attested Photograph (Showing face only) of the person with disability
---

Certificate No. \_\_\_\_\_

Date: \_\_\_\_\_

This is to certify that I have carefully examined

Shri/Smt./Kum. \_\_\_\_\_

son/ wife/daughter of Shri \_\_\_\_\_

Date of Birth (DD / MM / YY) \_\_\_\_\_ Age \_\_\_\_\_ years, male/female \_\_\_\_\_

Registration No. \_\_\_\_\_ permanent resident of House No. \_\_\_\_\_

Ward/Village/ Street \_\_\_\_\_ Post Office \_\_\_\_\_

District \_\_\_\_\_ State \_\_\_\_\_, whose photograph is affixed above,

and am satisfied that he/she is a case of \_\_\_\_\_ disability.

His/her extent of percentage physical impairment/disability has been evaluated as per guidelines (to be specified) and is shown against the relevant disability in the table below:-

S. No.	Disability	Affected Part of Body	Diagnosis	Permanent physical impairment/mental disability (in %)
1	Locomotor disability	@		
2	Low vision	#		
3	Blindness	Both Eyes		
4	Hearing impairment	£		
5	Mental retardation	X		
6	Mental-illness	X		

(Please strike out the disabilities which are not applicable.)

2. The above condition is progressive/ non-progressive/ likely to improve/ not likely to improve.

3. Reassessment of disability is :

(i) not necessary,

**Or**

(ii) is recommended/ after \_\_\_\_\_ years \_\_\_\_\_ months, and therefore this certificate shall be valid till (DD / MM / YY) \_\_\_\_\_

**@ - e.g. Left/Right/both arms/legs**

**# - e.g. Single eye/both eyes**

**£ - e.g. Left/Right/both ears**

4. The applicant has submitted the following document as proof of residence:-

Nature of Document	Date of Issue	Details of authority issuing certificate

(Authorised Signatory of notified Medical Authority)

(Name and Seal)

Countersigned

{Countersignature and seal of the CMO/Medical Superintendent/Head of Government Hospital, in case the certificate is issued by a medical authority who is not a government servant (with seal)}

Signature/Thumb impression of the person in whose favour disability certificate is issued.
--

Note: In case this certificate is issued by a medical authority who is not a government servant, it shall be valid only if countersigned by the Chief Medical Officer of the District.

Note: The principal rules were published in the Gazette of India vide notification number S.O. 908(E), dated the 31st December, 1996.

FORMAT OF MEDICAL CERTIFICATE TO BE PRODUCED BY DYSLEXIC CANDIDATE

{Name and address of the Government Hospital / Government-recognized NGO  
issuing the certificate}

Date:

PSYCHO-EDUCATIONAL EVALUATION REPORT

Name of the candidate:

Date of Birth:

Registration in the hospital / NGO {date / number}:

Name of the Father/Mother/Guardian:

Standard and Name of the School / College:

Physical & Neurologic Assessment: [                    ]

Psychological Assessment: [                    ]

WISC                    Verbal IQ:  
                                 Performance IQ:  
                                 Full Scale IQ:

Interpretation:

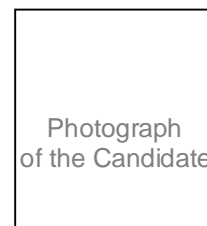
Educational Assessment: [                    ]

Certified that:

1. The percentage of handicap is **NOT LESS** than 40%.
2. The disability is **PERMANENT** in nature.

Learning Disability is a permanent developmental disorder. Currently there are no standard approved methods to quantify the disorder. However the method of diagnosis is based on significant impairment in academic achievement. Thus a disorder that is diagnosed implies a disability amounting to not less than 40%.

Recommendations:



{Name, Signature, Seal and Registration number of Clinical Psychologist qualified to issue this certificate  
recognized by the Central or a State {including Union Territories} Government}

PROFORMA

EDUCATION SCHOLARSHIP-ENTITLEMENT CARD

(To children of Armed Forces personnel killed/disabled/missing in wars/CI Operations)

The holder of this card Shri/Kum \_\_\_\_\_  
Born on \_\_\_\_\_ is the son/daughter of Shri/Smt \_\_\_\_\_  
Rank \_\_\_\_\_ of Unit \_\_\_\_\_ Service \_\_\_\_\_  
Service No. \_\_\_\_\_ killed in action/permanently disabled/missing on \_\_\_\_\_  
during \_\_\_\_\_ (Name of War/ Operation)

Name of the Guardian \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The holder is eligible for all educational concessions sanctioned by Central Government for children of Armed Forces personnel killed, missing or permanently disabled in wars/ CI Operations.

Signature of the authorized Officer

Office Address:

*(In case of officers, Entitlement Card for Education Scholarship should be obtained from AG/MP-59B, Army HQ, New Delhi-11, and for Personnel Below Officer Rank (PBOR) the same be obtained from the respective Record Offices.)*



**FORMAT OF REQUEST LETTER FOR  
SCRIBE AND EXTRA TIME FOR PwD CANDIDATES**

From

Date:

Name of the candidate

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Roll Number of JEE(Main) 2016:

Mobile:

Email:

The Chairman  
JEE (Advanced) 2016  
Indian Institute of Technology, Bombay/ Delhi/ Guwahati/ Kanpur/ Kharagpur/ Madras/ Roorkee (Tick Appropriate Zone)

Dear Sir,

Subject: Requirement of SCRIBE and EXTRA TIME

I am a PwD candidate (Visually impaired/ dyslexic/ disability in the upper limbs or loss of fingers). I would like to use the service of a scribe for writing JEE (Advanced) 2016. I also request you to provide extra time to complete the paper as per the government norms. Kindly do the needful.

Thanking you,

\_\_\_\_\_  
**Signature of the candidate**

\_\_\_\_\_  
Signature of the Parent/Guardian  
(Name of the Parent/Guardian)

# **Annexure-III**

# **COURSES OFFERED IN 2015**

## JEE (Advanced) 2016 – Information Brochure

	IITB	IITBBS	IITBHU	IITD	IITG	IITGN	IITH	IITI	IITJ	IITK	IITKGP	IITM	IITMD	IITPKD	IITP	IITR	IITRPR	IITT	ISM
<b>B.Tech. (4 Years)</b>																			
1	Aerospace Engineering	x								x	x	x							
2	Agricultural & Food Engineering										x								
3	Biological Sciences and Bioengineering									x									
4	Biotechnology				x											x			
5	Biotechnology & Biochemical Engineering				x						x								
6	Ceramic Engineering		x																
7	Chemical Engineering	x		x	x	x	x			x	x	x				x			x
8	Chemical Science and Technology				x										x				
9	Civil Engineering	x	x	x	x	x	x			x	x	x	x	x	x	x		x	x
10	Computer Science & Engineering	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	Electrical Engineering	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
12	Electrical Engineering (Power & Automation)				x														
13	Electronics & Communication Engineering				x											x			x
14	Electronics & Electrical Communication Engineering										x								
15	Electronics & Electrical Engineering				x														
16	Electronics & Instrumentation Engineering																		x
17	Electronics Engineering			x															
18	Engineering Physics	x			x	x		x				x				x			x
19	Engineering Science							x											
20	Environmental Engineering																		x
21	Industrial and Systems Engineering										x								
22	Instrumentation Engineering										x								
23	Manufacturing Science and Engineering										x								
24	Materials Science and Engineering					x				x									
25	Mathematics and Computing				x	x													
26	Mechanical Engineering	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	Metallurgical & Materials Engineering		x								x	x				x			
28	Metallurgical Engineering			x															
29	Metallurgical Engineering & Materials Science	x						x											
30	Mineral Engineering																		x
31	Mining Engineering			AR							AR								AR
32	Mining Machinery Engineering																		AR
33	Naval Architecture & Ocean Engineering											x							
34	Ocean Engineering & Naval Architecture										x								
35	Petroleum Engineering																		AR
36	Polymer Science and Engineering															x			
37	Production and Industrial Engineering				x											x			
38	Textile Technology				x														

## JEE (Advanced) 2016 - Information Brochure

		IITB	IITBBS	IITBHU	IITD	IITG	IITGN	IITH	IIT	IITJ	IITK	IITKGP	IITM	IITMD	IITPKD	IITP	IITR	IITRPR	IITT	ISM
<b>B.S. (4 Years)</b>																				
39	Chemistry	x									x									
40	Economics										x									
41	Mathematics and Scientific Computing										x									
42	Physics										x									
<b>B. Pharm. (4 Years)</b>																				
43	Pharmaceutics			x																
<b>B. Arch. (5 Years)</b>																				
44	Architecture											x					x			
<b>B.Tech.-M.Tech. Dual Degree (5 Years)</b>																				
45	Aerospace Engineering											x	x							
46	Agricultural and Food Engineering with M.Tech in any of the listed specializations											x								
47	Biochemical Engineering & Biotechnology				x															
48	Biochemical Engineering with M.Tech. in Biochemical Engg & Biotechnology			x																
49	Bioengineering with M.Tech. in Biomedical Technology			x																
50	Biological Engineering												x							
51	Biotechnology & Biochemical Engineering											x								
52	Ceramic Engineering			x																
53	Chemical Engineering				x							x	x							
54	Civil Engineering												x							
55	Civil Engineering with M. Tech. in any of the listed specialization											x								
56	Civil Engineering with M. Tech. in Structural Engineering			x																
57	Computer Science & Engineering			x	x							x	x							x
58	Electrical Engineering												x							
59	Electrical Engineering with M. Tech. in any of the listed specializations											x								
60	Electrical Engineering with M. Tech. in Communications and Signal Processing	x																		
61	Electrical Engineering with M. Tech. in Microelectronics	x																		

## JEE (Advanced) 2016 – Information Brochure

		IITB	IITBBS	IITBHU	IITD	IITG	IITGN	IITH	IITI	IITJ	IITK	IITKGP	IITM	IITMD	IITPKD	IITP	IITR	IITRPR	IITT	ISM
62	Electrical Engineering with M.Tech. in Power Electronics			x																
63	Electronics & Electrical Communication Engineering with M. Tech. in any of the listed specializations											x								
64	Energy Engineering with M.Tech in Energy Systems Engineering	x																		
65	Engineering Design												x							
66	Engineering Physics with M.Tech in Engineering Physics with specialization in Nano Science	x																		
67	Industrial Engineering with M. Tech. in Industrial Engineering and Management											x								
68	Manufacturing Science & Engineering with M. Tech. in Industrial Systems Engineering & Management											x								
69	Material Science & Technology			x																
70	Mathematics & Computing				x															
71	Mechanical Engineering			x									x					x		
72	Mechanical Engineering																			
73	Mechanical Engineering with M. Tech. in any of the listed specialization											x								
74	Mechanical Engineering with M. Tech. in Computer Integrated Manufacturing	x																		
75	Metallurgical & Materials Engineering												x							
76	Metallurgical & Materials Engineering with M. Tech. in Metallurgical & Materials Engineering											x								
77	Metallurgical Engineering			x																
78	Metallurgical Engineering & Materials Science with M. Tech. in Metallurgical Process Engineering	x																		
79	Metallurgical Engineering & Materials Science with M. Tech. in Ceramics & Composites	x																		
80	Mineral Engineering with M.Tech. in Mineral Engineering																			x
81	Mining Engineering			AR								AR								AR
82	Mining Safety Engineering											AR								
83	Naval Architecture & Ocean Engineering												x							
84	Ocean Engineering & Naval Architecture											x								
85	Quality Engineering Design and Manufacturing											x								
<b>B.S.-M.S. Dual Degree (5 Years)</b>																				
86	Biological Sciences												x							
87	Physics												x							

## JEE (Advanced) 2016 – Information Brochure

		IITB	IITBBS	IITBHU	IITD	IITG	IITGN	IITH	IITI	IITJ	IITK	IITKGP	IITM	IITMD	IITPKD	IITP	IITR	IITRPR	IITT	ISM
<b>Integrated M.Tech. (5 Years)</b>																				
88	Applied Geology																			AR
89	Applied Geophysics																			AR
90	Engineering Physics			x																
91	Geological Technology																x			
92	Geophysical Technology																x			
93	Industrial Chemistry			x																
94	Mathematics & Computing			x																x
<b>Integrated M.Sc. (5 Years)</b>																				
95	Applied Geology											AR								
96	Applied Mathematics																x			
97	Chemistry											x								
98	Economics											x								
99	Exploration Geophysics											AR								
100	Mathematics and Computing											x								
101	Physics											x								
<b>Integrated M. Pharm. Dual Degree (5 Years)</b>																				
102	Pharmaceutics			x																

- NB. 1) AR: These courses have additional requirements.  
 2) At IIT Kharagpur, B.Tech. degrees are B.Tech.(Hons).

### Annexure-IV: IMPORTANT DATES

No.	Activity	Day, Date and TIME (IST)
1.	JEE (Main) 2016 [Offline exam]	SUN, 03-04-2016
2.	Results of JEE (Main) 2016	WED, 27-04-2016
3.	Registration for JEE (Advanced) 2016	FRI, 29-04-2016, 10 AM to WED, 04-05-2016, 05 PM
4.	Admit card available for downloading	WED, 11-05-2016, 10 AM to SUN, 22-05-2016, 09 AM
5.	JEE (Advanced) 2016 Paper 1 Paper 2	SUN, 22-05-2016 09:00-12:00 IST 14:00-17:00 IST
6.	(A) Online display of ORS and scanned responses (B) Request from candidates for review of scanned responses	WED, 01-06-2016, 10 AM to SAT, 04-06-2016, 05 PM
7.	Online display of answer keys	SUN, 05-06-2016, 10 AM
8.	Feedback and comments on answer keys from the candidates	SUN, 05-06-2016, 10 AM to TUE, 07-06-2016, 05 PM
9.	Online declaration of results	SUN, 12-06-2016, 10 AM
10.	Online registration for Architecture Aptitude Test	SUN, 12-06-2016, 10 AM to MON, 13-06-2016, 05 PM
11.	Architecture Aptitude Test	WED, 15-06-2016 09:00-12:00 IST
12.	Declaration of results of AAT	SUN, 19-06-2016
13.	Seat Allotment (Tentative)	MON, 20-06-2016 to TUE, 19-07-2016

**Annexure-V: CONTACT DETAILS OF ZONAL IITS**

<b>Institute Name</b>	<b>Address for Communication</b>	<b>Phone Number and Email</b>
IIT Guwahati	Organizing Chairman, JEE (Advanced) 2016 IIT Guwahati Guwahati 781039	Phone: +91 361 2692795 Fax: +91 361 2582180 Email: jee@iitg.ac.in
IIT Bombay	Chairman, JEE (Advanced) 2016 IIT Bombay, Powai Mumbai 400076	Phone: +91 22 25769093 Fax: +91 22 25720305 Email: jee.office@iitb.ac.in
IIT Delhi	Chairman, JEE (Advanced) 2016 IIT Delhi, Hauz Khas New Delhi 110016	Phone: +91 11 26591785 Fax: +91 11 26581067 Email: jeeadv@admin.iitd.ac.in
IIT Kanpur	Chairman, JEE (Advanced) 2016 IIT Kanpur Kanpur - 208 016	Phone: +91 512 2597335 Fax: +91 512 2590103 Email: jee@iitk.ac.in
IIT Kharagpur	Chairman, JEE (Advanced) 2016 IIT Kharagpur Kharagpur 721302	Phone: +91 3222 282102 Fax: +91 3222 278242 Email: jeeadv@iitkgp.ac.in
IIT Madras	Chairman, JEE (Advanced) 2016 IIT Madras Chennai 600036	Phone: +91 44 22578220 Fax: +91 44 22578224 Email: jeeadv@iitm.ac.in
IIT Roorkee	Chairman, JEE (Advanced) 2016 IIT Roorkee Roorkee 247667	Phone: +91 1332 284272 Fax: +91 1332 285346 Email: jeech@iitr.ac.in