



# JAM 2024

Joint Admission test for Masters

# INFORMATION BROCHURE



Organizing Institute

Indian Institute of Technology Madras

# ADMITTING INSTITUTES



IIT Bhilai



IIT Bhubaneswar



IIT Bombay



IIT Delhi



IIT (ISM) Dhanbad



IIT Gandhinagar



IIT Guwahati



IIT Hyderabad



IIT Indore



IIT Jammu



IIT Jodhpur



IIT Kanpur



IIT Kharagpur



IIT Madras



IIT Mandi



IIT PALAKKAD

IIT Palakkad



IIT Patna



IIT Roorkee



IIT Ropar



IIT Tirupati



IIT (BHU) Varanasi

# RESULT SHARING INSTITUTES



IISc Bengaluru



CCMN (NITs, IEST Shibpur,  
SLIET and DIAT)

# HIGHLIGHTS

- IIT Madras is the Organizing Institute for JAM 2024.
- JAM 2024 is open to all nationals (Indian/Foreign) and there is no age restriction.
- JAM 2024 is a Computer Based Test (**CBT**) to be conducted in **SEVEN** Test Papers at the undergraduate level.
- Test Papers will have three objective type of questions: (i) Multiple Choice Questions (MCQ), (ii) Multiple Select Questions (MSQ) and (iii) Numerical Answer Type (NAT) Questions.
- Candidates may appear in ONE or TWO Test Paper(s).
- Candidates qualifying in JAM 2024 are eligible to apply for admission to around 3000 seats in IITs for the academic year 2024-25. No additional evaluation process, such as suitability test or interview is required for admission to the programmes in Admitting Institutes under JAM 2024.
- JAM Scores are used for admission to programmes such as M.Sc., M.Sc. (Tech), M.S Research, M.Sc.-M.Tech. Dual Degree, Joint M.Sc. - Ph.D., M.Sc. - Ph.D. Dual Degree in various institutes.
- JAM 2024 Scores will be used for admission to over 2000 seats for IISc and counselling through CCMN.
- JAM 2024 Examination will be conducted in around 100 Cities in India.



# IMPORTANT DATES

JAM Online Application Processing System (JOAPS) Website Opens **September 5, 2023**

Last Date for Online Registration/ Application Submission **October 13, 2023**

Availability of JAM 2024 Admit Cards for download **January 8, 2024**

Date of JAM 2024 Examination **February 11, 2024**

Declaration of JAM 2024 Results **March 22, 2024**

# JAM TEST PAPERS



**Biotechnology (BT)**



**Chemistry (CY)**



**Economics (EN)**



**Geology (GG)**



**Mathematics (MA)**



**Mathematical Statistics (MS)**



**Physics (PH)**

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## 1. INTRODUCTION:

The Indian Institutes of Technology (IITs) are institutions of national importance established through an Act of Parliament in 1956. The Indian Institute of Science (IISc) is a premier research and teaching institute established in 1909. IITs and IISc are well-known, the world over, for high-quality education in engineering, science, social science, management, and research in frontier areas. The aim of these institutes is to build a strong foundation of knowledge, pursue excellence and enhance creativity in an intellectually stimulating environment. The current pace of advancement of technology needs a coherent back-up of basic science education and research. The vibrant academic ambience and research infrastructure at IITs and IISc motivate students to pursue Research and Development careers in frontier areas of basic sciences, social sciences, as well as interdisciplinary areas of science and technology. Further, IITs and IISc are well-equipped with modern laboratories, efficient computer networks and state-of-the-art libraries. The teaching process is structured to promote close and continuous interface between the faculty and the students. A number of financial assistantships are available to SC, ST and other deserving/meritorious students at individual institutes.

**Joint Admission test for Masters (JAM)** has been established as a benchmark for the undergraduate level science education in the country from last two decades. The objective of JAM is to provide admissions to Post-graduate Degree Programmes and to consolidate Science as a career option for the students across the country. These programmes offer high-quality education in their respective disciplines, comparable to the best in the world. The curricula for these programmes are designed to provide the students with opportunities to develop academic talent leading to challenging and rewarding professional life. The interdisciplinary content of the curricula enable the students with the ability to utilize scientific knowledge for practical applications. These programmes are open to all eligible students irrespective of their nationality. The medium of instruction is English for all the programmes.

## 2. GENERAL INFORMATION:

- Candidates seeking admission to select postgraduate programmes for the academic year 2024-25 must appear in JAM 2024 Examination. There is no age restriction.
- **JAM 2024 Examination will be held on February 11, 2024 (Sunday).**
- JAM 2024 Examination will be conducted as a **Computer Based Test** in **SEVEN** Test Papers namely, Biotechnology (BT), Chemistry (CY), Economics (EN), Geology (GG), Mathematics (MA), Mathematical Statistics (MS), and Physics (PH). The syllabi are given in [Annexure I](#).
- To apply for admission to a desired programme, a candidate is required to qualify in the relevant Test Paper, satisfy the Eligibility Requirements (ERs) and Minimum Educational Qualifications (MEQs) of the respective Academic Programmes.
- Candidates who have either completed or will be appearing in the final examination of their qualifying degree in 2024 are eligible to appear in JAM 2024. By qualifying in JAM 2024, candidates can apply for admission subject to the conditions that (a) all parts of their undergraduate programme shall be completed before the date of admission of the respective Admitting Institute, and (b) proof of having passed the qualifying degree with required eligibility, as specified by the Admitting Institute should be submitted within the timeline provided by respective admitting institute.
- Admission shall be given as per All India Rank (AIR) in each Test Paper of JAM 2024, reservation policy of Government of India, and the availability of seats.
- JAM 2024 is open to all nationals (Indian/Foreign). For admission, foreign nationals are required to satisfy the rules and regulations of the Admitting Institute pertaining to foreign students. For further details, they are advised to contact the concerned Admitting Institute.

### 3. ADMISSION PROGRAMMES:

JAM Score is used for admission to various postgraduate programmes such as (i) M.Sc., (ii) M.Sc. (Tech.), (iii) MS (Research), (iv) M.Sc. - M.Tech. Dual Degree, (v) Joint M.Sc. - Ph.D., and (vi) M.Sc. - Ph.D. Dual Degree, across multiple disciplines by premier institutes across the country.

Admissions to various programmes using JAM 2024 Score can be divided into two categories:

#### 3.1 Admitting Institutes:

There are around 3000 seats in postgraduate programmes at 21 IITs for the academic year 2024-25. JAM 2024 Scores will be used to admit the candidates subject to satisfying the ERs and MEQs and any other necessary requirements, **without any additional interview or written test**. The details of Seat matrix and MEQs of various programmes at the participating IITs are provided in [Annexure II \(Seat Matrix and MEQs\)](#)

Seat Matrix and MEQs in [Annexure II \(Seat Matrix and MEQs\)](#) is tentative and are subject to change based on the requirements of the Admitting Institutes. The final Seat Matrix and MEQs will be available in the admission brochure.

#### 3.2 Result Sharing Institutes:

JAM scores will be used for admission to over 2000 seats for postgraduate programmes such as M.Sc. and M.A. at IISc and various NITs, IEST Shibpur, SLIET, DIAT through Centralized Counselling for M.Sc / M.Sc. (Tech.) Admission (CCMN). There are no additional written tests or interviews for admission to candidates qualifying JAM and satisfying the eligibility and special eligibility requirements through CCMN. Please visit <https://ccmn.admissions.nic.in/> for more details.

In addition, JAM 2024 scores will be used for admission to the four Integrated Ph. D. Programmes and two M.Sc. Programmes at Indian Institute of Science (IISc).

JAM 2024 scores are likely to be used by various other institutes such as Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Indian Institute of Science Education and Research Bhopal (IISER Bhopal), Indian Institute of Science Education and Research Pune (IISER Pune), and Indian Institute of Petroleum and Energy (IPE). Additional details can be directly obtained from the respective institute.

JAM 2024 Organizing Institute will coordinate the admission process of only the Admitting Institutes and the qualifying candidates can apply for Admission after the JAM 2024 examination through <https://jam.iitm.ac.in>. For admissions to Result Sharing Institutes, candidates have to directly approach the respective Institute / admission body.



#### 4. TEST PAPERS & PATTERN OF TEST PAPERS:

JAM 2024 Examination will be conducted in **SEVEN** subjects, also referred to as Test Papers; Biotechnology (BT), Chemistry (CY), Economics (EN), Geology (GG), Mathematics (MA), Mathematical Statistics (MS), and Physics (PH). The medium for all the Test Papers is English only.

JAM 2024 Examination for all the Test Papers will be conducted as a Computer Based Test (**CBT**) where the candidates will be shown the questions in a random sequence on a computer screen. The duration of the examination will be of **THREE** hours. Eligible PwD candidates may be given one-hour compensatory time and the assistance of scribe for the examination as per the guidelines of Government of India (Refer [Section 9](#)). There will be a total of 60 questions carrying a total of 100 marks. The entire paper will be divided into three sections, A, B and C. All sections are compulsory. Questions in each section will be of different types as given below:

**Section - A** contains a total of 30 **Multiple Choice Questions (MCQs)** involving 10 questions of one mark each and 20 questions of two marks each. Each MCQ has four choices out of which only one choice is the correct answer. Candidates can mark their answer by clicking one of the choices. A wrong answer will result in negative marks. For each wrong answer to 1 mark questions, 1/3 mark will be deducted and similarly for each wrong answer to 2 marks questions, 2/3 mark will be deducted.

**Section - B** contains a total of 10 **Multiple Select Questions (MSQs)** carrying two marks each. Each MSQ is similar to MCQ but with the difference that MSQ may have one or more than one correct choice(s) out of the four given choices. The candidate is awarded full credit only if all the correct answer(s) and no wrong answers are selected. Candidates can mark the answer(s) by clicking the choice(s). There is no negative marking or partial marking for MSQ.

**Section - C** contains a total of 20 **Numerical Answer Type (NAT)** questions involving 10 questions of one mark each and 10 questions of two marks each. For NAT questions, the answer is a signed real number, which needs to be entered using the virtual numeric keypad displayed on the monitor. No choices will be shown for NAT questions. There is no negative marking for NAT.

- In all sections, questions not attempted will result in zero mark. There is no provision for partial marking.
- The candidates are required to select the answer(s) for MCQ and MSQ type questions using the mouse.
- The answer for NAT questions must be entered using a mouse on a virtual numeric keypad. The keyboard of the computer will be disabled.
- There is a provision for using online virtual calculator. Candidates are not allowed to bring their own calculators.
- A scribble pad will be provided for rough work. Candidates have to write their name and registration number before using it. The scribble pad has to be returned at the end of the examination.
- The examination will end automatically after the stipulated time. Candidates are required to adhere to the code of conduct specified in [Annexure III](#) (Code of Conduct)
- Candidates will also be able to take a mock examination through a 'Mock Test' link that will be made available on the JAM 2024 website. Previous years question papers are available on JAM 2024 website.

## 5. TEST SCHEDULE AND FEES:

The Test Paper schedule of JAM 2024 is given in **Table 1**

**Table 1: JAM 2024 Test Paper Schedule**

| Examination Date              | Session                              | Test Papers and Codes  |
|-------------------------------|--------------------------------------|--|
| February 11, 2024<br>(Sunday) | Forenoon (FN)<br>9.30 am to 12.30 pm | <ul style="list-style-type: none"> <li>• Chemistry (CY)</li> <li>• Geology (GG)</li> <li>• Mathematics (MA)</li> </ul>   |
|                               | Afternoon (AN)<br>2.30 pm to 5.30 pm | <ul style="list-style-type: none"> <li>• Biotechnology (BT)</li> <li>• Economics (EN)</li> <li>• Mathematical Statistics (MS)</li> <li>• Physics (PH)</li> </ul> |

A candidate can appear in either **ONE** or **TWO** Test Paper(s). However, a candidate can appear in two Test Papers only if they are not scheduled in the same session (see **Table 1**).

The details of the application fee are given in **Table 2**.

The application fees is non-refundable under any circumstances.

**Table 2: Application Fee for JAM 2024**

| Gender/Category        | Fee Amount**   |                 |
|------------------------|----------------|-----------------|
|                        | One Test Paper | Two Test Papers |
| Female/ SC / ST / PwD* | ₹ 900          | ₹ 1250          |
| All Others             | ₹ 1800         | ₹ 2500          |

\*\*Fee Amount – Fees for changing Category/ Gender/ Test paper/ Examination city is ₹ 300 apart from the applicable difference in Application fee.

\*PwD – Person with benchmark Disability

Candidates who have wrongly entered the Category or Gender will be allowed to change with applicable fee and if candidates decide to appear in other Test Paper or to change Test Paper(s), they can ADD THE ADDITIONAL TEST PAPER or can CHANGE THE TEST PAPER(S) in the earlier submitted application available at <https://jam.iitm.ac.in> with an additional fee as shown in **Table 2** before **November 20, 2023**.

## 6. APPLICATION PROCEDURE:

Candidates can apply for JAM 2024 through <https://jam.iitm.ac.in> from **September 5, 2023** to **October 13, 2023**. Candidates have to first register on JOAPS (JAM Online Application Processing System), by providing their name, a valid e-mail address, an active mobile number and setting a password. Upon successful registration, candidate's Enrolment ID and OTP will be sent to the e-mail address and mobile number provided by the candidate. The candidate needs to use this Enrolment ID or e-mail address along with the password for submitting the application. Candidates are advised to keep the Enrolment ID and the password safe and confidential.

JOAPS provides an online interface to the candidate for interacting with the JAM 2024 Administration. With this interface, a candidate can:

- Apply for the examination Online, upload photograph, signature, and other documents like certificate (for OBC-NCL/ EWS/ SC/ ST/ PwD)
- Pay the application fee through any of the electronic payment modes.
- Check the status of the application form such as Submitted, Under scrutiny, Accepted, Defect status, Status after rectification, Rejected with valid reasons, and Admit card ready for download.

**Note:** (i) Candidates are strongly advised to fill the application form on their own. If someone else is filling the application on behalf of the candidate, the candidate must ensure that the data submitted are correct. (ii) Candidates must give an e-mail address that they use frequently, as all communication to the candidate for JAM 2024 will be sent to this e-mail address. (iii) The candidate must not use somebody else's e-mail address and only one candidate can be registered with one e-mail address. (iv) Similarly, candidates should provide their personal mobile number and are advised to use the same number until the admission is completed because most of the communication may also be sent via SMS.

A candidate should submit only one application form even if the candidate wants to appear for two Test Papers. Multiple applications submitted by a candidate are liable for rejection. Hence, **DO NOT submit multiple application forms.**

### 6.1 Choice of Examination Cities:

JAM 2024 Examination will be conducted in eight zones. The names of these eight zones with the list of zone-wise Examination Cities are listed in [Annexure IV \(Probable Examination cities of JAM 2024\)](#). Candidates must specify their first, second and third choice of cities at the time of applying for JAM 2024. When the choice of first city is made, then the zone gets determined and the candidates will be able to choose the second and third choice city only from the same zone. In case, any city in the choices is not allotted due to operational reasons, alternate city will be allotted. Candidates are requested to regularly check JAM 2024 website for updates regarding examination cities, if any.

## 6.2 Data Requirement for Filling the Application Form:

The following information will be required while filling the form at JOAPS portal:

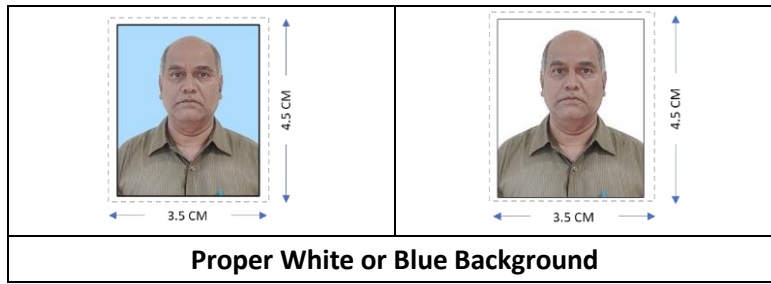
- Personal information (name, e-mail id, date of birth, mobile number, parent's/guardian's name, parent's/ guardian's mobile number, etc.)
- **Name of the candidate in the application form must exactly be the same as per Qualifying degree.** JAM 2024 Scorecard will be issued as per the name entered in the application form. Prefix/title such as Mr/Shri/Dr/Ms/Mrs/Smt, etc. should NOT be used.
- Address for communication including PIN code.
- Details of Eligibility degree.
- Name and address with PIN code of the College/Institute/University.
- Choice of JAM paper(s).
- Choice of JAM Examination Cities.
- **Scanned copy of 10th standard (SSC) Marksheet.**
- High-quality image of the candidate's photograph and signature conforming to the specifications given in **Section 6.3 (Photograph Requirements)** and **Section 6.4 (Signature Requirements)**, respectively.
- Scanned copy of the Category (OBC-NCL/EWS/SC/ST) Certificate (if applicable) as per guidelines given in **Section 6.5 (Certificate for OBC-NCL/ EWS/ SC/ ST/ PwD).**
- Scanned copy of Physical Disability Certificate (if applicable) or Unique Disability Identification (UDID) certificate.
- Details of the Photo Identity Document (ID). Any one of the following Photo ID: Aadhaar ID, Driving License, PAN Card, Passport, or Voter ID. The specified Photo Id, in original, should be carried by the candidate to the examination centre.
- Mode of Payment – Net banking / Debit card / Credit card / UPI details for fee payment. The application fee will be automatically determined based on the category, gender, and number of Test Papers that have been opted by the candidate.
- JOAPS allows the candidate to enter the data, save a partially filled form, log out and resume filling by logging in again. The JOAPS portal is self-explanatory and user-friendly.

## 6.3 Photograph Requirements:










- Upload only a good quality (not blurred) recent photograph.
- **JAM 2024 Admit Card and Scorecard will be printed with the photograph that you submit during application.**
- The photograph must be recent and must be in COLOUR. Background of the photograph must be **white** or in a very light colour.
- Photographs of poor resolution taken using a mobile phone and other self-composed portraits may result in the rejection of the application.
- A passport size (3.5 cm Width × 4.5 cm Height) JPEG/JPG format photograph of the face of the candidate is required for the application form.
- Maximum size of the JPEG/JPG image can be 480 × 640 in pixels. The minimum pixel size of the JPEG/JPG image should be 240 × 320. The file size of the image should be in the range of 20 KB to 200 KB. Aspect ratio (width: height) has to be between 0.66 and 0.89.
- The face should occupy at least 50% of the area of the photograph with a full-face view looking into the camera directly.
- Forehead, eyes, nose, ears, and chin should be clearly visible. These must not be covered by hair, any cloth/facemask, or any shadow.
- If glare cannot be avoided, then take the photo without the spectacles.
- Do not wear spectacles with dark or tinted glasses; only clear glasses are permitted.
- Poor quality photograph will lead to rejection of application, without any refund of the application fee.

**Table 5A** shows samples of Acceptable Photographs and **Table 5B** shows samples of not Acceptable photographs.

**Table 5A: Samples of Acceptable Photographs**



**Table 5B: Samples of not Acceptable Photographs**





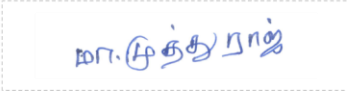
|   |   |  |
|---|---|--|
|    |    |    |
| <b>Glare on Spectacles</b>  | <b>Not looking into camera and improper background</b>                              | <b>Wearing hat or Cap</b>  |
|   |   |   |
| <b>Face covered with mask</b>   | <b>Shadow on the photo</b>  | <b>Face not covering 50% area</b>  |
|  |  |  |
| <b>Smaller in size</b>  | <b>Facial features are not fully visible</b>  | <b>Blurred Image</b>   |

#### 6.4 Signature Requirements:









- Upload only a good quality (not blurred) image of your signature in black or dark blue ink pen. Size of the signature should be within 2 cm x 7 cm (Height x Width).
- Name written in CAPITAL LETTERS, Initials or signature in any other colour (other than black or dark blue) will NOT be accepted.
- Use a professional scanner to get the digital image of the signature. Only JPEG/JPG image format will be accepted.
- Maximum size of the JPEG/JPG image of the signature can be 160 x 560 in pixels. Minimum pixel size of the JPEG/JPG image should be 80 x 280. The file size of the image should be in the range of 5 KB to 150 KB. Aspect ratio (width: height) has to be between 3.15 and 4.04.

**Table 6A** shows samples of Acceptable Signatures and **Table 6B** shows samples of not Acceptable Signatures.

**Table 6A: Samples of Acceptable Signatures**

|  |  |
|--|--|
|   |  |
|   |  |
|  |  |

**Table 6B: Samples of not Acceptable Signatures**

|   |  |
|---|--|
|    |    |
| <b>Signature in Dark background</b>   | <b>Name in all Capital</b>   |
|    |    |
| <b>Signature in other than Blue or Black ink</b>                                    | <b>Signature with date</b>   |
|   |   |
| <b>Signature with box</b>   | <b>Signature is too small to view</b>  |
|  |  |
| <b>Signature is too hazy</b>  | <b>Signature outside the rectangle and not aligned horizontally</b>                  |

**6.5 Certificate for OBC-NCL/ EWS/ SC/ ST/ PwD:**

Candidates who belong to OBC-NCL, EWS, SC, ST and/or PwD category have to upload a valid certificate issued ONLY by authorized officials (For more details please refer [Annexure V Information relevant to Certificates](#)). Physical Disability Certificate should meet the requirements specified in [Annexure V \(Information relevant to Certificates\)](#). OBC-NCL and EWS certificate should be submitted in the format shown in [Annexure VI](#) and [Annexure VII](#) and should have been issued on or after **April 1, 2023**. If no valid OBC-NCL/ EWS certificate is submitted, the candidate will be treated under the General category.

Candidates should upload scanned copy of the relevant certificate in pdf format of file size in the range 10 KB to 300 KB. Candidates shall be required to submit the same certificate during Admissions to the respective Admitting Institutes.

After filling in the required fields in the application form and uploading the required documents, the candidate must review the application form before final submission and payment.

Any application that is incomplete in any respect and does not have the required valid documents is liable to be rejected. The candidates are advised to visit the 'FAQs' section on the website: <https://jam.iitm.ac.in> for additional queries.



## 6.6 Application Fee Payment Procedure:

The application fee as shown in **Table 2** is to be paid ONLINE only. Candidates will be able to make the payment using net-banking, debit or credit card or UPI until **October 13, 2023**. Before proceeding for making any payment, applicants should view their application by clicking the "**Save and View**" button. They should carefully check the application and ensure that there are no errors in the application form. They should also ensure that all the relevant and valid documents are uploaded.

If there is any mistake, they can edit the relevant fields before proceeding for the payment. After this they should click on "**Proceed for Payment**" button. Once a candidate clicks "**Proceed for Payment**" button, **NO FURTHER CHANGES** in the application form can be made and the candidate will be directed to the payment portal. On the fee payment portal, the fee amount and bank charges will be shown and the candidate has to confirm that the payment is for JAM 2024. Once confirmed and payment is successful, the candidate will be redirected back to the JOAPS Website, where it shows confirmation of the fee payment. If the candidate had selected only ONE Test Paper, there will be an option to choose a second Test Paper. If candidates desire to do so, they can proceed by paying the additional amount for second Test Paper as indicated in **Table 2**.

If candidates have difficulty in making the fee payment (due to poor internet connection or power failure) or are not sure whether payment has been processed or not, then they should login to JOAPS after about an hour and check the status of the payment. A new online payment should be initiated if the payment of fee is not reflected in the JOAPS portal. If the payment is not done the application will be rejected. In case, the fee amount has been debited from the account of candidate, but JOAPS does not acknowledge any fee payment, then the money will be credited back to the account within ten working days.

## 6.7 Application Scrutiny and Rectification:

Applications shall be scrutinized to verify the data entered by the candidate with the submitted supporting documents, clarity of the photograph and signature. If everything is found to be in order, the application will be accepted. Otherwise, defects in the application will be marked and intimated to the candidate for rectification within a stipulated time. The status of the application and defects marked in the application will be intimated to the candidates through e-mail and/or SMS. The latest status of an application will be updated after the receipt and re-scrutiny of the application. The status of an application can be checked at any point of time by logging in JOAPS.

Candidates should rectify the marked defects in the application before the stipulated deadline. **Failing to rectify the defects within the stipulated time can lead to the rejection of the application.**

## 7. Admit Card:

An Admit Card bearing the Candidate's Name, Registration Number, Photograph, Signature and Name(s) and Code(s) of the Test Paper(s) applied, along with the Name and Address of the Test Centre allotted, will be available for download from JOAPS from **January 08, 2024 until the Examination Date**. Admit Cards will not be sent by post/e-mail. The candidate should carefully examine the Admit Card for all the entries made therein. In case of any discrepancy, the candidate should inform through email to [jam@iitm.ac.in](mailto:jam@iitm.ac.in)

**A printout of the downloaded Admit Card must be brought to the Test Centre along with the original and valid Photo ID.** The candidate has to give the details of this ID proof while filling the online application. No candidate will be permitted to appear in JAM 2024 examination without a valid Admit Card, and a valid and original Photo ID. The Admit Card should be presented for verification.

**A copy of the Admit Card of JAM 2024 must be carefully preserved by the Candidate and produced at the time of Admission, if required by the Admitting Institute.**

The Organizing Institute may withdraw the permission granted to a candidate to appear in JAM 2024, if it is found later that the candidate is not eligible to appear in the exam, even though an Admit Card has been issued.

## 8. JAM 2024 Scorecard and Merit Lists:

The results will be declared on **March 22, 2024** on the JAM 2024 website. For each Test Paper, an **All India Rank (AIR)** will be assigned to all candidates based on their performance.

**Tie-Breaking:** The tie-breaking criteria for awarding the ranks to candidates scoring the same aggregate marks in a Test Paper will be as follows:

Positive-to-negative marks ratio, followed by NAT marks, and then MSQ marks. Subsequently, if there is a tie, then DOB would be used, where, the older candidate gets better rank.

For each Test Paper, an All India Merit list will be prepared based on AIR. The number of candidates included in the All India Merit List will depend on the total number of seats available in each category (GEN/ OBC-NCL/ EWS/ SC/ ST/ PwD) in a given subject. These candidates (henceforth called Qualified Candidates) are eligible to apply for admission to any of the corresponding academic programmes. The JAM 2024 Scorecard indicating the AIR and the mark obtained by the candidate will be available for download from the JAM 2024 website from **April 02, 2024 to July 31, 2024** for qualified candidates.

## 9. Scribe & Compensatory Time for Eligible PwD Candidates:

PwD candidates who are visually impaired OR dyslexic (severe) OR have disability in the upper limbs OR have lost fingers / hands thereby preventing them from properly taking the Computer Based Test may avail the services of a Scribe in accordance with the Office Memorandum ([F. No. 29-6/2019-DD-III dated 10th August, 2022](#)) issued by of the Ministry of Social Justice and Empowerment. The option to utilize the services of a Scribe has to be exercised by the candidates during the application stage. If they choose to utilize the services of a Scribe, they would also be given an option to specify if they would arrange their own Scribe or they would want to be provided with a Scribe.

The assistance that the Scribe can render to the candidate is limited to ONLY reading the instructions and test paper displayed on the computer screen verbatim and in assisting with the mouse-clicks, if the candidate is not able to do so. The Scribe shall NOT translate / interpret / emphasize the Test Paper Contents to the Candidate.

### 9.1 Scribes arranged by Candidates:

Candidate and the scribe should certify that the scribe satisfies the government guidelines and qualification of the scribe is one step below the qualification of the candidate taking the examination. Candidates using their own scribe will have to provide a letter of undertaking in the prescribed proforma (Appendix II of the office order F.No. 34-02/2015-DD-III dated August 29, 2018).

Scribe must not be a candidate for a test paper in JAM 2024. No honorarium will be paid to the scribe arranged by the PwD candidate. If a PwD candidate has opted to bring his/her own scribe but do not do so on the day of examination, then it will not be possible to provide a scribe.

### 9.2 Scribes arranged by Examination Body:

Scribes will be arranged for those PwD candidates who have requested to be provided with a scribe at the time of application.

Qualification of the scribe arranged by test center will NOT be more than the minimum eligibility criteria of JAM 2024. However, the qualification of the scribe will be matriculation (10th) or above. If there are Y candidates who require scribe, it will be ensured that a panel of (Y+1) scribes is available at the exam centre so that every candidate can have an alternative scribe to choose for the services. Each eligible PwD candidate will be presented with TWO scribes on the day before examination. The candidate has to choose one from these two scribes. Candidates will NOT be permitted to bring their own scribe, if they have already requested to be provided with scribes.

PwD Candidates are permitted to visit the Exam Centre a day before the examination to get familiarized with the arrangements.

### 9.3 Compensatory Time:

Candidates who are eligible to avail the facility of scribe can opt for compensatory time of one hour, for the three-hour examination, even if they do not utilize the services of a scribe. This compensatory time of 60 minutes will be provided automatically, which needs to be checked in the candidate's console. PwD candidates who are not eligible for the facility of scribe may be given the compensatory time provided that they submit a certificate during the application to the effect that the candidate concerned has physical limitation to write from the Chief Medical Officer/ Civil Surgeon/ Medical Superintendent of a Government Health Care institution in the prescribed proforma (Appendix I of the office order F.No. 34-02/2015-DD-III dated August 29, 2018).

If it is found at any stage that a candidate has availed compensatory time and/or the services of a scribe, but does not possess the extent of disability that warrants the same, the candidate will be excluded from the process of evaluation, ranking and admission. In case such a candidate has already been admitted to any IIT, the admission of the candidate will be cancelled.

PwD candidates having disability in terms of vision will be given an option to view the Test Paper on the computer screen in a magnified font.

#### Note:

- Candidates should note that mere appearance in JAM 2024 or being in the merit list of any Test Paper neither guarantees nor provides any automatic entitlement to admission. Qualified candidates will have to apply for admission as per the prescribed procedure.
- With regard to the interpretation of the provisions on any matter not covered in this Information Brochure, the decision of the Organizing Institute shall be final and binding on all the parties concerned.

## 10. ADMISSION PROCEDURE:

A brief summary of the admission procedure is provided in this section and detailed information including timelines will be given in the Admission Brochure to be published in the second week of March 2024.

**Academic Programmes:** The list of academic programmes available at the 21 admitting IITs as part of JAM 2024 is given in [Annexure II \(Seat Matrix and MEQs\)](#). A qualified candidate can apply to admissions for all eligible programmes with a single application. Candidates who have qualified in multiple Test Papers also need to apply with a single application.

**Eligibility Requirements (ERs) & Minimum Educational Qualifications (MEQs):** Candidates who have successfully completed an undergraduate degree or currently studying in the final year of undergraduate are eligible for admission through JAM 2024. Proof of having passed the Qualifying Degree with the Minimum Educational Qualifications (MEQs) as specified by the Admitting Institute in [Annexure II \(Seat Matrix and MEQs\)](#) should be submitted within the timeline provided by the respective admitting Institute. At the time of admission, all admitted candidates may have to submit a Physical Fitness certificate from a registered medical practitioner in the prescribed form to the Admitting Institute. At the time of admission, the admitted candidates may also have to undergo a Physical Fitness test by a medical board constituted by the Admitting Institute. In case candidates are not found physically fit to pursue their chosen programme of study, their admission is liable to be cancelled.

**Application for Admission:** Subsequent to the announcement of JAM 2024 results, a qualified candidate satisfying the ERs and MEQs seeking admission has to apply online through the JAM 2024 website to the preferred programmes in 21 IITs where the admission is sought. The candidate needs to provide the required information, such as choice of the programmes in order of preference, educational qualifications, percentage of marks/CGPA, category, PwD status, etc. A payment of ₹ 750 (Rupees Seven hundred and fifty only) is to be made online as non-refundable processing fee. **Foreign nationals with Indian degree are eligible to apply, subject to the policy of the Admitting Institute.**

**Reservations:** In each programme, a certain number of seats are reserved/allocated for candidates belonging to various categories. Candidates who seek admission under SC or ST category must submit the requisite certificate issued by a competent authority as specified in [Annexure V](#). Candidates who seek admission under the OBC-NCL or EWS Category must submit a valid certificate issued by the competent authority as specified in [Annexure V](#), in the format shown in [Annexure VI](#) for OBC-NCL and [Annexure VII](#) for EWS, should have been issued on or after **April 01, 2023**. Candidates who seek admission under PwD category must submit a disability certificate (refer [Annexure V](#)) or Unique Disability Identification (UDID) certificate.

**Provisional Admission:** A maximum of four rounds of admission will be made to fill the available seats. Candidates who are offered a seat can either (i) accept the offered seat as final with no changes in the subsequent round, or (ii) accept the offered seat in this round with an option to be considered for being upgraded to other programmes, only for which they have given better preferences, in subsequent round(s), if any, or (iii) reject the offer and quit the admission process.

**Admission Fee:** After the declaration of the Admission List in each round, intimation will be sent by the Organizing Institute to the candidates concerned. Along with the submission of acceptance form, these candidates will also have to pay an advance seat booking fee (**₹ 15000 for General / OBC-NCL / EWS category candidates and ₹ 7500 for SC / ST / PwD category candidates**) online through JOAPS, within the deadline mentioned in the offer letter. This amount will be transferred to the Admitting Institute and it will be adjusted against the Institute Fee at the time of Registration. Admission can be denied if a candidate does not upload valid requisite documents or does not pay fee in the stipulated time.

# ANNEXURE I : SYLLABI FOR TEST PAPERS



JAM 2024



BIOTECHNOLOGY



## BIOTECHNOLOGY (BT)

The Biotechnology (BT) Test Paper comprises Biology, Chemistry, Mathematics and Physics.

### BIOLOGY (10+2+3 level)

**Cell Biology:** Structure of prokaryotic and eukaryotic cells; Membrane structure and function; Organelles and internal organization of the eukaryotic cell Protein trafficking in a eukaryotic cell; Cell communication – signalling pathways: endocrine and paracrine signalling; Extracellular matrix and apoptosis; Cell cycle – stages of mitosis and meiosis, and control of cell division cycle.

**Biochemistry:** Structure and function of biological macromolecules; Allostery; Enzymes – basic mechanisms of enzyme catalysis, Michaelis-Menten kinetics, enzyme inhibition, vitamins as coenzymes, and regulation; Bioenergetics – free-energy change, high-energy compounds, biological oxidation-reduction reactions and reduction potential; Metabolism – glycolysis, TCA cycle, oxidative phosphorylation, photosynthesis, nitrogen fixation, urea cycle, and regulation of glycolysis and TCA cycle.

**Genetics:** Mendel's laws; Inheritance patterns of polygenic traits; Mendelian inheritance patterns of human disorders; Pedigree analysis; Chromosomal basis of inheritance; Genetic recombination; Mapping genes on chromosomes based on linkage analysis; Plant breeding.

**Molecular Biology:** Landmark experiments that established DNA is the genetic material; DNA replication; Proof-reading and repair of DNA; DNA recombination; Transcription; RNA processing; Translation; Regulation of gene expression including operons bacteria and differential gene expression in multicellular eukaryotes.

**Evolution:** Darwinian view – natural selection, fossil record and descent with modification; Population genetics – sources of genetic variation, gene pools and allele frequencies, Hardy-Weinberg equation, genetic drift, gene flow and adaptive evolution; Different types of speciation; Phylogenetic classification; Origin of life – abiotic synthesis of biological macromolecules, protocell, dating fossils and origin of multicellularity.

**Microbiology:** Isolation; Cultivation; Structural features of viruses, bacteria, fungi and protozoa; Pathogenic microorganisms; Nutrition-based classification of microbes; Microbial metabolism; Growth kinetics; Submerged fermentation techniques; Microbial genetics.

**Plant Biology:** Types of tissues and organs; Primary and secondary growth; Morphogenesis; Transport in vascular plants; Plant nutrition; Development of flowering plants – gametophytic and sporophytic generations, different developmental phases, genetic control of flowering, gametogenesis, incompatibility, embryogenesis, dormancy, germination and environmental influence; Plant hormones; Photobiology; Plant response to biotic and abiotic stresses.

**Animal Biology:** Digestive, circulatory, respiratory, excretory, nervous, reproductive and endocrine systems; Basics of immunology – Innate and adaptive immunity, Immune cells and Immunoglobulins; Animal development – Fertilization, embryonic pattern formation, cleavage, gastrulation, cellular differentiation and morphogenesis.

**Ecology:** Climate patterns; Terrestrial and aquatic biomes; Environmental constraints on species distribution; Factors affecting population density; Interactions among communities; Ecosystems; Ecological remediation.

**Biotechnology:** Plant tissue culture; Cloning of animals through somatic cell nuclear transfer; Applications of recombinant DNA technology in medicine, agriculture and forensic science.

### Methods in Biology:

**Cell Biology:** Microscopy (light microscopy and electron microscopy); Staining proteins with antibodies; Visualizations using the GFP reporter.

**Biochemical techniques:** UV spectrophotometry; Biomolecular chromatography; cell fractionation by centrifugation; Electrophoresis; and Western blotting.



**Molecular biology techniques:** DNA cloning – plasmid vectors, and restriction enzymes; Polymerase Chain Reaction; Expression of cloned eukaryotic genes in bacteria; Hybridization techniques; DNA sequencing.

### CHEMISTRY (10+2+3 level)

**Structure and properties of Atoms:** Bohr's theory; Periodicity in properties.

**Bonding in molecules:** Chemical bonding; Complex formation; Physical and chemical basis of molecular interactions.

**Chemical kinetics, thermodynamics, and equilibrium:** Chemical equilibrium; Chemical thermodynamics (first and second law); and Chemical kinetics (zero and first order reactions).

**Physical and chemical properties of compounds:** Chemical catalysis; Acid-base concepts; Concepts of pH and buffer; Conjugative effects and resonance; Inductive effects; Electromeric effects; Photochemistry; and Electrochemistry.

**Chemistry of organic compounds:** Hydrocarbons; Alkyl halides; Alcohols; Aldehydes; Ketones; Carboxylic acids; Amines and their derivatives; Aromatic hydrocarbons, halides, nitro and amino compounds, phenols, diazonium salts, carboxylic and sulphonic acids; Soaps and detergents; Stereochemistry of carbon compounds.

**Instrumental techniques - Spectroscopy:** fundamentals of molecular spectroscopy, emission and absorption spectroscopy, UV-Vis, IR and 1-D proton NMR spectroscopy, basics of mass spectrometry; Basics of calorimetry; Basic concepts of crystallography.

### MATHEMATICS (10+2 level)

Sets; Relations and Functions; Mathematical Induction; Logarithms; Complex numbers; Linear and Quadratic equations; Sequences and Series; Trigonometry; Cartesian System of Rectangular Coordinates; Straight lines and Family; Three Dimensional Geometry; Permutations and Combinations; Binomial Theorem; Vectors; Matrices and Determinants; Boolean Algebra; Functions; Limits and Continuity; Differentiation; Ordinary Differential Equations; Application of Derivatives; Integration as inverse process of differentiation; Definite and indefinite integrals; Methods of Integration; Integration by parts.

**Statistics:** Measures of dispersion; Mean Deviation for grouped and ungrouped data; Variance and Standard Deviation; and Analysis of Frequency Distribution.

**Probability:** Random Experiments; Event; Axiomatic Approach to Probability; Conditional Probability and its properties; Multiplication Theorem on Probability; Independent Events; Bayes' Theorem; Random Variables and its Probability Distributions; Bernoulli Trails and Binomial Distributions.

### PHYSICS (10+2 level)

Units and measurements; Motion in one and two dimensions; Laws of motion; Work and kinetic energy; Conservation of energy; System of particles and rotational motion; Mechanical properties of solids and fluids; Thermal properties of matter; Heat and laws of thermodynamics; Kinetic theory of gases; Electric charge and field; Electric potential and capacitance; Current, resistance and simple circuits; Moving charges and magnetic field; Magnetism and matter; Electromagnetic induction; Electromagnetic waves; Alternating currents; Optics: Geometrical Optics – Reflection by spherical mirrors, Refraction at spherical surfaces and lenses, Total internal reflection and Optical instruments; Wave optics – Reflection and refraction of plane waves, Interference, Diffraction, Polarization, and Young's experiment: Dual nature of radiation and matter; Atoms, nuclei and nuclear physics; Semiconductor materials, devices and simple circuits.







## CHEMISTRY (CY)

### Physical Chemistry

#### Atomic and Molecular Structure:

Planck's black body radiation, Photoelectric effect, Bohr's theory, de Broglie postulate, Heisenberg's Uncertainty Principle; Schrödinger's wave equation (including mathematical treatment), postulates of quantum mechanics, normalized and orthogonal wave functions, its complex conjugate (idea of complex numbers) and significance of  $\Psi^2$ ; Operators; Particle in one-dimension box, radial and angular wave functions for hydrogen atom, radial probability distribution; Finding maxima of distribution functions (idea of maxima and minima), energy spectrum of hydrogen atom; Shapes of s, p, d and f orbitals; Pauli's Exclusion Principle; Hund's rule of maximum multiplicity.

#### Gaseous State:

Kinetic molecular model of a gas: collision frequency; collision diameter; mean free path and viscosity of gases; Maxwell-Boltzmann distribution: molecular velocities, law of equipartition of energy, molecular basis of heat capacities; Ideal gases, and deviations from ideal gas behaviour, van der Waals equation of state; critical state, law of corresponding states.

#### Liquid State:

Physical properties of Liquid, vapour pressure, surface tension and co-efficient of viscosity and their applications; effect of concentration of solutes on surface tension and viscosity; effect of temperature on viscosity of liquids.

#### Solid State:

Unit Cells, Miller indices, crystal systems and Bravais Lattices, elementary applications of vectors to crystal systems; X-ray diffraction, Bragg's Law, Structure of NaCl, CsCl, and KCl, diamond, and graphite; Close packing in metals and metal compounds, semiconductors, insulators; Defects in crystals, lattice energy; isomorphism; heat capacity of solids.

#### Chemical Thermodynamics:

Mathematical treatment: Exact and in-exact differentials, partial derivatives, Euler's reciprocity, cyclic rule; Reversible and irreversible processes; Laws of thermodynamics, thermochemistry, thermodynamic functions, such as enthalpy, entropy, and Gibbs free energy, their properties and applications; Partial molar quantities, dependence of thermodynamic parameters on composition, Gibbs Duhem equation, chemical potential and its applications.

#### Chemical and Phase Equilibria:

Law of mass action;  $K_p$ ,  $K_c$ ,  $K_x$  and  $K_n$ ; Effect of temperature on K; Le-Chatelier principle; Ionic equilibria in solutions; pH and buffer solutions; Salt hydrolysis; Solubility and solubility product; Acid – base titration curves; Indicators; Dilute solutions; Raoult's and Henry's Laws and their applications; Colligative properties; Gibbs phase rule; Phase equilibria; single and two-component phase diagrams.

#### Electrochemistry:

Conductivity, equivalent and molar conductivity and their properties; Kohlrausch law; Debye-Hückel-Onsager equation; Ionic velocities, mobilities, transference numbers; Applications of conductance measurement; Quantitative aspects of Faraday's laws of electrolysis, applications of electrolysis in metallurgy and industry; Electromotive force of a cell, Nernst equation; Standard electrode potential, Electrochemical series; Concentration cells with and without transference; Applications of EMF measurements including potentiometric titrations.

#### Chemical Kinetics:

Order and molecularity of a reaction, differential and integrated form of rate expressions - basic ideas of integration and differentiation; Kinetics of opposing, parallel, and consecutive reactions; Steady state approximation in reaction mechanisms; Chain reactions; Uni-molecular reaction (Lindemann mechanism); Temperature dependence of reaction rates, Arrhenius equation;



activation energy; Collision theory of reaction rates; Types of catalysts, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces; Enzyme catalysis (Michaelis-Menten mechanism, Double reciprocal plot), Acid-base catalysis.

#### Adsorption:

Gibbs adsorption equation; adsorption isotherm; types of adsorption; surface area of adsorbents; surface films on liquids.

#### Spectroscopy:

Beer-Lambert's law; fundamental concepts of rotational, vibrational, electronic and magnetic resonance spectroscopy.

### Organic Chemistry

#### Basic Concepts in Organic Chemistry and Stereochemistry:

Electronic effects (resonance, inductive, hyperconjugation) and steric effects and its applications (acid/base property); optical isomerism in compounds with and without any stereocenters (allenes, biphenyls); conformation of acyclic systems (substituted ethane/n-propane/n-butane) and cyclic systems, substituted cyclohexanes, and polycyclic (*cis* and *trans* decalins) systems.

#### Organic Reaction Mechanism and Synthetic Applications:

Chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzyne); nucleophilic substitution, elimination reactions and mechanisms; Hofmann-Curtius-Lossen rearrangement, Wolff rearrangement, Simmons-Smith reaction, Reimer-Tiemann reaction, Michael reaction, Darzens reaction, Wittig reaction and McMurry reaction; Pinacolpinacolone, Favorskii, benzilic acid rearrangement, Baeyer-Villiger reaction; oxidation and reduction reactions in organic chemistry; Organometallic reagents in organic synthesis (Grignard, organolithium, organocopper and organozinc (Reformatsky only); Diels-Alder, electrocyclic and sigmatropic reactions; functional group inter-conversions and structural problems using chemical reactions.

#### Qualitative Organic Analysis:

Identification of functional groups by chemical tests; elementary UV, IR and  $^1\text{H}$  NMR spectroscopic techniques as tools for structural elucidation of simple organic molecules.

#### Natural Products Chemistry:

Chemistry of alkaloids, steroids, terpenes, carbohydrates, amino acids, peptides and nucleic acids.

#### Aromatic and Heterocyclic Chemistry:

Monocyclic, bicyclic and tricyclic aromatic hydrocarbons, and monocyclic compounds with one hetero atom: synthesis, reactivity and properties, aromaticity; Electrophilic and nucleophilic aromatic substitution reactions.

### Inorganic Chemistry

#### Periodic Table:

Periodic classification of elements, Aufbau's principle, periodicity; Variations of orbital energy, effective nuclear charge, atomic, covalent, and ionic radii, ionization enthalpy, electron gain enthalpy, and electronegativity with atomic number, electronic configuration of diatomic molecules (first and second row elements).

#### Extractions of Metals:

General methods of isolation and purification of elements; Principles and applications of Ellingham diagram.

#### Chemical Bonding and shapes of molecules:

Ionic bond: Packing of ions in crystals, radius ratio rule, Born-Landé equation, Kapustinskii expression, Madelung constant, Born-Haber cycle, solvation energy, polarizing power and polarizability; Fajan's rules; Covalent bond: Lewis structure, valence bond theory. Hybridization,



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CHEMISTRY



molecular orbital theory, molecular orbital diagrams of diatomic and simple polyatomic molecules and ions; Multiple bonding ( $\sigma$  and  $\pi$  bond approach) and bond lengths; van der Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, instantaneous dipole-induced dipole interactions, hydrogen bonding; Effect of intermolecular forces on melting and boiling points, solubility energetics of dissolution process; Bond dipole, dipole moment, and molecular polarizabilities; VSEPR theory and shapes of molecules; ionic solids.

#### Main Group Elements (s and p blocks):

Reactions of alkali and alkaline earth metals with oxygen, hydrogen and water; Alkali and alkaline earth metals in liquid ammonia; Gradation in properties of main group element in a group; Inert pair effect; Synthesis, structure and properties of diborane, ammonia, silane, phosphine and hydrogen sulphide; Allotropes of carbon; Oxides of nitrogen, phosphorus and sulphur; Oxoacids of phosphorus, sulphur and chlorine; Halides of silicon and phosphorus; Synthesis and properties of borazine, silicone and phosphazene; Synthesis and reactions of xenon fluorides.

#### Transition Metals (d block):

Characteristics of d-block elements; oxide, hydroxide and salts of first row metals; coordination complexes: structure, isomerism, reaction mechanism and electronic spectra; VB, MO and crystal field theoretical approaches for structure, color and magnetic properties of metal complexes; Organometallic compounds with metal-ligand single and multiple bonds (such as metal carbonyls, metal nitrosyls and metallocenes); Homogenous catalysis involving Wilkinson's catalyst.

#### Bioinorganic Chemistry:

Essentials and trace elements of life; basic reactions in the biological systems and the role of metal ions, especially  $\text{Fe}^{2+}$ , and  $\text{Zn}^{2+}$ ; structure and function of myoglobin, hemoglobin and carbonic anhydrase.

#### Instrumental Methods of Analysis:

Basic principles; instrumentations and simple applications of conductometry, potentiometry and UV-vis spectrophotometry; analyses of water, air and soil samples.

#### Analytical Chemistry:

Principles of qualitative and quantitative analysis; Acid-base, oxidation-reduction and complexometric titrations using EDTA; Precipitation reactions; Use and types of indicators; Use of organic reagents in inorganic analysis; Radioactivity, nuclear reactions, applications of isotopes; Mathematical treatment in error analysis, elementary statistics and probability theory.

## ECONOMICS (EN)



JAM 2024



ECONOMICS



### Microeconomics

**Consumer theory:** Preference, utility and representation theorem, budget constraint, choice, demand (ordinary and compensated), Slutsky equation, revealed preference axioms.

**Theory of production and cost:** Production technology, isoquants, production function with one and more inputs, returns to scale, short run and long run costs, cost curves in the short run and long run.

**General equilibrium and welfare:** Equilibrium and efficiency under pure exchange and production, welfare economics, theorems of welfare economics.

**Market structure:** Perfect competition, monopoly, pricing with market power, price discrimination (first, second and third), monopolistic competition and oligopoly.

**Game theory:** Strategic form games, iterated elimination of dominated strategies, Nash equilibrium, mixed extension and mixed strategy Nash equilibrium, examples: Cournot, Bertrand duopolies, Prisoner's dilemma.

**Public goods and market failure:** Externalities, public goods and markets with asymmetric information (adverse selection and moral hazard).

### Macroeconomics

**National income accounting:** Structure, key concepts, measurements, and circular flow of income - for closed and open economy, money, fiscal and foreign sector variables - concepts and measurements.

**Behavioural and technological functions:** Consumption functions - absolute income hypothesis, life-cycle and permanent income hypothesis, random walk model of consumption, investment functions - Keynesian, money demand and supply functions, production function.

**Business cycles and economic models (closed economy):** Business cycles-facts and features, the Classical model of the business cycle, the Keynesian model of the business cycle, simple Keynesian cross model of income and employment determination and the multiplier (in a closed economy), IS-LM Model, Hicks' IS-LM synthesis, role of monetary and fiscal policies.

**Business cycles and economic models (open economy):** Open economy, Mundell-Fleming model, Keynesian flexible price (aggregate demand and aggregate supply) model, role of monetary and fiscal policies.

**Inflation and unemployment:** Inflation - theories, measurement, causes, and effects, unemployment - types, measurement, causes, and effects.

**Growth models:** Harrod-Domar, Solow and Neo-classical growth models (AK model, Romer model and Schumpeterian growth model).

### Statistics for Economics

**Probability theory:** Sample space and events, axioms of probability and their properties, conditional probability and Bayes' rule, independent events, random variables and probability distributions, expectation, variance and higher order moments, functions of random variables, properties of commonly used discrete and continuous distributions, density and distribution functions for jointly distributed random variables, mean and variance of jointly distributed random variables, covariance and correlation coefficients.

**Mathematical statistics:** Random sampling, types of sampling, point and interval estimation, estimation of population parameters using methods of moments and maximum likelihood procedures, properties of estimators, sampling distribution, confidence intervals, central limit theorem, law of large number.



**Hypothesis testing:** distributions of test statistics, testing hypotheses related to population parameters, Type I and Type II errors, the power of a test, tests for comparing parameters from two samples.

**Correlation and regression:** Correlation and types of correlation, the nature of regression analysis, method of Ordinary Least Squares (OLS), CLRM assumptions, properties of OLS, goodness of fit, variance and covariance of OLS estimator.

### Indian Economy

**Indian economy before 1950:** Transfer of tribute, deindustrialization of India.

**Planning and Indian development:** Planning models, relation between agricultural and industrial growth, challenges faced by Indian planning.

**Indian economy after 1991:** Balance of payments crisis in 1991, major aspects of economic reforms in India after 1991, reforms in trade and foreign investment.

**Banking, finance and macroeconomic policies:** aspects of banking in India, CRR and SLR, financial sector reforms in India, fiscal and monetary policy, savings and investment rates in India.

**Inequalities in social development:** India's achievements in health, education and other social sectors, disparities between Indian States in human development.

**Poverty:** Methodology of poverty estimation, Issues in poverty estimation in India.

**India's labour market:** unemployment, labour force participation rates.

### Mathematics for Economics

**Preliminaries and functions:** Set theory and number theory, elementary functions: quadratic, polynomial, power, exponential, logarithmic, functions of several variables, graphs and level curves, convex set, concavity and quasiconcavity of function, convexity and quasi-convexity of functions, sequences and series: convergence, algebraic properties and applications, complex numbers and its geometrical representation, De Moivre's theorem and its application.

**Differential calculus:** Limits, continuity and differentiability, mean value theorems, Taylor's theorem, partial differentiation, gradient, chain rule, second and higher order derivatives: properties and applications, implicit function theorem, and application to comparative statics problems, homogeneous and homothetic functions: characterisations and applications.

**Integral calculus:** Definite integrals, fundamental theorems, indefinite integrals and applications.

**Differential equations, and difference equations:** First order difference equations, first order differential equations and applications.

**Linear algebra:** Matrix representations and elementary operations, systems of linear equations: properties of their solution, linear independence and dependence, rank, determinants, eigenvectors and eigenvalues of square matrices, symmetric matrices and quadratic forms, definiteness and semidefiniteness of quadratic forms.

**Optimization:** Local and global optima: geometric and calculus-based characterisations, and applications, multivariate optimization, constrained optimization and method of Lagrange multiplier, second order condition of optima, definiteness and optimality, properties of value function: envelope theorem and applications, linear programming: graphical solution, matrix formulation, duality, economic interpretation.

## GEOLOGY (GG)



JAM 2024

**The Planet Earth:** Origin of the Solar System and the Earth; Geosphere and the composition of the Earth; Shape and size of the Earth; Earth-Moon system; Dating rocks and age of the Earth; Volcanism and volcanic landforms; Interior of the Earth; Earthquakes; Earth's magnetism and gravity, Isostasy; Basic elements of Plate Tectonics; Orogenic cycles.

**Geomorphology:** Weathering and erosion; Soil formation; Transportation and deposition by wind, ice, river, sea and resulting landforms.

**Structural Geology:** Orientation of planes and lines in space – concept of dip, strike, rake and plunge. Contour lines; Rule of 'V's and outcrop patterns; Interpretation of geological maps and cross-section construction; Classification and origin of folds, faults, joints, unconformities, foliations and lineations; Stereographic and equal-area projections of planes and lines; Numerical problems related to outcrop and bore-hole data.

**Paleontology:** Major steps in the evolution of life forms; Fossils, their mode of preservation and utility in age determination and paleoenvironmental interpretations; Morphology, major evolutionary trends and ages of important groups of animals – Brachiopoda, Mollusca, Trilobita, Graptolitoidea, Anthozoa, Echinodermata; Gondwana plant fossils; Elementary idea of vertebrate fossils in India.

**Stratigraphy:** Principles of stratigraphy; Litho-, Chrono- and biostratigraphic classification; Stratigraphic correlation techniques; Archaean cratons of Peninsular India (Dharwar, Singhbhum and Aravalli); Proterozoic mobile belts; Stratigraphy of Cuddapah and Vindhyan basins; Stratigraphy of Paleozoic – Mesozoic of Spiti and Kashmir, Gondwana Supergroup, Jurassic of Kutch, Cretaceous of Trichinopoly, Tertiary and Quaternary sequences of Assam, Bengal and Siwaliks.

**Mineralogy:** Symmetry and forms in common crystal classes; Physical properties of minerals; Isomorphism, polymorphism, solid solution and exsolution; Classification of minerals; Structure of silicates; Mineralogy of common rock-forming minerals; Elements of Optical Mineralogy, Optical properties of common rock-forming minerals.

**Petrology:** Definition and classification of rocks; Igneous rocks – forms of igneous bodies; Processes of evolution and diversification of magma; Classification, association, and genesis of common igneous rocks. Sedimentary rocks – classification, texture, and structure; Petrology of sandstone and limestone; Elements of sedimentary environments and facies. Metamorphic rocks – classification and texture; Types of metamorphism; Controls on metamorphism – pressure, temperature and fluids; Concept of projections – ACF, AKF and AFM diagrams; Phase Rule and its applications; Concepts of zones and facies, Characteristic mineral assemblages of pelites in the Barrovian zones and mafic rocks in common facies.

**Economic Geology:** Physical properties of common economic minerals; General processes of formation of mineral deposits; Mode of occurrence and distribution of metallic and non-metallic mineral deposits in India; Fundamentals of reserve calculation; Elements of coal and hydrocarbon geology, Coal and hydrocarbon occurrences in India.

**Applied Geology:** Groundwater and hydrological cycle, Types of aquifers, porosity and permeability; Principles of engineering geology; Geological considerations in construction of dams and tunnels.

GEOLOGY







## MATHEMATICS (MA)

### Real Analysis:

**Sequences and Series of Real Numbers:** convergence of sequences, bounded and monotone sequences, Cauchy sequences, Bolzano-Weierstrass theorem, absolute convergence, tests of convergence for series – comparison test, ratio test, root test; Power series (of one real variable), radius and interval of convergence, term-wise differentiation and integration of power series.

**Functions of One Real Variable:** limit, continuity, intermediate value property, differentiation, Rolle's Theorem, mean value theorem, L'Hospital rule, Taylor's theorem, Taylor's series, maxima and minima, Riemann integration (definite integrals and their properties), fundamental theorem of calculus.

### Multivariable Calculus and Differential Equations:

**Functions of Two or Three Real Variables:** limit, continuity, partial derivatives, total derivative, maxima and minima.

**Integral Calculus:** double and triple integrals, change of order of integration, calculating surface areas and volumes using double integrals, calculating volumes using triple integrals.

**Differential Equations:** Bernoulli's equation, exact differential equations, integrating factors, orthogonal trajectories, homogeneous differential equations, method of separation of variables, linear differential equations of second order with constant coefficients, method of variation of parameters, Cauchy-Euler equation.

### Linear Algebra and Algebra:

**Matrices:** systems of linear equations, rank, nullity, rank-nullity theorem, inverse, determinant, eigenvalues, eigenvectors.

**Finite Dimensional Vector Spaces:** linear independence of vectors, basis, dimension, linear transformations, matrix representation, range space, null space, rank-nullity theorem.

**Groups:** cyclic groups, abelian groups, non-abelian groups, permutation groups, normal subgroups, quotient groups, Lagrange's theorem for finite groups, group homomorphisms.



## MATHEMATICAL STATISTICS (MS)

The Mathematical Statistics (MS) Test Paper comprises following topics of Mathematics (about 30% weight) and Statistics (about 70% weight).

### Mathematics

**Sequences and Series of real numbers:** Sequences of real numbers, their convergence, and limits. Cauchy sequences and their convergence. Monotonic sequences and their limits. Limits of standard sequences. Infinite series and its convergence, and divergence. Convergence of series with non-negative terms. Tests for convergence and divergence of a series. Comparison test, limit comparison test, D'Alembert's ratio test, Cauchy's  $n^{\text{th}}$  root test, Cauchy's condensation test and integral test. Absolute convergence of series. Leibnitz's test for the convergence of alternating series. Conditional convergence. Convergence of power series and radius of convergence.

**Differential Calculus of one and two real variables:** Limits of functions of one real variable. Continuity and differentiability of functions of one real variable. Properties of continuous and differentiable functions of one real variable. Rolle's theorem and Lagrange's mean value theorems. Higher order derivatives, Leibnitz's rule and its applications. Taylor's theorem with Lagrange's and Cauchy's form of remainders. Taylor's and Maclaurin's series of standard functions. Indeterminate forms and L' Hospital's rule. Maxima and minima of functions of one real variable, critical points, local maxima and minima, global maxima and minima, and point of inflection. Limits of functions of two real variables. Continuity and differentiability of functions of two real variables. Properties of continuous and differentiable functions of two real variables. Partial differentiation and total differentiation. Leibnitz's rule for successive differentiation. Maxima and minima of functions of two real variables. Critical points, Hessian matrix, and saddle points. Constrained optimization techniques (with Lagrange multiplier).

**Integral Calculus:** Fundamental theorems of integral calculus (single integral). Leibnitz's rule and its applications. Differentiation under integral sign. Improper integrals. Beta and Gamma integrals: properties and relationship between them. Double integrals. Change of order of integration. Transformation of variables. Applications of definite integrals. Arc lengths, areas and volumes.

**Matrices and Determinants:** Vector spaces with real field. Subspaces and sum of subspaces. Span of a set. Linear dependence and independence. Dimension and basis. Algebra of matrices. Standard matrices (Symmetric and Skew Symmetric matrices, Hermitian and Skew Hermitian matrices, Orthogonal and Unitary matrices, Idempotent and Nilpotent matrices). Definition, properties and applications of determinants. Evaluation of determinants using transformations. Determinant of product of matrices. Singular and non-singular matrices and their properties. Trace of a matrix. Adjoint and inverse of a matrix and related properties. Rank of a matrix, row-rank, column-rank, standard theorems on ranks, rank of the sum and the product of two matrices. Row reduction and echelon forms. Partitioning of matrices and simple properties. Consistent and inconsistent system of linear equations. Properties of solutions of system of linear equations. Use of determinants in solution to the system of linear equations. Cramer's rule. Characteristic roots and Characteristic vectors. Properties of characteristic roots and vectors. Cayley Hamilton theorem.

### Statistics

**Probability:** Random Experiments. Sample Space and Algebra of Events (Event space). Relative frequency and Axiomatic definitions of probability. Properties of probability function. Addition theorem of probability function (inclusion exclusion principle). Geometric probability. Boole's and Bonferroni's inequalities. Conditional probability and Multiplication rule. Theorem of total probability and Bayes' theorem. Pairwise and mutual independence of events.

**Univariate Distributions:** Definition of random variables. Cumulative distribution function (c.d.f.) of a random variable. Discrete and Continuous random variables. Probability mass function (p.m.f.) and Probability density function (p.d.f.) of a random variable. Distribution (c.d.f., p.m.f., p.d.f.) of a function of a random variable using transformation of variable and Jacobian method. Mathematical expectation and moments. Mean, Median, Mode, Variance, Standard deviation, Coefficient of variation, Quantiles, Quartiles, Coefficient of Variation, and measures of Skewness and Kurtosis of a probability distribution. Moment generating function (m.g.f.), its properties and uniqueness. Markov and Chebyshev inequalities and their applications.



**Standard Univariate Distributions:** Degenerate, Bernoulli, Binomial, Negative binomial, Geometric, Poisson, Hypergeometric, Uniform, Exponential, Double exponential, Gamma, Beta (of first and second type), Normal and Cauchy distributions, their properties, interrelations, and limiting (approximation) cases.

**Multivariate Distributions:** Definition of random vectors. Joint and marginal c.d.f.s of a random vector. Discrete and continuous type random vectors. Joint and marginal p.m.f., joint and marginal p.d.f.. Conditional c.d.f., conditional p.m.f. and conditional p.d.f.. Independence of random variables. Distribution of functions of random vectors using transformation of variables and Jacobian method. Mathematical expectation of functions of random vectors. Joint moments, Covariance and Correlation. Joint moment generating function and its properties. Uniqueness of joint m.g.f. and its applications. Conditional moments, conditional expectations and conditional variance. Additive properties of Binomial, Poisson, Negative Binomial, Gamma and Normal Distributions using their m.g.f..

**Standard Multivariate Distributions:** Multinomial distribution as a generalization of binomial distribution and its properties (moments, correlation, marginal distributions, additive property). Bivariate normal distribution, its marginal and conditional distributions and related properties.

**Limit Theorems:** Convergence in probability, convergence in distribution and their inter relations. Weak law of large numbers and Central Limit Theorem (i.i.d. case) and their applications.

**Sampling Distributions:** Definitions of random sample, parameter and statistic. Sampling distribution of a statistic. Order Statistics: Definition and distribution of the  $r^{th}$  order statistic (d.f. and p.d.f. for i.i.d. case for continuous distributions). Distribution (c.d.f., p.m.f., p.d.f.) of smallest and largest order statistics (i.i.d. case for discrete as well as continuous distributions). Central Chi-square distribution: Definition and derivation of p.d.f. of central  $\chi^2$  distribution with  $n$  degrees of freedom (d.f.) using m.g.f.. Properties of central  $\chi^2$  distribution, additive property and limiting form of central  $\chi^2$  distribution. Central Student's  $t$ -distribution: Definition and derivation of p.d.f. of Central Student's  $t$ -distribution with  $n$  d.f., Properties and limiting form of central  $t$ -distribution. Snedecor's Central  $F$ -distribution: Definition and derivation of p.d.f. of Snedecor's Central  $F$ -distribution with  $(m, n)$  d.f.. Properties of Central  $F$ -distribution, distribution of the reciprocal of  $F$ -distribution. Relationship between  $t$ ,  $F$  and  $\chi^2$  distributions.

**Estimation:** Unbiasedness. Sufficiency of a statistic. Factorization theorem. Complete statistic. Consistency and relative efficiency of estimators. Uniformly Minimum variance unbiased estimator (UMVUE). Rao-Blackwell and Lehmann-Scheffe theorems and their applications. Cramer-Rao inequality and UMVUEs. Methods of Estimation: Method of moments, method of maximum likelihood, invariance of maximum likelihood estimators. Least squares estimation and its applications in simple linear regression models. Confidence intervals and confidence coefficient. Confidence intervals for the parameters of univariate normal, two independent normal, and exponential distributions.

**Testing of Hypotheses:** Null and alternative hypotheses (simple and composite), Type-I and Type-II errors. Critical region. Level of significance, size and power of a test, p-value. Most powerful critical regions and most powerful (MP) tests. Uniformly most powerful (UMP) tests. Neyman Pearson Lemma (without proof) and its applications to construction of MP and UMP tests for parameter of single parameter parametric families. Likelihood ratio tests for parameters of univariate normal distribution.



## PHYSICS (PH)

**Mathematical Methods:** Calculus of single and multiple variables, partial derivatives, Jacobian, imperfect and perfect differentials, Taylor expansion, Fourier series. Vector algebra, Vector Calculus, Multiple integrals, Divergence theorem, Green's theorem, Stokes' theorem. First order equations and linear second order differential equations with constant coefficients. Matrices and determinants, Algebra of complex numbers.

**Mechanics and General Properties of Matter:** Newton's laws of motion and applications, Velocity and acceleration in Cartesian, polar and cylindrical coordinate systems, uniformly rotating frame, centrifugal and Coriolis forces, Motion under a central force, Kepler's laws, Gravitational Law and field, Conservative and non-conservative forces. System of particles, Center of mass, equation of motion of the CM, conservation of linear and angular momentum, conservation of energy, variable mass systems. Elastic and inelastic collisions. Rigid body motion, fixed axis rotations, rotation and translation, moments of Inertia and products of Inertia, parallel and perpendicular axes theorem. Principal moments and axes. Kinematics of moving fluids, equation of continuity, Euler's equation, Bernoulli's theorem.

**Oscillations, Waves and Optics:** Differential equation for simple harmonic oscillator and its general solution. Superposition of two or more simple harmonic oscillators. Lissajous figures. Damped and forced oscillators, resonance. Wave equation, traveling and standing waves in one-dimension. Energy density and energy transmission in waves. Group velocity and phase velocity. Sound waves in media. Doppler Effect. Fermat's Principle. General theory of image formation. Thick lens, thin lens and lens combinations. Interference of light, optical path retardation. Fraunhofer diffraction. Rayleigh criterion and resolving power. Diffraction gratings. Polarization: linear, circular and elliptic polarization. Double refraction and optical rotation.

**Electricity and Magnetism:** Coulomb's law, Gauss's law. Electric field and potential. Electrostatic boundary conditions, Solution of Laplace's equation for simple cases. Conductors, capacitors, dielectrics, dielectric polarization, volume and surface charges, electrostatic energy. Biot-Savart law, Ampere's law, Faraday's law of electromagnetic induction, Self and mutual inductance. Alternating currents. Simple DC and AC circuits with R, L and C components. Displacement current, Maxwell's equations and plane electromagnetic waves, Poynting's theorem, reflection and refraction at a dielectric interface, transmission and reflection coefficients (normal incidence only). Lorentz Force and motion of charged particles in electric and magnetic fields.

**Kinetic Theory, Thermodynamics:** Elements of Kinetic theory of gases. Velocity distribution and Equipartition of energy. Specific heat of Mono-, di- and tri-atomic gases. Ideal gas, van-der-Waals gas and equation of state. Mean free path. Laws of thermodynamics. Zeroth law and concept of thermal equilibrium. First law and its consequences. Isothermal and adiabatic processes. Reversible, irreversible and quasi-static processes. Second law and entropy. Carnot cycle. Maxwell's thermodynamic relations and simple applications. Thermodynamic potentials and their applications. Phase transitions and Clausius-Clapeyron equation. Ideas of ensembles, Maxwell-Boltzmann, Fermi-Dirac and Bose-Einstein distributions.

**Modern Physics:** Inertial frames and Galilean invariance. Postulates of special relativity. Lorentz transformations. Length contraction, time dilation. Relativistic velocity addition theorem, mass energy equivalence. Blackbody radiation, photoelectric effect, Compton effect, Bohr's atomic model, X-rays. Wave-particle duality, Uncertainty principle, the superposition principle, calculation of expectation values, Schrödinger equation and its solution for one, two and three dimensional boxes. Solution of Schrödinger equation for the one dimensional harmonic oscillator. Reflection and transmission at a step potential, Pauli exclusion principle. Structure of atomic nucleus, mass and binding energy. Radioactivity and its applications. Laws of radioactive decay.



JAM 2024

PHYSICS



**Solid State Physics, Devices and Electronics:** Crystal structure, Bravais lattices and basis. Miller indices. X-ray diffraction and Bragg's law; Intrinsic and extrinsic semiconductors, variation of resistivity with temperature. Fermi level. p-n junction diode, I-V characteristics, Zener diode and its applications, BJT: characteristics in CB, CE, CC modes. Single stage amplifier, two stage R-C coupled amplifiers. Simple Oscillators: Barkhausen condition, sinusoidal oscillators. OPAMP and applications: Inverting and non-inverting amplifier. Boolean algebra: Binary number systems; conversion from one system to another system; binary addition and subtraction. Logic Gates AND, OR, NOT, NAND, NOR exclusive OR; Truth tables; combination of gates; de Morgan's theorem.

## Annexure II : Seat Matrix and MEQs for various Academic Programmes

| Admitting Institute | Academic Programme    | Discipline name (Program code)     | JAM Test Paper(s)  | Minimum Educational Qualifications (MEQs)   | General | EWS         | OBC     | SC     | ST     | Total  |
|---------------------|-----------------------|------------------------------------|--------------------|---|---------|-------------|---------|--------|--------|--------|
|                     |                       |                                    |                    | Essential subjects in Bachelor's Degree along with minimum duration   |         |             |         |        |        |        |
| IIT Bhilai          | M.Sc.                 | Chemistry (2801)                   | CY                 | Chemistry for three years/six semesters.  | 8       | 2           | 5       | 3      | 2      | 20     |
|                     |                       | Mathematics & Computing (2802)     | MA                 | Mathematics for at least two years/four semesters.  | 7 + 1*  | 2           | 5 + 1*  | 3      | 1      | 20     |
|                     |                       | Physics (2803)                     | PH                 | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees. | 8       | 2           | 5       | 3      | 1 + 1* | 20     |
| IIT Bhubaneswar     | Joint M.Sc.-<br>Ph.D. | Chemistry (1901)                   | CY                 | Chemistry for three years/six semesters.  | 10      | 2           | 7       | 3 + 1* | 2      | 25     |
|                     |                       | Mathematics (1902)                 | MA                 | Mathematics/ Statistics as a subject for at least two years/four semesters.   | 9 + 1*  | 2 + 1*      | 6       | 3      | 2      | 24     |
|                     |                       | Physics (1903)                     | PH                 | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for Engineering degrees. | 10      | 3           | 7 + 1*  | 4      | 2      | 27     |
|                     |                       | Geology (1904)                     | GG                 | Geology as a subject for three years/ six semesters and any two subjects among Mathematics, Physics and Chemistry.  | 9 + 1*  | 2           | 7       | 4      | 2      | 25     |
|                     |                       | Atmosphere & Ocean Sciences (1905) | GG/ PH/ MA/ MS/ CY | Mathematics and Physics with any one of these subjects among Chemistry, Computer Science, Computer Application, Geology and Statistics.                               | 9 + 1*  | 2           | 6       | 4      | 2      | 24     |
| IIT Bombay          | M.Sc.                 | Applied Geology (1201)             | GG                 | Geology for three years/six semesters and any two subjects among Mathematics, Physics, Chemistry and Biological Science.  | 14 + 1* | 4           | 9 + 1*  | 6      | 3      | 38     |
|                     |                       | Applied Geophysics (1202)          | PH                 | Physics and Mathematics/ Mathematical Physics for two years/four semesters and at least one of them as subject for three years/six semesters.                         | 8       | 2           | 4 + 1*  | 3      | 2      | 20     |
|                     |                       | Statistics (1203)                  | MS                 | No Restrictions.  | 19      | 4 + 1*      | 13      | 6 + 1* | 4      | 48     |
|                     |                       | Biotechnology (1204) @             | BT                 | Any Branch/Subject.   | 13 + 1* | 3 + 1*      | 9       | 5      | 3      | 35     |
|                     |                       | Chemistry (1205)                   | CY                 | Chemistry for three years/six semesters and Mathematics for one year/two semesters.   | 22 + 1* | 5 + 1*      | 14 + 1* | 9      | 4      | 57     |
|                     |                       | Mathematics (1206)                 | MA                 | No Restrictions.  | 15      | 4           | 9 + 1*  | 5 + 1* | 3      | 38     |
|                     |                       | Physics (1207)                     | PH                 | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees. | 23 + 1* | 6           | 16      | 8 + 1* | 4 + 1* | 60     |
|                     |                       | Operations Research (1214)         | MA<br>MS           | No Restrictions.  | 3<br>3  | 1<br>0 + 1* | 2<br>2  | 1<br>1 | 0<br>1 | 7<br>8 |



| Admitting Institute | Academic Programme      | Discipline name (Program code)               | JAM Test Paper(s) | Minimum Educational Qualifications (MEQs)   | General   | EWS    | OBC     | SC     | ST     | Total  |   |
|---------------------|-------------------------|--|-------------------|---|---|--------|---------|--------|--------|--------|---|
|                     |                         |  |                   | Essential subjects in Bachelor's Degree along with minimum duration   |   |        |         |        |        |        |   |
| IIT Bombay          | M.Sc.-Ph.D. Dual Degree | Energy Science and Engineering (1212)        | CY                | B.Sc. or equivalent of minimum three years duration, with any one of Chemistry, Mathematics and Physics for two years/four semesters and any one of the remaining two subjects for at least one year/two semesters.       | 4   | 1      | 2       | 1      | 1      | 9      |   |
|                     |                         |  | MA                |   | 1   | 0      | 2       | 0 + 1* | 0      | 4      |   |
|                     |                         |  | PH                |   | 4   | 1      | 2       | 1      | 1      | 9      |   |
|                     |                         | Environmental Science and Engineering (1213) | BT                |   | Any one of Biology, Biotechnology, Chemistry, Mathematics and Physics for two years/four semesters, and any one of the other four subjects for at least one year/two semesters and Mathematics for at least one semester. | 1      | 1       | 1      | 0      | 0      | 3 |
|                     |                         |  | CY                |   |   | 2      | 0       | 1      | 1      | 0 + 1* | 5 |
|                     |                         |  | PH                |   |   | 1      | 0       | 1      | 0      | 0      | 2 |
|                     |                         |  | MA                |   |   | 1      | 0       | 0      | 1      | 0      | 2 |
| IIT Delhi           | M.Sc.                   | Chemistry (1301)                             | CY                | Chemistry for three years/six semesters.  | 27 + 1*   | 6 + 1* | 17 + 1* | 10     | 5      | 68     |   |
|                     |                         | Mathematics (1302)                           | MA                | B.Sc./B.S. degrees, Mathematics for at least two years/four semesters. No restrictions for engineering degrees.   | 27 + 1*   | 7      | 17 + 1* | 9 + 1* | 5      | 68     |   |
|                     |                         | Physics (1303)                               | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.  | 26 + 2*   | 7      | 17 + 1* | 10     | 4 + 1* | 68     |   |
|                     |                         | Economics (1304)                             | EN                | B.A. /B.Sc. /B.Com. / B.Stat. /B.Math. /B.Tech /B.E. or equivalent with minimum of three years of education after completing higher secondary schooling (10+2) or equivalent.   | 9 + 1*  | 2      | 7       | 3 + 1* | 2      | 25     |   |
| IIT (ISM) Dhanbad   | M.Sc.                   | Chemistry (2601)                             | CY                | Chemistry for three years/six semesters.  | 26 + 1*   | 6      | 17 + 1* | 10     | 5      | 66     |   |
|                     |                         | Mathematics & Computing (2602)               | MA                | Mathematics for at least two years/four semesters.  | 21 + 1*   | 6      | 15      | 7 + 1* | 4      | 55     |   |
|                     |                         | Physics (2603)                               | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.  | 21 + 1*   | 6      | 15      | 8      | 3 + 1* | 55     |   |
|                     | M.Sc. (Tech.)           | Applied Geology (2604)                       | GG                | B.Sc. degree (03 years) with Geology as a subject for three years/six semesters along with Mathematics as one subject, and any one subject out of Physics and Chemistry.  | 26 + 1*   | 6      | 17 + 1* | 10     | 5      | 66     |   |
|                     |                         | Applied Geophysics (2605)                    | PH                | B.Sc. Degree with physics for three years/six semesters. Mathematics with two semesters/one year and any one subject among Chemistry, Electronics, Statistics, Geology, and Computer Science with two semesters/one year. | 22  | 6      | 15      | 7 + 1* | 4      | 55     |   |
| IIT Gandhinagar     | M.Sc.                   | Chemistry (2001)                             | CY                | No Restrictions.  | 15 + 1*   | 3 + 1* | 11      | 5 + 1* | 3      | 40     |   |
|                     |                         | Mathematics (2002)                           | MA                | No Restrictions.  | 17 + 1*   | 5      | 12      | 7      | 3      | 45     |   |
|                     |                         | Physics (2003)                               | PH                | No Restrictions.  | 17 + 1*   | 5      | 12      | 6 + 1* | 3      | 45     |   |

| Admitting Institute | Academic Programme | Discipline name (Program code)              | JAM Test Paper(s) | Minimum Educational Qualifications (MEQs)  | General | EWS    | OBC    | SC     | ST     | Total |
|---------------------|--------------------|---|-------------------|--|---------|--------|--------|--------|--------|-------|
|                     |                    |   |                   | Essential subjects in Bachelor's Degree along with minimum duration  |         |        |        |        |        |       |
| IIT Guwahati        | M.Sc.              | Chemistry (1401)                            | CY                | Chemistry for three years/six semesters.   | 23 + 2* | 6      | 16     | 9      | 3 + 1* | 60    |
|                     |                    | Mathematics & Computing (1402)              | MA                | Mathematics for at least two years/four semesters.   | 11 + 1* | 3      | 7 + 1  | 5      | 2      | 30    |
|                     |                    | Physics (1403)                              | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 22 + 2* | 6      | 16     | 9      | 4 + 1* | 60    |
|                     |                    | Mathematics (1404)                          | MA                | Mathematics for at least two years/four semesters.   | 12      | 2 + 1* | 8      | 4 + 1* | 2      | 30    |
| IIT Hyderabad       | M.Sc.              | Chemistry (2101)                            | CY                | Chemistry for three years/six semesters.   | 16      | 3 + 1* | 11     | 5 + 1* | 3      | 40    |
|                     |                    | Mathematics/ Mathematics & Computing (2102) | MA                | Mathematics for at least two years/four semesters. No restrictions for engineering degrees.  | 11      | 2      | 5 + 1* | 4      | 2      | 25    |
|                     |                    | Physics (2103)                              | PH                | B.Sc./B.S. degree, physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.     | 15 + 1* | 4      | 11     | 6      | 2 + 1* | 40    |
| IIT Indore          | M.Sc.              | Chemistry (2201)                            | CY                | Chemistry for three years/six semesters.   | 12      | 3      | 8 + 1* | 4      | 2      | 30    |
|                     |                    | Physics (2202)                              | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 12      | 2 + 1* | 8 + 1* | 4      | 2      | 30    |
|                     |                    | Mathematics (2203)                          | MA                | Mathematics for at least two years/four semesters.   | 8 + 1*  | 2      | 4      | 2 + 1* | 2      | 20    |
|                     |                    | Biotechnology (2204)                        | BT                | Any Branch/Subject.  | 6 + 1*  | 1      | 4      | 2      | 1      | 15    |
|                     |                    | Astronomy (2205)                            | PH                | B. Sc in Physics / Mathematics / Statistics / Electronics / Computer Science. No restrictions for engineering degrees.   | 6       | 1      | 4      | 3      | 1      | 15    |
| IIT Jammu           | M.Sc.              | Chemistry (3201)                            | CY                | Chemistry for three years/six semesters.   | 8       | 2      | 6      | 2 + 1* | 1      | 20    |
|                     |                    | Physics (3202)                              | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 8       | 2      | 6      | 2 + 1* | 1      | 20    |
| IIT Jodhpur         | M.Sc.              | Chemistry (2401)                            | CY                | Chemistry for three years/six semesters.   | 8       | 2      | 6      | 3      | 1      | 20    |
|                     |                    | Mathematics (2402)                          | MA                | Mathematics for at least two years/four semesters.   | 7       | 2      | 6      | 4      | 1      | 20    |
|                     |                    | Physics (2403)                              | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 8       | 2      | 6      | 3      | 1      | 20    |

| Admitting Institute | Academic Programme               | Discipline name (Program code)                   | JAM Test Paper(s) | Minimum Educational Qualifications (MEQs)   | General | EWS    | OBC     | SC     | ST     | Total |
|---------------------|----------------------------------|--|-------------------|---|---------|--------|---------|--------|--------|-------|
|                     |                                  |  |                   | Essential subjects in Bachelor's Degree along with minimum duration   |         |        |         |        |        |       |
| IIT Jodhpur         | M.Sc.-<br>M.Tech.<br>Dual Degree | Mathematics-Data & Computational Sciences (2404) | MA                | Mathematics for at least two years/four semesters.  | 3 + 1*  | 1      | 2       | 2      | 1      | 10    |
|                     |                                  | Physics and Materials Engineering (2405)         | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees.   | 6       | 1      | 3       | 2      | 1      | 13    |
|                     |                                  | Chemistry and Materials Engineering (2406)       | CY                | B.Sc./B.S. degree with Chemistry for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees.   | 5       | 1      | 4       | 2      | 1      | 13    |
| IIT Kanpur          | M.Sc.                            | Chemistry (1501)                                 | CY                | Chemistry for three years/six semesters.  | 19 + 1* | 5      | 12 + 1* | 7      | 4      | 49    |
|                     |                                  | Mathematics (1502)                               | MA                | No Restrictions.  | 19 + 1* | 5      | 12 + 1* | 7      | 3 + 1* | 49    |
|                     |                                  | Physics (1503)                                   | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees.   | 14 + 1* | 3 + 1* | 10      | 6      | 3      | 38    |
|                     |                                  | Statistics (1504)                                | MS                | No Restrictions.  | 24 + 1* | 6      | 16 + 1* | 8 + 1* | 5      | 62    |
|                     | M.Sc.-Ph.D.<br>Dual Degree       | Physics (1505)                                   | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters.<br>No restrictions for engineering degrees.   | 8       | 2      | 5       | 2 + 1* | 2      | 20    |
| IIT Kharagpur       | Joint M.Sc.-<br>Ph.D.            | Chemistry (1601)                                 | CY                | B.Sc./B.S. degree with at least six Chemistry subjects for six semesters / three years.   | 22 + 1* | 6      | 14 + 1* | 8 + 1* | 4      | 57    |
|                     |                                  | Geology (1602)                                   | GG                | B.Sc./B.S. degree including Geology subjects for 6 semesters / 3 years, and any one of the following combinations.<br>a) 2 Physics subjects + 2 Mathematics subjects.<br>b) 2 Physics subjects + 2 Chemistry subjects.<br>c) 2 Chemistry subjects + 2 Mathematics subjects. | 14 + 1* | 4      | 9 + 1*  | 6      | 3      | 38    |
|                     |                                  | Mathematics (1603)                               | MA                | Mathematics/Statistics subjects for six semesters / three years.  | 15      | 4      | 9 + 1*  | 5 + 1  | 3      | 38    |
|                     |                                  | Physics (1604)                                   | PH                | B.Sc. degree with at least 4 Physics subjects and 2 Mathematics subjects.   | 23 + 1* | 6      | 15 + 1* | 9      | 3 + 1* | 59    |
|                     |                                  | Geophysics (1605)                                | GG                | B.Sc. degree together with either of the following, with minimum number of subjects in respective domains.  | 6       | 2      | 4       | 2      | 0 + 1* | 15    |
|                     |                                  |  | PH                | (i) Geology subjects for 6 semesters or 3 years, and 2 Physics subjects + 2 Mathematics subjects.<br>(ii) Physics subjects for 6 semesters or 3 years, and 2 Mathematics.   | 6       | 2      | 4       | 1 + 1* | 1      | 15    |

| Admitting Institute | Academic Programme                | Discipline name (Program code) | JAM Test Paper(s) | Minimum Educational Qualifications (MEQs)  | General | EWS    | OBC     | SC     | ST     | Total |
|---------------------|-----------------------------------|--------------------------------|-------------------|--|---------|--------|---------|--------|--------|-------|
|                     |                                   |                                |                   | Essential subjects in Bachelor's Degree along with minimum duration  |         |        |         |        |        |       |
| IIT Madras          | M.Sc.                             | Chemistry (1701)               | CY                | B.Sc./B.S. degree with Chemistry for at least six semesters/three years, along with mathematics for two semesters/one year.  | 25 + 2* | 6 + 1* | 17 + 1* | 10     | 5      | 67    |
|                     |                                   | Mathematics (1702)             | MA                | Mathematics for at least two years/four semesters.   | 19 + 1* | 5      | 12 + 1* | 7      | 3 + 1* | 49    |
|                     |                                   | Physics (1703)                 | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.     | 21 + 1* | 5      | 15      | 7 + 1* | 4      | 54    |
| IIT Mandi           | M.Sc.                             | Chemistry (3101)               | CY                | Chemistry for three years/six semesters.   | 12 + 1* | 3      | 7 + 1*  | 5      | 2      | 31    |
|                     |                                   | Applied Mathematics (3102)     | MA                | Mathematics for at least two years/four semesters.   | 11 + 1* | 3      | 8       | 3 + 1* | 3      | 30    |
|                     |                                   | Physics (3103)                 | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.     | 12      | 2 + 1* | 8       | 5      | 1 + 1* | 30    |
|                     | Integrated-Ph.D<br>Physics (3104) | 4 + 1*                         |                   |  | 1       | 3      | 2       | 1      | 12     |       |
| IIT Palakkad        | M.Sc.                             | Chemistry (2901)               | CY                | No Restrictions.   | 8 + 1*  | 3      | 5       | 3      | 1      | 21    |
|                     |                                   | Mathematics (2902)             | MA, MS            | At least four Mathematics courses in Bachelor's degree.  | 8       | 2 + 1* | 5       | 3      | 2      | 21    |
|                     |                                   | Physics (2903)                 | PH                | No Restrictions.   | 7 + 1*  | 3      | 6       | 3      | 1      | 21    |
| IIT Patna           | M.Sc.                             | Chemistry (2501)               | CY                | Chemistry for three years/six semesters.   | 12 + 1* | 3      | 8       | 4      | 2      | 30    |
|                     |                                   | Mathematics (2502)             | MA                | Mathematics for at least two years/four semesters.   | 11 + 1* | 3      | 8       | 5      | 2      | 30    |
|                     |                                   | Physics (2503)                 | PH                | B.Sc./B.S. degree, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.     | 12 + 1* | 3      | 7 + 1*  | 4      | 2      | 30    |
| IIT Roorkee         | M.Sc.                             | Applied Geology (1801)         | GG                | Geology for three years/six semesters and any two subjects among Mathematics, Physics, Chemistry and Biological Science. No restrictions for engineering degrees.  | 8       | 2      | 4 + 1*  | 3      | 1      | 19    |
|                     |                                   | Chemistry (1802)               | CY                | Chemistry for three years/six semesters. No restrictions for engineering degrees.  | 18      | 4      | 11 + 1* | 7      | 2 + 1* | 44    |
|                     |                                   | Economics (1803)               | EN                | B.Sc. (Economics)/B.A. (Economics)/B.Sc. (Statistics)/ BCA and B.Sc./B.A./B.Com. with Mathematics as one of the subjects. No restrictions for engineering degrees. | 13      | 2 + 1* | 9       | 4 + 1  | 3      | 33    |
|                     |                                   | Mathematics (1804)             | MA                | Mathematics for at least two years/four semesters. No restrictions for engineering degrees.  | 15      | 3 + 1* | 10      | 5 + 1* | 3      | 38    |
|                     |                                   | Physics (1805)                 | PH                | B.Sc./B.S. degrees, Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees.    | 12      | 3      | 8 + 1*  | 4      | 1 + 1* | 30    |

| Admitting Institute | Academic Programme | Discipline name (Program code)  | JAM Test Paper(s) | Minimum Educational Qualifications (MEQs)  | General | EWS    | OBC    | SC   | ST     | Total |
|---------------------|--------------------|---------------------------------|-------------------|--|---------|--------|--------|------|--------|-------|
|                     |                    |                                 |                   | Essential subjects in Bachelor's Degree along with minimum duration  |         |        |        |      |        |       |
| IIT Ropar           | M.Sc.              | Chemistry (2302)                | CY                | Chemistry for three years/six semesters.   | 9 + 1*  | 3      | 7      | 3    | 2      | 25    |
|                     |                    | Mathematics (2301)              | MA                | Mathematics for at least two years/four semesters.   | 10      | 3      | 6      | 4    | 1 + 1* | 25    |
|                     |                    | Physics (2303)                  | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 10      | 1 + 1* | 6 + 1* | 4    | 2      | 25    |
| IIT Tirupati        | M.Sc.              | Mathematics & Statistics (3001) | MA                | No Restrictions.   | 6       | 1      | 4      | 3    | 1      | 15    |
|                     |                    |                                 | MS                |  | 2       | 0      | 2      | 0    | 1      | 5     |
|                     |                    | Chemistry (3002)                | CY                | Chemistry for three years/six semesters.   | 8       | 3      | 5      | 2+1* | 1      | 20    |
|                     |                    | Physics (3003)                  | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 7+1*    | 3      | 5      | 3    | 1      | 20    |
| IIT (BHU) Varanasi  | M.Sc.              | Chemistry (2701)                | CY                | Chemistry for three years/six semesters.   | 9 + 1*  | 2      | 6 + 1* | 4    | 2      | 25    |
|                     |                    | Physics (2702)                  | PH                | B.Sc./B.S. degree with Physics for at least two years/four semesters and Mathematics for at least one year/two semesters. No restrictions for engineering degrees. | 10      | 3      | 7      | 3    | 1 + 1* | 25    |

\* Indicates seats reserved for PwD Candidates.

@ The department may revise (a) the curriculum, (b) modes of assessment, and (c) duration of the academic program by taking into consideration the nature and extent of disability of each PwBD student. The Department will seek approval of each such revision by the Senate of the Institute. The Department, and thereby the Institute, reserves the right to implement such duly approved revisions, along with Reasonable Adjustments, specific to each PwBD student.

PwBD – Person with Benchmark Disability.

**Note:** Seat Matrix and MEQs are subject to change. The final Seat Matrix and MEQs will be available in the Admission brochure.

## Annexure III - Code of Conduct

All candidates appearing for the **JAM 2024** must strictly comply with the following Rules and Regulations:

- Candidates appearing for the examination must carry their Admit Card and Original Valid Photo- Identity Proof (as indicated in the application form) to the examination hall.
- The candidate's fingerprint and/or photograph may be captured before the examination. This captured data will be used for verification during admission. Hence, candidates should avoid any coating (e.g., ink, mehendi, henna, or tattoo) on their fingertips and have clean fingers on the examination day.
- Carrying mobile phones (even in the switched-off mode), smart watches, calculators, and other electronic gadgets inside the examination hall is strictly prohibited.
- Carrying any other electronic devices that can be used for communication or for any other purpose, and printed, scanned or hand-written materials, inside the examination hall is strictly prohibited.
- All means of communication (verbal or otherwise) among the candidates inside the examination hall are strictly prohibited.
- Candidates should not tamper the computer and the related hardware provided in the examination hall. Candidates found to have tampered these willfully, will have their candidature cancelled.
- Use of unfair means by a candidate in JAM 2024, whether detected at the time of examination, or at any other stage, will lead to the cancellation of candidature as well as disqualification of the candidate from appearing in JAM in future. In addition, appropriate legal action will be initiated against such candidates.



**Annexure IV - Probable Examination Cities for JAM 2024**

| Zones  | Probable Examination Cities  |
|--|--|
| 1. IISc Bengaluru<br><a href="mailto:jam@iisc.ac.in">jam@iisc.ac.in</a><br>+91 80 2293 2392            | Belagavi (Belgaum), Bengaluru, Bidar, Gulbarga (Kalaburagi), Hassan, Hubballi, Hyderabad, Kannur, Kozhikode, Mangaluru, Mysuru (Mysore), Palakkad, Port Blair, Shimoga, Thrissur, Vatakara         |
| 2. IIT Bombay<br><a href="mailto:jam@iitb.ac.in">jam@iitb.ac.in</a><br>+91 22 2576 7068                | Ahmedabad, Ahmednagar, Akola, Amravati, Aurangabad, Goa, Jalgaon, Kolhapur, Mumbai-Navi Mumbai - Thane, Nagpur, Nanded, Nashik, Pune, Rajkot, Sangli, Satara, Solapur, Surat, Vadodara             |
| 3. IIT Delhi<br><a href="mailto:jam@admin.iitd.ac.in">jam@admin.iitd.ac.in</a><br>+91 11 2659 1749     | Faridabad, Greater NOIDA, Gurugram, Hisar, Indore, Jaipur, Jammu, Jodhpur, Mathura, New Delhi, Srinagar  |
| 4. IIT Guwahati<br><a href="mailto:jam@iitg.ac.in">jam@iitg.ac.in</a><br>+91 361 258 2751              | Agartala, Asansol, Durgapur, Dhanbad, Dibrugarh, Dimapur, Kohima, Guwahati, Imphal, Jorhat, Kalyani, Patna, Shillong, Siliguri   |
| 5. IIT Kanpur<br><a href="mailto:jam@iitk.ac.in">jam@iitk.ac.in</a><br>+91 512 679 7412                | Agra, Aligarh, Bareilly, Bhopal, Gorakhpur, Jabalpur, Kanpur, Lucknow, Prayagraj (Allahabad), Varanasi   |
| 6. IIT Kharagpur<br><a href="mailto:jam@adm.iitkgp.ac.in">jam@adm.iitkgp.ac.in</a><br>+91 3222 282 091 | Bhubaneswar, Bilaspur, Brahmapur (Odisha), Kolaghat, Kolkata, Kharagpur-Midnapore, Raipur, Ranchi, Vijayawada, Visakhapatnam   |
| 7. IIT Madras<br><a href="mailto:jam@iitm.ac.in">jam@iitm.ac.in</a><br>+91 44 2257 8200                | Alappuzha, Chennai, Coimbatore, Ernakulam, Guntur, Karimnagar, Khammam, Kollam, Kottayam, Madurai, Ongole, Puducherry, Salem, Thiruvananthapuram, Tiruchirappalli, Tirunelveli, Tirupati, Warangal |
| 8. IIT Roorkee<br><a href="mailto:jam@iitr.ac.in">jam@iitr.ac.in</a><br>+91 1332 284 531               | Ambala, Dehradun, Ghaziabad, Haldwani, Jalandhar, Kangra, Kurukshetra, Meerut, Mohali-Chandigarh, Moradabad, NOIDA, Patiala, Roorkee, Shimla-Solan   |

**Note:** JAM 2024 Committee may add or drop an examination city or town due to operational constraints – a notification will be made on the JAM 2024 website.

## **Annexure V – Information relevant to Certificates**

### **Authorities Empowered to issue SC / ST / OBC – NCL / EWS Certificates**

- District Magistrate / Additional District Magistrate / Collector / Deputy Collector / Deputy Commissioner / Additional Deputy Commissioner / First Class Stipendiary Magistrate / City Magistrate / Sub-Divisional Magistrate / Taluka Magistrate / Executive Magistrate / Extra Assistant Commissioner.
  - Chief Presidency Magistrate / Additional Chief Presidency Magistrate / Presidency Magistrate.
  - Revenue Officer not below the rank of Tehsildar.
  - Sub-Divisional Officer of the area where the candidate and/or her/his family normally resides.
  - Administrator / Secretary to Administrator / Development Officer (Lakshadweep Islands).
- Certificate issued by any other official will NOT be accepted.

### **Person with Disability (PwD) Category**

Benefits of concessionary fee and reservations would be given **only** to those who have benchmark disability i.e. not less than 40% impairment irrespective of the type of disability. Candidates should submit a certificate issued by Chief Medical Officer / Civil Surgeon / Medical Superintendent of a Government Health Care Institution. The certificate should be preferably in the format given in the Form V or Form VI or Form VII in the Rights of Persons with Disabilities Rules, 2017 available at

[https://upload.indiacode.nic.in/showfile?actid=AC\\_CEN\\_25\\_54\\_00002\\_201649\\_1517807328299&type=rule&filename=Rules\\_notified\\_15.06.pdf](https://upload.indiacode.nic.in/showfile?actid=AC_CEN_25_54_00002_201649_1517807328299&type=rule&filename=Rules_notified_15.06.pdf)

### **Authorities Empowered to issue Certificate of Dyslexia**

A copy of the certificate of Dyslexic condition should be uploaded at the time of online registration. Such certificate of Dyslexia will be obtained from any Dyslexia Association. Some of them are listed below:

- Dyslexia Trust of Kolkata, Divya Jalan, Aruna Bhaskar 3, Dover Park, Kolkata - 700019.
- Dyslexia Association of Andhra Pradesh (DAAP), 3-4-494/1, 1st Floor, Macherla Gastrology Hospital, Reddy College Road, Barkatpura, Hyderabad, Telangana, 500027.
- Madras Dyslexia Association, 94 Park View, 1st Floor, G.N. Chetty Road, T. Nagar, Chennai - 600017.
- Maharashtra Dyslexia Association, 003, Amit Park Bldg, L J Road, Deonar, Mumbai 400088.
- The Dyslexia Association of India, MZ-47, The Center Stage Mall, Plot No 01, Block L, Sector 18, Noida, 201303.

## **Annexure VI - Proforma for OBC-NCL (Non-Creamy Layer) Certificate**

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

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

Shri/Smt./Kumari \_\_\_\_\_ 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 and again further modified vide OM No. 36033/1/2013-Estt (Res) dated 13/09/2017.

Dated:

District Magistrate /  
Deputy Commissioner /  
Any other Competent Authority

Seal

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\* The authority issuing the certificate may have to mention the details of Resolution (Number and Date) of Government of India, in which the caste of the candidate is mentioned as OBC.

### **NOTE:**

- (a) The term "Ordinarily" 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:
- District Magistrate/ Additional Magistrate/ Collector/ Deputy Commissioner/ Additional Deputy Commissioner / Deputy Collector/ 1st Class Stipendiary Magistrate/ Sub-Divisional Magistrate/ Taluka Magistrate/Executive Magistrate/Extra Assistant Commissioner (not below the rank of 1st Class Stipendiary Magistrate)
  - Chief Presidency Magistrate/Additional Chief Presidency Magistrate/Presidency Magistrate
  - Revenue Officer not below the rank of Tehsildar and
  - Sub-Divisional Officer of the area where the candidate and/or his/her family resides

**The date of issue of OBC (NCL) certificate should be on or after April 1, 2023**

# **Annexure VII - Proforma for Economically Weaker Sections (EWS) Certificate**

**(INCOME & ASSETS CERTIFICATE TO BE PRODUCED BY ECONOMICALLY WEAKER SECTIONS)**

Government of \_\_\_\_\_  
(Name & Address of the authority issuing the certificate)

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

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

VALID FOR THE YEAR \_\_\_\_\_

This is to certify that Shri/Smt./Kumari \_\_\_\_\_ son/ daughter/wife of \_\_\_\_\_ permanent resident of \_\_\_\_\_, Village/Street \_\_\_\_\_ Post Office \_\_\_\_\_ District \_\_\_\_\_ in the State/Union Territory \_\_\_\_\_ Pin Code \_\_\_\_\_ whose photograph is attested below belongs to Economically Weaker Sections, since the gross annual income\* of his/her family\*\* is below Rs. 8 lakh (Rupees Eight Lakh only) for the financial year \_\_\_\_\_ His/her family does not own or possess any of the following assets\*\*\*:

- I. 5 acres of agricultural land and above;
- II. Residential flat of 1000 sq. ft. and above;
- III. Residential plot of 100 sq. yards and above in notified municipalities;
- IV. Residential plot of 200 sq. yards and above in. areas other than the notified municipalities.

Shri/Smt./Kumari \_\_\_\_\_ belongs to the \_\_\_\_\_ caste which is not recognized as a Scheduled Caste, Scheduled Tribe and Other Backward Classes (Central List)

**Recent  
Passport size  
attested  
photograph of  
the applicant**

Signature with seal of office \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

**\*Note 1:** Income covered all sources i.e. salary, agriculture, business, profession, etc.

**\*\*Note 2:** The term "Family" for this purpose include the person, who seeks benefit of reservation, his/her parents and siblings below the age of 18 years as also his/her spouse and children below the age of 18 years.

**\*\*\*Note 3:** The property held by a "Family" in different locations or different places/cities have been clubbed while applying the land or property holding test to determine EWS status.

The authorities competent to issue EWS Certificates are indicated below:

- (i) District Magistrate/ Additional Magistrate/ Collector/ Deputy Commissioner/ Additional Deputy Commissioner/ Deputy Collector/ 1st Class Stipendiary Magistrate/ Sub-Divisional Magistrate/ Taluka Magistrate/Executive Magistrate/Extra Assistant Commissioner (not below the rank of 1st Class Stipendiary Magistrate)
- (ii) Chief Presidency Magistrate/Additional Chief Presidency Magistrate/Presidency Magistrate
- (iii) Revenue Officer not below the rank of Tehsildar
- (iv) Sub-Divisional Officer of the area where the candidate and/or his/her family resides.

**The date of issue of EWS certificate should be on or after April 1, 2023**

## Important Note

- Verification of Minimum Educational Qualifications (MEQs) and the Eligibility Requirements (ERs) for admission is the prerogative of the Admitting Institute(s) only and the Organizing Institute will not respond to any queries in this regard.
- The offer of admission to a candidate will be provisional, subject to the fulfillment of all the requirements by the dates specified.
- Candidates should note that being in the Merit List of any test paper neither guarantees nor provides any automatic entitlement for admission. Admissions shall be made in the order of merit and depending on the availability of seats at the Admitting Institutes.

### Legal Policy:

In all matters concerning JAM 2024, the decision of the Organizing Institute, JAM 2024 will be final and binding on all the applicants.

Although JAM 2024 is held at different centres across the country, the Organizing Institute, has the overall responsibility of conducting JAM 2024. In case of any claims or disputes related to JAM 2024, the Madras High Court (Chennai, Tamil Nadu) shall have the exclusive jurisdiction to entertain and settle any such disputes and claims.

Information contained in this brochure is correct as on **Aug 07, 2023**. There may be changes in future due to unavoidable reasons. As and when any change is made, it will be notified on the following website.

**JAM 2024 website:** <https://jam.iitm.ac.in>

### Privacy Policy:

The Privacy Policy governs the use of this website.

JAM Online Application Processing System (JOAPS) is committed to protect your privacy and works towards offering you a useful, safe online experience.

JAM treats your personal information or your use of the service as private and confidential and does not check, edit or reveal it to any third parties except where it believes in good faith, such action is necessary to comply with the applicable legal and regulatory processes or to protect and defend the rights of other users or to enforce the terms of service which are binding on all the users of the site.

Except where specifically agreed upon or necessary for operational or regulatory reasons, JAM will not send you any unsolicited information via e-mail.

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**Note:** Applicants are requested to periodically check the website ( <https://jam.iitm.ac.in> ) for the status of the application or/ and any information. They should also check the messages sent to their registered email id and mobile number.





# JAM 2024

For more details, information brochure, and Online application please visit website

<https://jam.iitm.ac.in>

## Contact Us

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