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BITSAT-2025

A computer based online test for admissions to Integrated First Degree programmes of BITS Pilani at Pilani Campus, K K Birla Goa Campus, and Hyderabad Campus

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BITS Pilani

Pilani | Dubai | Goa | Hyderabad | Mumbai

innovate achieve lead

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BITSAT-2025

Brochure

A Computer Based Online Test for Admission to Integrated First Degree programmes of BITS Pilani for the Academic Year 2025-26

The Birla Institute of Technology and Science (BITS) Pilani, recognized as an *Institution of Eminence* by the Ministry of Education, Government of India, is India's leading Institute of Higher Education and a *Deemed to be University*, with an illustrious legacy, modern campuses and eminent alumni in leadership positions across the world. The Institute's commitment to excellence, adherence to merit, transparency, innovation, and enterprise have characterized its steady march to eminence. It is the only Private University in India which DST, Government of India has identified to establish a Technology Innovation Hub under the Bio-CPS vertical with a grant of Rs 125 Crore.

Admissions to all the Integrated First Degree (FD) programmes of BITS Pilani for its Campuses at Pilani, K K Birla Goa, and Hyderabad for the academic year 2025-26 will be made on the basis of a Computer based Online Test conducted by BITS Pilani. This test will be referred to as 'BITS Admission Test – 2025', in short as **BITSAT-2025** hereafter in this document.

1. Integrated FD programmes to which admissions will be made on the basis of BITSAT-2025:

(i) at BITS Pilani, Pilani Campus:

B.E.: Chemical, Civil, Computer Science, Electrical and Electronics, Electronics and Instrumentation, Electronics and Communication, Mathematics and Computing, Mechanical, Manufacturing Engg., Environmental and Sustainability Engg..

B. Pharm.

M.Sc.*: Biological Sciences, Chemistry, Economics, Mathematics, Physics, Semiconductor and Nanoscience

M.Sc.: General Studies.

(ii) at BITS Pilani, K K Birla Goa Campus:

B.E.: Chemical, Computer Science, Electronics and Communication, Electrical and Electronics, Electronics and Instrumentation, Electronics and Computer Engg., Mathematics and Computing, Mechanical, Environmental and Sustainability Engg. and

M.Sc.*: Biological Sciences, Chemistry, Economics, Mathematics, Physics, Semiconductor and Nanoscience.

(iii) at BITS Pilani, Hyderabad Campus:

B.E.: Chemical, Civil, Computer Science, Electronics and Communication, Electrical and Electronics, Electronics and Instrumentation, Mathematics and Computing, Mechanical, Environmental and Sustainability Engg..

B. Pharm.

M.Sc.*: Biological Sciences, Chemistry, Economics, Mathematics, Physics, Semiconductor and Nanoscience.

* The candidates who join in M.Sc. programme are eligible to apply for dual degree in Engineering at BITS Pilani after completion of first year. This assignment is made by competition on their performance at BITS at the end of the first year. (For more details, refer to Admissions Modality available on the BITS admissions website: www.bitsadmission.com)

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Candidates appearing for the BITSAT-2025, based on their BITSAT score, will not only have the opportunity to apply for Admissions in First Degree (B.E. M.Sc., and B.Pharm.) Programmes offered for the entire duration of the programmes exclusively by the Indian Campuses of BITS Pilani but also will have the opportunity to apply for a few selected 2+2 Joint Collaborative Programmes offered by BITS Pilani and a few reputed International Universities in Australia and USA (e.g., RMIT University, Melbourne; Iowa State University, Ames, USA; University at Buffalo, New York, USA; Rensselaer Polytechnic Institute, New York, USA, etc.). These 2+2 Joint-Collaborative Programmes initiatives will allow students to spend their initial two years at the BITS Pilani campus in India, benefiting from cutting-edge facilities and esteemed faculty resources of BITS Pilani. Subsequently, students admitted under Joint-Collaborative Programmes will spend the remaining two years at their chosen foreign university, providing access to a world-class international education. More details about the Joint-Collaborative Programmes initiatives shall be available on the website in due course of time.

2. Eligibility Criteria:

(i) For B.E. (Except B.E. Environmental and Sustainability Engg.), and M.Sc. Programmes

- Candidates must have completed their 12th-grade examination under the 10+2 system from a recognized Central or State board or an equivalent qualification.
- A minimum of five subjects is required, including Physics, Chemistry, Mathematics, one Language, and any additional subject beyond these four.
- Candidates must secure:
  - An aggregate of 75% marks in Physics, Chemistry, and Mathematics, and
  - At least 60% marks in each of Physics, Chemistry, and Mathematics individually.
- Both theory and practical components must be considered while calculating percentages.

(ii) For B.Pharm., and B.E. Environmental and Sustainability Engg. Programme*

- Candidates must have completed their 12th-grade examination under the 10+2 system from a recognized Central or State board or an equivalent qualification.
- A minimum of five subjects is required, including Physics, Chemistry, Biology/Mathematics, one Language, and any additional subject beyond these four.
- Candidates must secure:
  - An aggregate of 75% marks in Physics, Chemistry, and Biology/Mathematics, and
  - At least 60% marks in each of Physics, Chemistry, and Biology/Mathematics individually.
- Both theory and practical components must be considered while calculating percentages.

*Students entering through the PCB stream at the 10+2 level are expected to possess mathematics proficiency at the high school (Class 10) level.

Admissions to all the programmes are subject to the conditions given below:

Students who are appearing for the 12th examination in 2025 or who have passed the 12th Examination in 2024 are eligible to appear in the BITSAT-2025. If a candidate has taken more than one attempt in the 12th class or its equivalent, only his/her latest performance is considered. Additionally, the candidates must meet the following conditions:

- Students must appear for their 12th-grade examination for the first time in 2024 or 2025, with Physics, Chemistry, and Mathematics/Biology as compulsory subjects, provided their results are available by the submission deadline (June 30, 2025), as specified on the admissions portal.

OR

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- Students who completed their 12th-grade examination in 2024 may reappear for improvement exams in specific subject(s). The results of these improvements must be available by the submission deadline (June 30, 2025), as specified on the admissions portal.

OR

- Students who retake the full set of 12th-grade subjects (in 2024/2025) are also eligible, provided their results are available by the submission deadline (June 30, 2025), as specified on the admissions portal.

In all the above cases, the candidates' "Pass" status must remain unchanged after taking the improvement exam or repeating Grade 12.

Important Notes

1. **Academic Requirements:**

Candidates must have passed Physics, Chemistry, and Mathematics/Biology (PCM/PCB) from a recognized Central or State board. The list of recognized boards is provided by the Council of Boards of School Education in India, COBSE. (*https://www.cobse.org.in/recognized-educational-boards-list/*)

2. **Eligibility for CAIE and IB Board Students:**

Candidates from the Cambridge Assessment International Education (CAIE) board must have completed the required subjects at the A Level. Similarly, students from the International Baccalaureate (IB) board must have completed the required subjects at the Higher Level to satisfy the eligibility criteria.

3. **Eligibility for M.Sc. Students for Dual Degree:**

The candidates who join in M.Sc programme are eligible to apply for Dual Degree in Engineering at BITS Pilani after completion of first year. This assignment is made by competition on their performance at BITS at the end of the first year.

4. **Eligibility for 2+2 Dual Degree under International Collaborative Programmes:**

Candidates appearing for the BITSAT-2025, based on their BITSAT score, will not only have the opportunity to apply for Admissions in First Degree (e.g., B.E. M.Sc., and B. Pharm.) Programmes offered for the entire duration of the programmes exclusively by the Indian STEM Campuses of BITS Pilani, but also will have the opportunity to apply for a few selected 2+2 dual degree international collaborative programmes offered by BITS Pilani and a few reputed International Universities in Australia and USA (e.g., RMIT University Melbourne; Iowa State University, Ames, USA; University at Buffalo, New York, USA). These 2+2 dual degree international collaborative programmes initiatives will allow students normally to spend their initial two years at the BITS Pilani campus in India, benefiting from cutting-edge facilities and esteemed faculty resources of BITS Pilani. Subsequently, students admitted under this scheme will spend the remaining two years at their chosen foreign university, providing access to a world-class international education. More details about the dual degree collaborative programmes initiatives is available on the website, www.bitsadmission.com.

5. **Current Enrollment Restriction:**

Students currently enrolled in any programme at a BITS campus are not eligible to appear for BITSAT-2025. Students who have passed the 12th examination in 2023 or earlier are not eligible to appear for BITSAT-2025.

Admissions will be made purely on merit. The merit position of the candidate for admission will be based on the score obtained by the candidate in the BITSAT-2025. However, their eligibility for admission is subject

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to fulfilling the requirement of minimum marks in the 12th examination, as mentioned above.

Direct Admission to Board Toppers: In the past, admission process of the Institute always ensured guaranteed admission to all the students who obtained first ranks in their respective board examinations. This has given a very vital input of highly meritorious students from all over India. First rank students of State and Central boards in India for the year 2025 will be given direct admission to the programme of their choice, irrespective of their BITSAT-2025 score as per the eligibility criteria. The detailed eligibility criteria, application procedure, and prescribed application form will be available tentatively by third week of June, 2025 at **www.bitsadmission.com**

3. Details of BITSAT-2025:

'Computer Based Online test' means the candidate sits in front of a computer and the questions are presented on the computer monitor and the candidate answers the questions on the computer by using keyboard or mouse. Each computer is connected to a server, which prepares the question set and delivers it to the candidate on the computer. This is unlike the traditional paper-pencil based test, which is generally offered on a single day to all candidates. ***Salient features of BITSAT-2025 are given below:***

- A candidate may appear a maximum of two times in BITSAT-2025.
- The examination will be organized in two sets of dates, BITSAT Session-1 and BITSAT Session-2, separated by a gap of a few weeks. The candidate can choose the Center, the Day, and slot of his/her convenience to take the test, as described later in this document.
- A candidate may opt to appear twice, even at the time of the first application. Such a candidate will then choose one slot from the first set of dates and another from the second.
- A candidate may opt for 'Session-1 or BOTH'.
- A candidate may also choose to appear the second time after the first appearance. To facilitate this process, there will be a period during which candidates who have appeared during Session-1 but had not originally exercised the option to appear twice, will be allowed to apply to appear a second time.
- Those who did not apply/appear in Session-1 can also apply to appear in Session-2 during the second application window as mentioned in 'Important dates and deadlines' below.
- The application window will reopen for Session-2 after the first date of Session-1 of BITSAT.
- A candidate who chooses to appear twice will have to pay a sum of Rs. 5500 (for a male candidate) and Rs. 4500 (for a female candidate), Rs. 4500 (for a transgender candidate).
- A candidate who opts to appear once (Session-1 or Session-2), will pay a fee of Rs. 3500 (for a male candidate) Rs. 3000 (for a female candidate), and Rs. 3000 (for a transgender candidate).
- If a candidate who opts to appear to Session-1 only, chooses then to apply separately to appear a second time (Session-2), then such candidate will have to pay an additional sum of Rs. 2000 (for a male candidate), Rs. 1500 (for a female candidate), and Rs. 1500 (for a transgender candidate).
- If a candidate chooses Dubai as a test center for either Session-1 or Session-2, then the application fee for male/female/transgender candidates will be Rs. 7150 (in INR). However, if the candidate wants to appear for both the sessions then the prescribed fee will be Rs. 9150. If a candidate who originally opts to appear once (Session-1) at Dubai Center and then apply to appear a second time (Session-2), then such candidate will have to pay an additional sum of Rs. 2000 (in INR).
- The application fee is non-refundable and non-transferrable.
- For a candidate who has appeared twice in BITSAT-2025, and then seeks admission to any of the First Degree programmes in BITS Pilani, the higher of the two scores will be considered for admission.

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BITSAT-2025 Test Format:

Each session of BITSAT-2025 will be of 3 hours duration (without break), comprising the following 4 parts:

Part I:	Physics
Part II:	Chemistry
Part III:	(a) English Proficiency and (b) Logical Reasoning
Part IV:	Mathematics or Biology (For B.Pharm. candidates)

All questions are of objective type (multiple choice questions); each question with a choice of four answers, only one being correct choice. Each correct answer fetches 3 marks, while each incorrect answer has a penalty of 1 mark (-1 mark). No marks are awarded for questions not attempted. While the candidate can skip a question, the computer will not allow the candidate to choose more than one option as the correct answer.

There will be 130 questions in all. The number of questions in each part is as follows:

Part	Subject	No of Questions
Part I	Physics	30
Part II	Chemistry	30
Part III	(a) English Proficiency	10
	(b) Logical Reasoning	20
Part IV	Mathematics/Biology (For B. Pharm)	40
	Total	**130**

There is no time limit for individual parts of the test. The candidate can go back and change any of his/her answers among the 130 questions.

If a candidate answers all the 130 questions (without skipping any question), the candidate will have an option of attempting 12 (twelve) extra questions, if there is still time left. These extra questions will be from Physics, Chemistry, Mathematics/ Biology and Logical Reasoning only; three questions from each of them. Further, once the candidate has opted for extra questions, he/she cannot go back for correction of any of the earlier answered 130 questions.

The questions are so designed that a good student will be able to answer 130 questions in 180 minutes. The extra questions (a maximum of 12) will give a chance to highly meritorious candidates to score higher. However, candidates should keep in mind the fact that there is **negative marking** for wrong answers and any attempt to answer the questions by pure guessing of the answers is not likely to have any advantage, but may result in a reduction in the total score.

The questions will be selected at random from a large question bank. Different candidates will get different question sets. An expert committee will ensure that the question sets are of comparable difficulty level, content, question type etc. In this matter, the decision of the expert committee will be final and binding on the candidate.

All the questions and instructions of the test will be in English only. Candidates should bring a pen for the purpose of rough work, signing etc. A scratch pad for rough work will be provided. Calculators and logarithmic tables are **not allowed** in the test centers. Candidates are not allowed to bring any other personal belongings such as mobiles.

Each candidate who registers for BITSAT-2025 will be instructed to download a 'Hall Ticket'. Candidates with the hall ticket only will be allowed inside the Test centers. All centers are closely monitored for security reasons and candidates' identity and activities will be recorded using web cameras and/or closed circuit TV cameras fitted in the test centers. Candidate's finger print and photograph will be taken at the time of the

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test (BITSAT-2025) and will be matched at the time of admission at particular BITS campus. Anyone violating the rules of the test center will not be allowed to continue with the test and will automatically be disqualified.

Syllabus:

The BITSAT-2025 test will be conducted on the basis of NCERT syllabus for the 11th and 12th class. The detailed syllabus is given in the Annexure. Candidates may refer to the NCERT textbooks for the contents. A sample test demonstrating the features of BITSAT-2025 will be made available to the registered candidates at the BITS admission website on which he/she can practice as many times as desired.

4. BITSAT Score Report:

At the completion of the test, the computer will announce the result to the candidate in terms of the number of total correct answers and wrong answers, with the score. After completion of the test, the candidate will logout of the test only after entering the scored marks in the test window. The candidate cannot logout without entering the correct scored marks in the test window. This activity confirms that the student has checked his/her marks before logging out of the test window. The candidate can also **check** the score report at the BITS admission website after a few days of the test date. The candidate can also take a **printout** of the score report for any further usage.

5. Merit List for Admission:

As explained earlier, a candidate who appears in the first session or both the sessions of BITSAT-2025 is eligible for admission only if he/she gets the required minimum marks in the Physics, Chemistry and Mathematics subjects of 12th examination as per the eligibility criteria described already.

All candidates who appeared in the first or second session or both the sessions of BITSAT-2025 and are interested in admission will be required to submit Admission Application Form with 12th marks and preferences to different degree programmes offered at Pilani, K K Birla Goa and Hyderabad campuses, starting from 1st June to 30th June, 2025 (tentative). Further details about iteration results and additional iterations will be announced on the admission website www.bitsadmission.com.

The merit position of such **eligible candidates (i.e., those who have appeared in BITSAT-2025 and who have submitted the application for admission in the prescribed form with the 12th marks, preferences and the required fees)** will be prepared on the basis of their scores in BITSAT-2025.

When the score of two candidates are the same, first their scores obtained in Mathematics / Biology (For B. Pharm.) in BITSAT-2025 will be considered for separating them. If the tie still exists, then their scores in Physics in BITSAT-2025 will be considered for separating them. If the tie exists even further, it is eliminated using their scores in Chemistry. Further, their PCM/PCB (for B.Pharm.) total marks in the 12th examination will be considered for their separation. Finally, the tie is eliminated preferring the female candidate and the oldest application is considered first, in case of further tie.

6. Test Centers for BITSAT-2025:

In order to facilitate a large number of students all over India to participate in BITSAT-2025, **apart from Pilani, K K Birla Goa and Hyderabad** campuses of BITS where it is expected that a large number of students will take the test, the Institute is also planning to offer the tests at dedicated **Test Centers** in several other cities.

Test Centers for BITSAT-2025 (Session-1 and Session-2)*

Sl#	BITSAT City	State	Sl#	BITSAT City	State
1	Agartala	Tripura	38	Kochi	Kerala
2	Agra	Uttar Pradesh	39	Kolhapur	Maharashtra
3	Ahmedabad	Gujarat	40	Kolkata	West Bengal

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4	Ajmer	Rajasthan	41	Kota	Rajasthan
5	Allahabad	Uttar Pradesh	42	Lucknow	Uttar Pradesh
6	Anantapur	Andhra Pradesh	43	Madgaon	Goa
7	Aurangabad	Maharashtra	44	Madurai	Tamil Nadu
8	Bangalore (Bengaluru)	Karnataka	45	Mangalore	Karnataka
9	Bareilly	Uttar Pradesh	46	Mehbubnagar	Telangana
10	Bhopal	Madhya Pradesh	47	Mohali	Punjab
11	Bhubaneswar	Odisha	48	Mumbai	Maharashtra
12	Chandigarh	Chandigarh	49	Nagpur	Maharashtra
13	Chennai	Tamil Nadu	50	Nasik	Maharashtra
14	Coimbatore	Tamil Nadu	51	Nizamabad	Telangana
15	Delhi	Delhi	52	Noida	Uttar Pradesh
16	Dhanbad	Jharkhand	53	Panaji	Goa
17	Dibrugarh	Assam	54	Patna	Bihar
18	Dubai Campus of BITS	Dubai, UAE	55	Pilani Campus of BITS	Rajasthan
19	Durgapur	West Bengal	56	Puducherry	Tamil Nadu
20	Ghaziabad	Uttar Pradesh	57	Pune	Maharashtra
21	K K Birla Goa Campus of BITS	Goa	58	Raipur	Chhattisgarh
22	Gorakhpur	Uttar Pradesh	59	Rajahmundry	Andhra Pradesh
23	Gulbarga	Karnataka	60	Rajkot	Gujarat
24	Gurgaon (Gurugram)	Haryana	61	Ranchi	Jharkhand
25	Guwahati	Assam	62	Roorkee	Uttarakhand
26	Gwalior	Madhya Pradesh	63	Sambalpur	Odisha
27	Hyderabad Campus of BITS	Telangana	64	Shimla	Himachal Pradesh
28	Hyderabad City	Telangana	65	Siliguri	West Bengal
29	Indore	Madhya Pradesh	66	Surat	Gujarat
30	Jabalpur	Madhya Pradesh	67	Thiruvananthapuram	Kerala
31	Jaipur	Rajasthan	68	Tiruchirapalli	Tamil Nadu
32	Jalandhar	Punjab	69	Tirupati	Andhra Pradesh
33	Jammu	Jammu and Kashmir	70	Udaipur	Rajasthan
34	Jamshedpur	Jharkhand	71	Vadodara	Gujarat
35	Jodhpur	Rajasthan	72	Vijayawada	Andhra Pradesh
36	Kanpur	Uttar Pradesh	73	Visakhapatnam	Andhra Pradesh
37	Kathmandu, Nepal	Kathmandu (Nepal)	74	Warangal	Telangana

*This is a tentative list of centers for Session-1 and Session-2. The list will be finalized based on the number of applications received.

Centers within India: The candidate will be asked to give three preferences and will be allotted one out of these three. Candidates applying for Kathmandu as a center can give two more center options in India.

If a candidate chooses Dubai as a center, he/she will not be asked for any other center preference and will be allotted Dubai center only as per the preference.

The final list of test centers in India and the operating days at each center in India and Dubai will depend on the number of applicants and their preferences and will be announced only after all the applications are received and candidates will be informed of the same through BITS admission website so that the candidates can choose their date and slot for the test as per their convenience and availability of slots in any of these centers. If the candidate does not book the test slot and date during the mentioned period then the system automatically allocates the test date and slot as per the preferences and available dates and slots.

7. Important dates and deadlines# (Tentative)

Start of BITSAT-2025 Application	20th January, 2025

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Deadline to apply online for BITSAT-2025 for Session-1 or Both the Sessions	18th April 2025
Revision/editing (online) in the application form by candidates	29th to 01st May 2025
Test center allotment and announcement to candidates	13th May 2025
Candidates to reserve Test date and slot$	13th to 16th May 2025
Candidates to download Hall tickets with instructions (for session-1)	23rd May, 2025 to till the exam date
BITSAT-2025 Online Test Session-1*	26th to 30th May, 2025
The application window to apply for BITSAT-2025 Session-2 only	26th May to 10th June, 2025
Revision/editing (online) in the application form by candidates	13th to 14th June, 2025
Test center allotment and announcement to candidates	16th June, 2025
Candidates to reserve Test date and slot$	16th to 17th June, 2025
Candidates to download the Hall tickets with instructions	20th June, 2025 to till the exam date
BITSAT-2025 Online Test Session-2*	22nd to 26th June, 2025
Apply for admission with 12th Marks and Preferences of Programmes	1st to 30th June, 2025
Editing of Marks/Preferences in Application form	03rd to 05th July, 2025
Admit list and Waitlist announcement after Iteration-I.	09th July, 2025
Deadline for accepting the offer along with payment of fee/advance fees	14th July, 2025

#Please note that these dates are tentative and might get changed if the situation warrants it. However, changes in dates (if any) shall be notified through the website well in advance. All information and communications regarding BITSAT-2025 and admission to BITS shall be made available to the candidates on the BITS admission website www.bitsadmission.com. Candidates are advised to check this website regularly for all related information on BITSAT and on admissions to BITS.

** Dates and No. of days may vary from center to center (These dates are tentative).*

$ If the candidate does not book the test slot and date during the mentioned period then the system automatically allocates the test date and slot as per the preferences and available dates and slots.

8. How to apply for writing BITSAT-2025?

- Interested candidates should register their names for BITSAT-2025 by applying in the prescribed application form online. A candidate has to complete the application form online at ***http://www.bitsadmission.com*** and pay the prescribed fees. Also, take the printout of the filled-in form for your future reference**.**
- BITSAT will be conducted in two sessions, the prescribed fee for BITSAT-2025 for a candidate who chooses to appear twice will have to pay a sum of Rs. 5500 (for a male candidate) and Rs. 4500 (for a female candidate) and Rs. 4500 (for a transgender candidate).
- A candidate who originally opts to appear once (Session-1), will pay a fee of Rs. 3500 (for a male candidate) and Rs. 3000 (for a female candidate) and Rs. 3000 (for a transgender candidate). If such a candidate chooses then to apply to appear a second time (Session-2), then he/she will have to pay an additional sum of Rs. 2000 (for a male candidate) and Rs. 1500 (for a female candidate) and Rs. 1500 (for a transgender candidate). If a candidate opts to appear only for Session-2, will pay a fee of Rs. 3500 (for a male candidate) and Rs. 3000 (for a female candidate) and Rs. 3000 (for a transgender

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candidate).

- The application fee is non-refundable and non-transferrable.

If a candidate chooses Dubai as a test center for either Session-1 or Session-2, then the application fee for both male and female candidates will be Rs. 7150 (in INR). However, if the candidate wants to appear for both the sessions then the prescribed fee will be Rs. 9150. If a candidate who originally opts to appear once (Session-1) at Dubai Center and then apply to appear a second time (Session-2), then he/she will have to pay an additional sum of Rs. 2000 (in INR).

Details for payment of fees are available at the admission website while applying online.

9. Procedure to Apply for admission in BITS:

In addition to applying and appearing for BITSAT-2025, candidates have to also apply for admission to BITS giving details of their 12th marks and preferences to different degree programmes offered at three Indian campuses of BITS. The prescribed application form for admission, the detailed application procedure, details of academic flexibilities such as Dual Degree, Transfer, etc.; admission modality, and the final list of degree programmes offered will be made available at the BITS admission website, tentatively in June 2025. The completed application form with the details of their 12th marks and preferences to different degree programmes along with the required application fee has to be submitted online at the BITS admission website **during 01st to 30th June, 2025 (tentative).**

10. Board codes

The codes for the name of the Board from which you have passed or appearing in the 12th examination are as follows which should be used while filling application form:

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Name of Board	Code
Central Board of Secondary Education - All India Senior School Certificate Examination	CBAT
Council for the Indian School Certificate Examination - Indian School Certificate (Year-12) Examination	ISCT
Board of Intermediate Education, Andhra Pradesh - Intermediate Examination	APBT
Assam Higher Secondary Education Council - Higher Secondary (+2) Examination	ASBT
Bihar Intermediate Council, Bihar Intermediate Examination	BICT
Board of Secondary Education, Chhattisgarh - Higher Secondary School Certificate Examination	CGBT
Goa Board of Secondary and Higher Secondary Education - Higher Secondary School Certificate Examination	GDBT
Gujarat Secondary Education Board, Gujarat -Higher Secondary Certificate Examination (10+2Pattern)	GJBT
Board of School Education, Haryana - Senior Secondary Certificate Examination	HRBT
Himachal Pradesh Board of School Education - Senior Secondary (+2) examination	HPBT
The Jammu & Kashmir State Board of School Education - Higher Secondary Part II Examination, Jammu/Kashmir Region	JKBW
Jharkhand Intermediate Council, Jharkhand Intermediate Examination	JHCT
Board of Pre-University Examination, Karnataka - Second Year Pre-University Examination	KART
Board of Higher Secondary Examination, Kerala – Higher Secondary Examination	KERT
Board of Secondary Education, Madhya Pradesh - Higher Secondary School CertificateExamination (10+2)	MPBT
Maharashtra State Board of Secondary and Higher Secondary Education - Higher Secondary Certificate Examination	MSBT
Council of Secondary Education, Manipur – Higher Secondary Examination	CHMT
Meghalaya Board of School Education - Higher Secondary School Leaving Certificate Examination	MEGT
Mizoram Board of School Education – Higher Secondary School Leaving CertificateExamination	MZBT

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Nagaland Board of School Education - Higher Secondary School Leaving CertificateExamination	NAGT
Council of Higher Secondary Education, Odisha - Higher Secondary Examination	CHOT
Punjab School Education Board - Senior Secondary Certificate Examination (Part II)	PNBT
Board of Secondary Education, Rajasthan - Senior Secondary Examination	RJBT
Board of Higher Secondary Examination, Tamil Nadu - Higher Secondary Exam.	TNBT
Board of Intermediate Education, Telangana- Intermediate Examination.	TSBT
Tripura Board of Secondary Education - Higher Secondary (+2 Stage) Examination	TRBT
Board of Intermediate Examination, Uttaranchal - Intermediate Examination	UABT
Board of Intermediate Examination, Uttar Pradesh - Intermediate Examination	UPBT
West Bengal Council of Higher Secondary Examination - Higher Secondary Examination	WBBT
Foreign Qualifications	FORW
Any Other Board/ University (not covered above)	AOBW

11. SCHOLARSHIPS

A large number of scholarships, fellowships and other financial assistance are available to the students of the Institute such as Institute's own merit or merit-cum-need awards for students. About 30% of the students receive some form of financial assistance or other even before admissions. For continuance of scholarships, scholarship holders are required to maintain good scholastic standing and good conduct.

a) For FD students: Every year about 25% of students admitted to First Degree Programmes get semester tuition fee waivers in the range between 10% to 100% in the form of either merit or merit-cum need scholarships as tabulated below:

Under Institute's own merit awards scheme	**Amount of scholarship**
Top 2% Students	100% of total tuition fee
The next top 1% Students	50% of total tuition fee
Under Institute's own merit-cum-need awards scheme	**Amount of scholarship**
Top 5% Students	100% of total tuition fee
The next top 2% Students	50% of total tuition fee
The next top 5% Students	25% of total tuition fee
The next 10% Students	10% of total tuition fee

Note: There will be no waiver of admission fee.

b) All awards are made for one semester only and their continuance in the subsequent semesters(s) will depend on the candidate's performance in the Institute and his/her needs

Important Notes:

i. The tests are generated from a large question bank and different candidates will get different question sets. An expert committee will ensure that the question sets are of comparable difficulty level, content, question type etc. In this matter, the decision of the expert committee will be final and binding on the candidate.

ii. The test assumes that the candidate has basic familiarity with computers, keyboard, and mouse operation. It is the responsibility of the candidate to acquire these skills before appearing in the test and the Institute cannot take responsibility for the same.

iii. The Institute is planning to operate test centers in different cities other than the Pilani, K K Birla Goa and Hyderabad campuses of BITS as previously stated. The final list of centers and actual days of

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operation will be announced to candidates through the BITS admission website www.bitsadmission.com. The Institute cannot guarantee that test centers will be set up in all these cities. Further, the Institute reserves the right to cancel any test center if such a situation arises. In such cases, those candidates allotted to these centers will be accommodated in alternate test centers including Pilani/ K K Birla Goa/Hyderabad campuses of BITS.

iv. **While BITSAT-2025 tests are scheduled to be held from 26th May – 30th May 2025 for Session-1 and 22nd June – 26th June, 2025 for Session-2, some of the test centers may operate only for a limited duration during this period depending on the number of applications received. The final list of the centers will be announced on the BITS admission website after all the applications are received.**

v. **Each day the exam will be conducted in two slots. The first slot will be from 9:00 AM till 12:00 Noon and the second slot will be from 2:00 PM till 5:00 PM. A candidate can choose anyone out of these two slots based on availability. More details will be available on the admission website. (**If the candidate does not book the test slot and date during the mentioned period then the system automatically allocates the test date and slot as per the preferences and available dates and slots.)

vi. The preferences that you give are only indicative and are to guide the Institute in deciding the number of centers. The Institute cannot guarantee that you will get your first preference. Further, if the Institute is unable to allot any center of your choice, you will be allotted a center either at Pilani or at K K Birla Goa or at Hyderabad campuses of BITS. The exact center where you will be appearing for the test will be announced at the BITS admission website www.bitsadmission.com. However, the Institute will try to accommodate all female candidates at their first preference of test centers.

vii. The candidate must fully obey the rules of the test centers, otherwise, he/she will be automatically debarred from the test.

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viii. **If a candidate completes the application form along with the fee but discovers any mistake in the form submitted by him/her, he/she can edit the required fields in the online application from 29th April - 01st May, 2025. No Email queries regarding corrections will be entertained for security and privacy reasons. The candidate has to go online and make changes (<u>except gender, email id and contact number</u>) to his or her application during this period. No further changes can be made to the application.**

ix. **In addition to applying for and appearing in BITSAT-2025, candidates have to also apply for admission to BITS as per the 'Procedure to apply for Admission' outlined earlier. The prescribed online application form for admission will be made available at the BITS admission website, during 1st – 30th June 2025 (tentative), for those who register for BITSAT-2025 and seek admission to BITS**. The completed application form with the details of their 12th marks and preferences to different degree programmes along with the required application fee has to be submitted online at the BITS admission website on or before **30th June 2025 (tentative).**

x. **All information and communications regarding BITSAT-2025 and admission to BITS are made available to the registered candidates on the BITS admission website www.bitsadmission.com Candidates are advised to view this website regularly for all related information on BITSAT and on admissions to BITS.**

xi. In all matters in the conduct of BITSAT-2025, the decision of the Vice-Chancellor of BITS Pilani will be final.

xii. All disputes pertaining to BITSAT-2025 shall fall within the jurisdiction of Pilani only.

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xiii. All queries related to **BITSAT-2025 application fee payment issues** (payment gateway issues) should only be sent to email id: admn.payment@pilani.bits-pilani.ac.in

xiv. All other BITSAT-2025 queries (**not related to payment issues**) such as application filling, admissions to various programmes, etc. should only be sent to the email id: bitsat@pilani.bits- pilani.ac.in

12. Provisions relating to Persons with Disability (PwD):

As per Section 2(t) of the RPwD Act, "Persons with Disability (PwD)" means a person with long-term physical, mental, intellectual, or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others.

According to Section 2(r) of the RPwD Act, 2016, "persons with benchmark disabilities" means a person with not less than forty percent (40%) of a specified disability where specified disability has not been defined in measurable terms and includes a person with disability where specified disability has been defined in measurable terms, as certified by the certifying authority.

Candidates with one of the benchmark disabilities [as defined in Section 2(r) of RPwD Act, 2016] holding a Disability Certificate in the prescribed format in the Rights of Person with Disabilities Rules, 2017 **should communicate with their details to bitsat@pilani.bits-pilani.ac.in with subject "PWD CANDIDATE" for any extra facility during the exam.** However, the final decision on such cases will be taken by the Admissions Committee, BITS Pilani.

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Annexure

Syllabus for BITSAT-2025

Part I: Physics

1. Units & Measurement

1.1 Units (Different systems of units, SI units, fundamental and derived units)
1.2 Dimensional Analysis
1.3 Precision and significant figures
1.4 Fundamental measurements in Physics (Vernier calipers, screw gauge, Physical balance etc)

2. Kinematics

2.1 Properties of vectors
2.2 Position, velocity, and acceleration vectors
2.3 Motion with constant acceleration
2.4 Projectile motion
2.5 Uniform circular motion
2.6 Relative motion

3. Newton's Laws of Motion

3.1 Newton's laws (free body diagram, resolution of forces)
3.2 Motion on an inclined plane
3.3 Motion of blocks with pulley systems
3.4 Circular motion – centripetal force
3.5 Inertial and non-inertial frames

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4. Impulse and Momentum

4.1 Definition of impulse and momentum
4.2 Conservation of momentum
4.3 Collisions
4.4 Momentum of a system of particles
4.5 Center of mass

5. Work and Energy

5.1 Work done by a force
5.2 Kinetic energy and work-energy theorem
5.3 Power
5.4 Conservative forces and potential energy
5.5 Conservation of mechanical energy

6. Rotational Motion

6.1 Description of rotation (angular displacement, angular velocity and angular acceleration)
6.2 Rotational motion with constant angular acceleration
6.3 Moment of inertia, Parallel and perpendicular axes theorems, rotational kinetic energy
6.4 Torque and angular momentum
6.5 Conservation of angular momentum
6.6 Rolling motion

7. Gravitation

7.1 Newton's law of gravitation
7.2 Gravitational potential energy, Escape velocity
7.3 Motion of planets – Kepler's laws, satellite motion

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8. Mechanics of Solids and Fluids

8.1 Elasticity

8.2 Pressure, density and Archimedes' principle

8.3 Viscosity and Surface Tension

8.4 Bernoulli's theorem

9. Oscillations

9.1 Kinematics of simple harmonic motion

9.2 Spring mass system, simple and compound pendulum

9.3 Forced & damped oscillations, resonance

10. Waves

10.1 Progressive sinusoidal waves

10.2 Standing waves in strings and pipes

10.3 Superposition of waves, beats

10.4 Doppler Effect

11. Heat and Thermodynamics

11.1 Kinetic theory of gases

11.2 Thermal equilibrium and temperature

11.3 Specific heat, Heat Transfer - Conduction, convection and radiation, thermal conductivity, Newton's law of cooling Work, heat and first law of thermodynamics

11.4 2nd law of thermodynamics, Carnot engine – Efficiency and Coefficient of performance

12. Electrostatics

12.1 Coulomb's law

12.2 Electric field (discrete and continuous charge distributions)

12.3 Electrostatic potential and Electrostatic potential energy

12.4 Gauss' law and its applications

12.5 Electric dipole

12.6 Capacitance and dielectrics (parallel plate capacitor, capacitors in series and parallel)

13. Current Electricity

13.1 Ohm's law, Joule heating

13.2 D.C circuits – Resistors and cells in series and parallel, Kirchoff's laws, potentiometer and Wheatstone bridge

13.3 Electrical Resistance (Resistivity, origin and temperature dependence of resistivity).

14. Magnetic Effect of Current

14.1 Biot-Savart's law and its applications

14.2 Ampere's law and its applications

14.3 Lorentz force, force on current carrying conductors in a magnetic field

14.4 Magnetic moment of a current loop, torque on a current loop, Galvanometer and its conversion to voltmeter and ammeter

15. Electromagnetic Induction

15.1 Faraday's law, Lenz's law, eddy currents

15.2 Self and mutual inductance

15.3 Transformers and generators

15.4 Alternating current (peak and rms value)

15.5 AC circuits, LCR circuits

16. Optics

16.1 Laws of reflection and refraction

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16.2 Lenses and mirrors
16.3 Optical instruments – telescope and microscope
16.4 Interference – Huygen's principle, Young's double slit experiment
16.5 Interference in thin films
16.6 Diffraction due to a single slit
16.7 Electromagnetic waves and their characteristics (only qualitative ideas), Electromagnetic spectrum
16.8 Polarization – states of polarization, Malus' law, Brewster's law

17. Modern Physics

17.1 Dual nature of light and matter – Photoelectric effect, De Broglie wavelength
17.2 Atomic models – Rutherford's experiment, Bohr's atomic model
17.3 Hydrogen atom spectrum
17.4 Radioactivity
17.5 Nuclear reactions: Fission and fusion, binding energy

18. Electronic Devices

18.1 Energy bands in solids (qualitative ideas only), conductors, insulators and semiconductors;
18.2 Semiconductor diode – *I-V* characteristics in forward and reverse bias, diode as a rectifier; *I-V* characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator.
18.3 Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator
18.4 Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.

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Part II: Chemistry

1. States of Matter

1.1 Measurement: Physical quantities and SI units, Dimensional analysis, Precision, Significant figures.
1.2 Chemical reactions: Laws of chemical combination, Dalton's atomic theory; Mole concept; Atomic, molecular and molar masses; Percentage composition empirical & molecular formula; Balanced chemical equations & stoichiometry
1.3 Three states of matter, intermolecular interactions, types of bonding, melting and boiling points Gaseous state: Kinetic energy and molecular speeds; Gas Laws, ideal behavior, ideal gas equation, empirical derivation of gas equation, Avogadro number, Deviation from ideal behaviour – Critical temperature, Liquefaction of gases, van der Waals equation.
1.4 Liquid state: Vapour pressure, surface tension, viscosity.
1.5 Solid state: Classification; Space lattices & crystal systems; Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell – Cubic & hexagonal systems; Close packing; Crystal structures: Simple AB and AB_2 type ionic crystals, covalent crystals – diamond & graphite, metals. Voids, number of atoms per unit cell in a cubic unit cell, Imperfections- Point defects, non-stoichiometric crystals; Electrical, magnetic and dielectric properties; Amorphous solids – qualitative description. Band theory of metals, conductors, semiconductors and insulators, and n- and p- type semiconductors.

2. Atomic Structure

2.1 Introduction: Subatomic particles; Atomic number, isotopes and isobars, Thompson's model and its limitations, Rutherford's picture of atom and its limitations; Hydrogen atom spectrum and Bohr model and its limitations.
2.2 Quantum mechanics: Wave-particle duality – de Broglie relation, Uncertainty principle; Hydrogen atom: Quantum numbers and wave functions, atomic orbitals and their shapes (s, p, and d), Spin quantum number.

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2.3 Many electron atoms: Pauli exclusion principle; Aufbau principle and the electronic configuration of atoms, Hund's rule.

3. Periodicity and Bonding

3.1 Brief history of the development of periodic tables Periodic law and the modern periodic table; Types of elements: s, p, d, and f blocks; Periodic trends: ionization energy, atomic, and ionic radii, inert gas radii, electron affinity, electro negativity and valency. Nomenclature of elements with atomic number greater than 100**.**

3.2 Valence electrons, Ionic Bond: Lattice Energy and Born-Haber cycle; Covalent character of ionic bonds and polar character of covalent bond, bond parameters

3.3 Molecular Structure: Lewis picture & resonance structures, VSEPR model & molecular shapes

3.4 Covalent Bond: Valence Bond Theory- Orbital overlap, Directionality of bonds & hybridization (s, p & d orbitals only), Resonance; Molecular orbital theory- Methodology, Orbital energy level diagram, Bond order, Magnetic properties for homonuclear diatomic species (qualitative idea only).

3.5 Dipole moments; Hydrogen Bond.

4. Thermodynamics

4.1 Basic Concepts: Systems and surroundings; State functions; Intensive & Extensive Properties; Zeroth Law and Temperature

4.2 First Law of Thermodynamics: Work, internal energy, heat, enthalpy, heat capacities and specific heats, measurements of ΔU and ΔH, Enthalpies of formation, phase transformation, ionization, electron gain; Thermochemistry; Hess's Law, Enthalpy of bond dissociation, combustion, atomization, sublimation, solution and dilution

4.3 Second Law: Spontaneous and reversible processes; Entropy, Gibbs free energy related to spontaneity and non-spontaneity non-mechanical work; Standard free energies of formation, free energy change and chemical equilibrium

4.4 Third Law: Introduction

5. Physical and Chemical Equilibria

5.1 Concentration Units: Mole Fraction, Molarity, and Molality

5.2 Solutions: Solubility of solids and gases in liquids, Vapour Pressure, Raoult's law, Relative lowering of vapor pressure, depression in freezing point; elevation in boiling point; osmotic pressure, determination of molecular mass; solid solutions, abnormal molecular mass, van't Hoff factor. Equilibrium: Dynamic nature of equilibrium, law of mass action.

5.3 Physical Equilibrium: Equilibria involving physical changes (solid-liquid, liquid-gas, solid-gas).

5.4 Chemical Equilibria: Equilibrium constants (K_P, K_C), Factors affecting equilibrium, Le- Chatelier's principle.

5.5 Ionic Equilibria: Strong and Weak electrolytes, Acids and Bases (Arrhenius, Lewis, Lowry and Bronsted) and their dissociation; degree of ionization, Ionization of Water; ionization of polybasic acids, pH; Buffer solutions; Henderson equation, Acid-base titrations; Hydrolysis; Solubility Product of Sparingly Soluble Salts; Common Ion Effect.

5.6 Factors Affecting Equilibria: Concentration, Temperature, Pressure, Catalysts, Significance of ΔG and ΔG^0 in Chemical Equilibria.

6. Electrochemistry

6.1 Redox Reactions: Oxidation-reduction reactions (electron transfer concept); Oxidation number; Balancing of redox reactions; Electrochemical cells and cell reactions; Standard electrode potentials; EMF of Galvanic cells; Nernst equation; Factors affecting the electrode potential; Gibbs energy change and cell potential; Secondary cells; dry cells, Fuel cells; Corrosion and its prevention.

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6.2 Electrolytic Conduction: Electrolytic Conductance; Specific and molar conductivities; variations of conductivity with concentration, Kolhrausch's Law and its application, Electrolysis, Faraday's laws of electrolysis; Electrode potential and electrolysis.

7. Chemical Kinetics

7.1 Aspects of Kinetics: Rate and Rate expression of a reaction; Rate constant; Order and molecularity of the reaction; Integrated rate expressions and half-life for zero and first order reactions.

7.2 Factor Affecting the Rate of the Reactions: Concentration of the reactants, catalyst; size of particles, Temperature dependence of rate constant concept of collision theory (elementary idea, no mathematical treatment); Activation energy, Arrhenius Equation.

7.3 Surface Chemistry: Adsorption – physisorption and chemisorption; factors affecting adsorption of gasses on solids; catalysis: homogeneous and heterogeneous, activity and selectivity: enzyme catalysis, colloidal state: distinction between true solutions, colloids and suspensions; lyophillic, lyophobic multi molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulations; emulsions–types of emulsions.

8. Hydrogen and s-block elements

8.1 Hydrogen: Element: unique position in periodic table, occurrence, isotopes; Dihydrogen: preparation, properties, reactions, and uses; Molecular, saline, ionic, covalent, interstitial hydrides; Water: Properties; Structure and aggregation of water molecules; Heavy water; Hydrogen peroxide: preparation, reaction, structure & use, Hydrogen as a fuel.

8.2 s-block elements: Abundance and occurrence; Anomalous properties of the first elements in each group; diagonal relationships; trends in the variation of properties (ionization energy, atomic & ionic radii).

8.3 Alkali metals: Lithium, sodium and potassium: occurrence, extraction, reactivity, and electrode potentials; Biological importance; Reactions with oxygen, hydrogen, halogens and water; Basic nature of oxides and hydroxides; halides; Properties and uses of compounds such as NaCl, Na_2CO_3, $NaHCO_3$, NaOH, KCl, and KOH.

8.4 Alkaline earth metals: Magnesium and calcium: Occurrence, extraction, reactivity and electrode potentials; Reactions with O_2, H_2O, H_2 and halogens; Solubility and thermal stability of oxo salts; Biological importance of Ca and Mg; Preparation, properties and uses of important compounds such as CaO, $Ca(OH)_2$, plaster of Paris, $MgSO_4$, $MgCl_2$, $CaCO_3$, and $CaSO_4$.

9. p- d- and f-block elements

9.1 General: Abundance, distribution, physical and chemical properties, isolation and uses of elements; Trends in chemical reactivity of elements of a group; electronic configuration, oxidation states; anomalous properties of first element of each group.

9.2 Group 13 elements: Boron; Properties and uses of borax, boric acid, boron hydrides & halides. Reaction of aluminum with acids and alkalis;

9.3 Group 14 elements: Carbon: carbon catenation, physical & chemical properties, uses, allotropes (graphite, diamond, fullerenes), oxides, halides and sulphides, carbides; Silicon: Silica, silicates, silicone, silicon tetrachloride, Zeolites, and their uses

9.4 Group 15 elements: Dinitrogen; Preparation, reactivity and uses of nitrogen; Industrial and biological nitrogen fixation; Compound of nitrogen; Ammonia: Haber's process, properties and reactions; Oxides of nitrogen and their structures; Properties and Ostwald's process of nitric acid production; Fertilizers – NPK type; Production of phosphorus; Allotropes of phosphorus; Preparation, structure and properties of hydrides, oxides, oxoacids (elementary idea only) and halides of phosphorus, phosphine.

9.5 Group 16 elements: Isolation and chemical reactivity of dioxygen; Acidic, basic and amphoteric oxides; Preparation, structure and properties of ozone; Allotropes of sulphur; Preparation/production properties and uses of sulphur dioxide and sulphuric acid; Structure and properties of oxides, oxoacids (structures only).

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9.6 Group 17 and group 18 elements: Structure and properties of hydrides, oxides, oxoacids of halogens (structures only); preparation, properties & uses of chlorine & HCl; Inter halogen compounds; Bleaching Powder; Uses of Group 18 elements, Preparation, structure and reactions of xenon fluorides, oxides, and oxoacids.

9.7 d-Block elements: General trends in the chemistry of first row transition elements; Metallic character; Oxidation state; ionization enthalpy; Ionic radii; Color; Catalytic properties; Magnetic properties; Interstitial compounds; Occurrence and extraction of iron, copper, silver, zinc, and mercury; Alloy formation; Steel and some important alloys; preparation and properties of $K_2Cr_2O_7$, $KMnO_4$.

9.8 f-Block elements: Lanthanoids and actinoids; Oxidation states and chemical reactivity of lanthanoids compounds; Lanthanide contraction and its consequences, Comparison of actinoids and lanthanoids.

9.9 Coordination Compounds: Coordination number; Ligands; Werner's coordination theory; IUPAC nomenclature; Application and importance of coordination compounds (in qualitative analysis, extraction of metals and biological systems e.g. chlorophyll, vitamin B12, and hemoglobin); Bonding: Valence-bond approach, Crystal field theory (qualitative); Isomerism including stereoisomerisms.

10. Principles of Organic Chemistry and Hydrocarbons

10.1 Classification: General Introduction, classification based on functional groups, trivial and IUPAC nomenclature. Methods of purification: qualitative and quantitative,

10.2 Electronic displacement in a covalent bond: Inductive, resonance effects, and hyperconjugation; free radicals; carbocations, carbanions, nucleophiles and electrophiles; types of organic reactions, free radial halogenations.

10.3 Alkanes: Structural isomerism, general properties and chemical reactions, free redical helogenation, combustion and pyrolysis.

10.4 Alkenes and alkynes: Structure of double and triple bonded compounds; General methods of preparation and reactions, physical properties, electrophilic and free radical additions, addition of hydrogen, halogen, water, hydrogen halides; (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition; acidic character of alkynes and (1,2 and 1,4) addition to dienes.

10.5 Aromatic hydrocarbons: Sources; properties; isomerism; resonance delocalization; aromaticity; polynuclear hydrocarbons; IUPAC nomenclature; mechanism of electrophilic substitution reaction, directive influence and effect of substituents on reactivity; carcinogenicity and toxicity.

10.6 Haloalkanes and haloarenes: Physical properties, nomenclature, optical rotation, chemical reactions and mechanism of substitution reaction. Uses and environmental effects; di, tri, tetrachloromethanes, iodoform, freon and DDT.

11. Stereochemistry

11.1 Conformations: Ethane conformations; Newman and Sawhorse projections.

11.2 Geometrical isomerism in alkenes

12. Organic Compounds with Functional Groups Containing Oxygen and Nitrogen

12.1 General: Nomenclature, electronic structure, important methods of preparation, identification, important reactions, physical and chemical properties, uses of alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, nitro compounds, amines, diazonium salts, cyanides and isocyanides.

12.2 Specific: Reactivity of alpha-hydrogen in carbonyl compounds, effect of substituents on alpha-carbon on acid strength, comparative reactivity of acid derivatives, mechanism of nucleophilic addition and dehydration, basic character of amines, methods of preparation, and their separation, importance of diazonium salts in synthetic organic chemistry.

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13. Biological, Industrial and Environmental chemistry

13.1 Carbohydrates: Classification; Monosaccharides; Structures of pentoses and hexoses; Simple chemical reactions of glucose, Disaccharides: reducing and non-reducing sugars – sucrose, maltose and lactose; Polysaccharides: elementary idea of structures of starch, cellulose and glycogen.

13.2 Proteins: Amino acids; Peptide bond; Polypeptides; Primary structure of proteins; Simple idea of secondary, tertiary and quaternary structures of proteins; Denaturation of proteins and enzymes.

13.3 Nucleic Acids: Types of nucleic acids; Primary building blocks of nucleic acids (chemical composition of DNA & RNA); Primary structure of DNA and its double helix.

13.4 Vitamins: Classification, structure, functions in biosystems; Hormones.

13.5 Polymers: Classification of polymers; General methods of polymerization; Molecular mass of polymers; Biopolymers and biodegradable polymers; methods of polymerization (free radical, cationic and anionic addition polymerizations); Copolymerization: Natural rubber; Vulcanization of rubber; Synthetic rubbers. Condensation polymers. Some important polymers: natural and synthetic like polythene, nylon, polyesters, bakelite, and rubber.

13.6 Pollution: Environmental pollutants; soil, water and air pollution; Chemical reactions in atmosphere; Smog; Major atmospheric pollutants; Acid rain; Ozone and its reactions; Depletion of ozone layer and its effects; Industrial air pollution; Greenhouse effect and global warming; Green Chemistry, study for control of environmental pollution.

13.7 Chemicals in medicine, health-care and food: Analgesics, Tranquilizers, antiseptics, disinfectants, anti-microbials, anti-fertility drugs, antihistamines, antibiotics, antacids; Preservatives, artificial sweetening agents, antioxidants, soaps and detergents.

14. Theoretical Principles of Experimental Chemistry

14.1 Volumetric Analysis: Principles; Standard solutions of sodium carbonate and oxalic acid; Acid- base titrations; Redox reactions involving KI, H_2SO_4, Na_2SO_3, $Na_2S_2O_3$ and H_2S; Potassium permanganate in acidic, basic and neutral media; Titrations of oxalic acid, ferrous ammonium sulphate with $KMnO_4$, $K_2Cr_2O_7/Na_2S_2O_3$, $Cu(II)/Na_2S_2O_3$.

14.2 Qualitative analysis of Inorganic Salts: Principles in the determination of the cations Pb^{2+}, Cu^{2+}, As^{3+}, Mn^{2+}, Al^{3+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+, Fe^{3+}, Ni^{2+} and the anions CO_3^{2-}, S^{2-}, SO_4^{2-}, SO_3^{2-}, NO_2^-, NO_3^-, Cl^-, Br^-, I^-, PO_4^{3-}, CH_3COO^-, $C_2O_4^{2-}$.

14.3 Physical Chemistry Experiments: preparation and crystallization of alum, copper sulphate. Benzoic acid ferrous sulphate, double salt of alum and ferrous sulphate, potassium ferric sulphate; Temperature vs. solubility; Study of pH charges by common ion effect in case of weak acids and weak bases; pH measurements of some solutions obtained from fruit juices, solutions of known and varied concentrations of acids, bases and salts using pH paper or universal indicator; Lyophilic and lyophobic sols; Dialysis; Role of emulsifying agents in emulsification. Equilibrium studies involving ferric and thiocyanate ions (ii) $[Co(H_2O)_6]^{2+}$ and chloride ions; Enthalpy determination for strong acid vs. strong base neutralization reaction (ii) hydrogen bonding interaction between acetone and chloroform; Rates of the reaction between (i) sodium thiosulphate and hydrochloric acid, (ii) potassium iodate and sodium sulphite (iii) iodide vs. hydrogen peroxide, concentration and temperature effects in these reactions.

14.4 Purification Methods: Filtration, crystallization, sublimation, distillation, differential extraction, and chromatography. Principles of melting point and boiling point determination; principles of paper chromatographic separation – Rf values.

14.5 Qualitative Analysis of Organic Compounds: Detection of nitrogen, sulphur, phosphorous and halogens; Detection of carbohydrates, fats and proteins in foodstuff; Detection of alcoholic, phenolic, aldehydic, ketonic, carboxylic, amino groups and unsaturation.

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14.6 Principles of Organic Chemistry Experiments: Preparation of, acetanilide, p-nitro acetanilide, di-benzayl acetone, aniline yellow, beta-naphthol-aniline dye.

14.7 Basic Laboratory Technique: Cutting glass tube and glass rod, bending a glass tube, drawing out a glass jet, boring of cork.

Part III: (a) English Proficiency and (b) Logical Reasoning

(a) English Proficiency

This test is designed to assess the test takers' general proficiency in the use of English language as a means of self-expression in real life situations. It specifically tests the test takers' knowledge of basic grammar, their vocabulary, their ability to read fast and comprehend, and also their ability to apply the elements of effective writing.

1. Grammar

1.1 Determiners, Prepositions, Modals, Adjectives, Relative Pronouns

1.2 Agreement, Time and Tense

1.3 Parallel Construction

1.4 Voice, Transformation

1.5 Question Tags, Relative Clauses

2. Vocabulary

2.1 Odd Word, One Word, Spelling & Word Formation, Homophones

2.2 Contextual Meanings of Vocabulary (Definitions, Academic Vocabulary, Connotation)

2.3 Synonyms, Antonyms, Collocations

2.4 Phrasal Verbs & Idioms

2.5 Analogy

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3. Reading Comprehension

3.1 Content/Ideas (Finding Main Ideas, Reaching Conclusions Using Supporting Evidence, Anticipation of Ideas, Distinguishing Facts from Opinions)

3.2 Vocabulary (Figurative Usage: Metaphors and Similes; Select CLOZE)

3.3 Summary (Findings from Options the Correct Summary)

3.4 Referents

3.5 Reorganization of Information (Jigsaw Reading)

4. Composition

4.1 Rearrangement (Word Order; Logical Organization of Paragraph)

4.2 Paragraph & Unity (Identifying the Correct Topic Sentence;)

4.3 Linkers/Connectives

(b) Logical Reasoning

The test is given to the candidates to judge their power of reasoning spread in verbal and nonverbal areas. The candidates should be able to think logically so that they perceive the data accurately, understand the relationships correctly, figure out the missing numbers or words, and apply rules in novel contexts. These indicators are measured through performance on such tasks as detecting missing links, following directions, classifying words, establishing sequences, and completing analogies.

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5. Verbal Reasoning

5.1 **Analogy:** Analogy means correspondence. In the questions based on analogy, a particular relationship is given and another similar relationship has to be identified from the alternatives provided.

5.2 **Classification:** Classification means to assort the items of a given group on the basis of certain common quality they possess and then spot the odd option out.

5.3 **Series Completion:** Here series of numbers or letters are given and one is asked to either complete the series or find out the wrong part in the series.

5.4 **Logical Deduction:** Reading Passage: Here a brief passage is given and based on the passage the candidate is required to identify the correct or incorrect logical conclusions.

5.5 **Chart Logic:** Here a chart or a table is given that is partially filled in and asks to complete it in accordance with the information given either in the chart / table or in the question.

6. Nonverbal Reasoning

6.1 **Pattern Perception:** Here a certain pattern is given and generally a quarter is left blank. The candidate is required to identify the correct quarter from the given options.

6.2 **Figure Formation and Analysis:** Here the candidate is required to analyze and form a figure from the various given parts.

6.3 **Paper Cutting:** Here the candidate analyses a pattern that is formed when a folded piece of paper is cut into a definite design.

6.4 **Figure Matrix:** Here the candidate is given more than one set of figures in the form of a matrix, which follow the same rule. The candidate is required to follow the rule and identify the missing figure.

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6.5 **Rule Detection:** Here a particular rule is given and the candidate is required to select from the given sets of figures, a set of figures, which obey the rule and form the correct series.

Part IV: Mathematics

1. Algebra

1.1 Complex numbers, addition, multiplication, conjugation, polar representation, properties of modulus and principal argument, triangle inequality, roots of complex numbers, geometric interpretations; Fundamental theorem of algebra.

1.2 Theory of Quadratic equations, quadratic equations in real and complex number system and their solutions.

1.3 Arithmetic and geometric progressions, arithmetic, geometric and arithmetico geometric series, sums of finite arithmetic and geometric progressions, infinite geometric series, sums of squares and cubes of the first n natural numbers.

1.4 Logarithms and their properties.

1.5 Exponential series.

1.6 Permutations and combinations, Permutations as an arrangement and combination as selection, simple applications.

1.7 Binomial theorem for a positive integral index, properties of binomial coefficients, Pascal's triangle

1.8 Matrices and determinants of order two or three, properties and evaluation of determinants, addition and multiplication of matrices, adjoint and inverse of matrices, Solutions of simultaneous linear equations in two or three variables, elementary row and column operations of matrices, Types of matrices, applications of determinants in finding the area of triangles.

1.9 Sets, Relations and Functions, algebra of sets applications, equivalence relations, mappings, one to

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one, into and onto mappings, composition of mappings, binary operation, inverse of function, functions of real variables like polynomial, modulus, signum and greatest integer.

1.10 Mathematical reasoning and methods of proofs, mathematically acceptable statements. Connecting words/phrases – consolidating the understanding of "if and only if (necessary and sufficient) condition", "implies", "and/or", "implied" by", "and", "or", "there exists" and through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words – difference between contradiction, converse and contra positive, Mathematical induction

1.11 Linear Inequalities, solution of linear inequalities in one variable (Algebraic) and two variables (Graphical).

2. Trigonometry

2.1 Measurement of angles in radians and degrees, positive and negative angles, trigonometric ratios, functions with their graphs and identities.

2.2 Solution of trigonometric equations.

2.3 Inverse trigonometric functions

3. Two-dimensional Coordinate Geometry

3.1 Cartesian coordinates, distance between two points, section formulae, shift of origin.

3.2 Straight lines and pair of straight lines: Equation of straight lines in various forms, angle between two lines, distance of a point from a line, lines through the point of intersection of two given lines, equation of the bisector of the angle between two lines, concurrent lines.

3.3 Circles: Equation of circle in standard form, parametric equations of a circle.

3.4 Conic sections: parabola, ellipse and hyperbola their eccentricity, directrices & foci.

4. Three dimensional Coordinate Geometry

4.1 Co-ordinate axes and co-ordinate planes, distance between two points, section formula, direction cosines and direction ratios, equation of a straight line in space and skew lines.

4.2 Angle between two lines whose direction ratios are given, shortest distance between two lines.

4.3 Equation of a plane, distance of a point from a plane, condition for coplanarity of three lines, angles between two planes, angle between a line and a plane.

5. Differential calculus

5.1 Domain and range of a real valued function, Limits and Continuity of the sum, difference, product and quotient of two functions, Differentiability.

5.2 Derivative of different types of functions (polynomial, rational, trigonometric, inverse trigonometric, exponential, logarithmic, implicit functions), derivative of the sum, difference, product and quotient of two functions, chain rule, parametric form.

5.3 Geometric interpretation of derivative, Tangents and Normal.

5.4 Increasing and decreasing functions, Maxima and minima of a function.

5.5 Rolle's Theorem, Mean Value Theorem and Intermediate Value Theorem.

6. Integral calculus

6.1 Integration as the inverse process of differentiation, indefinite integrals of standard functions.

6.2 Methods of integration: Integration by substitution, Integration by parts, integration by partial fractions, and integration by trigonometric identities.

6.3 Definite integrals and their properties, Fundamental Theorem of Integral Calculus, applications in finding areas under simple curves.

6.4 Application of definite integrals to the determination of areas of regions bounded by simple curves.

7. Ordinary Differential Equations

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7.1 Order and degree of a differential equation, formulation of a differential equation whole general solution is given, variables separable method.

7.2 Solution of homogeneous differential equations of first order and first degree

7.3 Linear first order differential equations

8. Probability

8.1 Various terminology in probability, axiomatic and other approaches of probability, addition and multiplication rules of probability.

8.2 Conditional probability, total probability and Baye's theorem

8.3 Independent events

8.4 Discrete random variables and distributions with mean and variance.

9. Vectors

9.1 Direction ratio/cosines of vectors, addition of vectors, scalar multiplication, position vector of a point dividing a line segment in a given ratio.

9.2 Dot and cross products of two vectors, projection of a vector on a line.

9.3 Scalar triple products and their geometrical interpretations.

10. Statistics

10.1 Measures of dispersion

10.2 Analysis of frequency distributions with equal means but different variances

11. Linear Programming

11.1 Various terminology and formulation of linear Programming

11.2 Solution of linear Programming using graphical method, feasible and infeasible regions, feasible and infeasible solutions, optimal feasible solutions (upto three nontrivial constraints)

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12. Mathematical modeling

12.1 Formulation of simple real life problem, solution using matrices, calculus and linear programming.

Part IV: Biology

1: Diversity in Living World

1.1 Biology – its meaning and relevance to mankind

1.2 What is living; Taxonomic categories and aids; Systematics and Binomial system of nomenclature.

1.3 Introductory classification of living organisms (Two-kingdom system, Five-kingdom system);

1.4 Plant kingdom – Salient features of major groups (Algae to Angiosperms);

1.5 Animal kingdom – Salient features of Nonchordates up to phylum, and Chordates up to class level.

2: Cell: The Unit of Life; Structure and Function

2.1 Cell wall; Cell membrane; Endomembrane system (ER, Golgi apparatus/Dictyosome, Lysosomes, Vacuoles); Mitochondria; Plastids; Ribosomes; Cytoskeleton; Cilia and Flagella; Centrosome and Centriole; Nucleus; Microbodies.

2.2 Structural differences between prokaryotic and eukaryotic, and between plant and animal cells.

2.3 Cell cycle (various phases); Mitosis; Meiosis.

2.4 Biomolecules – Structure and function of Carbohydrates, Proteins, Lipids, and Nucleic acids.

2.5 Enzymes – Chemical nature, types, properties and mechanism of action.

3: Genetics and Evolution

3.1 Mendelian inheritance; Chromosome theory of inheritance; Gene interaction; Incomplete dominance; Co-dominance; Complementary genes; Multiple alleles;

3.2 Linkage and Crossing over; Inheritance patterns of hemophilia and blood groups in humans.

3.3 DNA –its organization and replication; Transcription and Translation;

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3.4 Gene expression and regulation; DNA fingerprinting.

3.5 Theories and evidences of evolution, including modern Darwinism.

4: Structure and Function – Plants

4.1 Morphology of a flowering plant; Tissues and tissue systems in plants; Anatomy and function of root, stem (including modifications), leaf, inflorescence, flower (including position and arrangement of different whorls, placentation), fruit and seed; Types of fruit; Secondary growth;

4.2 Absorption and movement of water (including diffusion, osmosis and water relations of cell) and of nutrients; Translocation of food; Transpiration and gaseous exchange; Mechanism of stomatal movement.

4.3 Mineral nutrition – Macro- and micro-nutrients in plants including deficiency disorders; Biological nitrogen fixation mechanism.

4.4 Photosynthesis – Light reaction, cyclic and non-cyclic photophosphorylation; various pathways of carbon dioxide fixation; Photorespiration; Limiting factors.

4.5 Respiration – Anaerobic, Fermentation, Aerobic; Glycolysis, TCA cycle; Electron transport system; Energy relations.

5: Structure and Function - Animals

5.1 Human Physiology – Digestive system – organs, digestion and absorption; Respiratory system – organs, breathing and exchange and transport of gases.

5.2 Body fluids and circulation – Blood, lymph, double circulation, regulation of cardiac activity; Hypertension, Coronary artery diseases.

5.3 Excretion system – Urine formation, regulation of kidney function

5.4 Locomotion and movement – Skeletal system, joints, muscles, types of movement.

5.5 Control and co-ordination – Central and peripheral nervous systems, structure and function of neuron, reflex action and sensory reception; role of various types of endocrine glands; Mechanism of hormone action.

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6: Reproduction, Growth and Movement in Plants

6.1 Asexual methods of reproduction;

6.2 Sexual Reproduction – Development of male and female gametophytes; Pollination (Types and agents); Fertilization; Development of embryo, endosperm, seed and fruit (including parthenocarpy and elminth).

6.3 Growth and Movement – Growth phases; Types of growth regulators and their role in seed dormancy, germination and movement;

6.4 Apical dominance; Senescence; Abscission; Photo- periodism; Vernalisation;

6.5 Various types of movements.

7: Reproduction and Development in Humans

7.1 Male and female reproductive systems;

7.2 Menstrual cycle; Gamete production; Fertilisation; Implantation;

7.3 Embryo development;

7.4 Pregnancy and parturition;

7.5 Birth control and contraception.

8: Ecology and Environment

8.1 Meaning of ecology, environment, habitat and niche.

8.2 Ecological levels of organization (organism to biosphere); Characteristics of Species, Population, Biotic Community and Ecosystem; Succession and Climax. Ecosystem – Biotic and abiotic components; Ecological pyramids; Food chain and Food web;

8.3 Energy flow; Major types of ecosystems including agroecosystem.

8.4 Ecological adaptations – Structural and physiological features in plants and animals of aquatic and

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desert habitats.

8.5 Biodiversity and Environmental Issues – Meaning, types and conservation strategies (Biosphere reserves, National parks and Sanctuaries), Air and Water Pollution (sources and major pollutants); Global warming and Climate change; Ozone depletion; Noise pollution; Radioactive pollution; Methods of pollution control (including an idea of bioremediation); Deforestation; Extinction of species (Hot Spots).

9: Biology and Human Welfare

9.1 Animal husbandry – Livestock, Poultry, Fisheries; Major animal diseases and their control. Pathogens of major communicable diseases of humans caused by fungi, bacteria, viruses, protozoans and helminthes, and their control.

9.2 Cancer; AIDS.

9.3 Adolescence and drug/alcohol abuse;

9.4 Basic concepts of immunology.

9.5 Plant Breeding and Tissue Culture in crop improvement.

10: Biotechnology and its Applications

10.1 Microbes as ideal system for biotechnology**;**

10.2 Microbial technology in food processing, industrial production (alcohol, acids, enzymes, antibiotics), sewage treatment and energy generation.

10.3 Steps in recombinant DNA technology – restriction enzymes, NA insertion by vectors and other methods, regeneration of recombinants

10.4 Applications of R-DNA technology in human health –Production of Insulin, Vaccines and Growth hormones, Organ transplant, Gene therapy.

10.5 Applications in Industry and agriculture – Production of expensive enzymes, strain improvement to scale up bioprocesses, GM crops by transfer of genes for nitrogen fixation, herbicide-resistance and pest-resistance including Bt crops.

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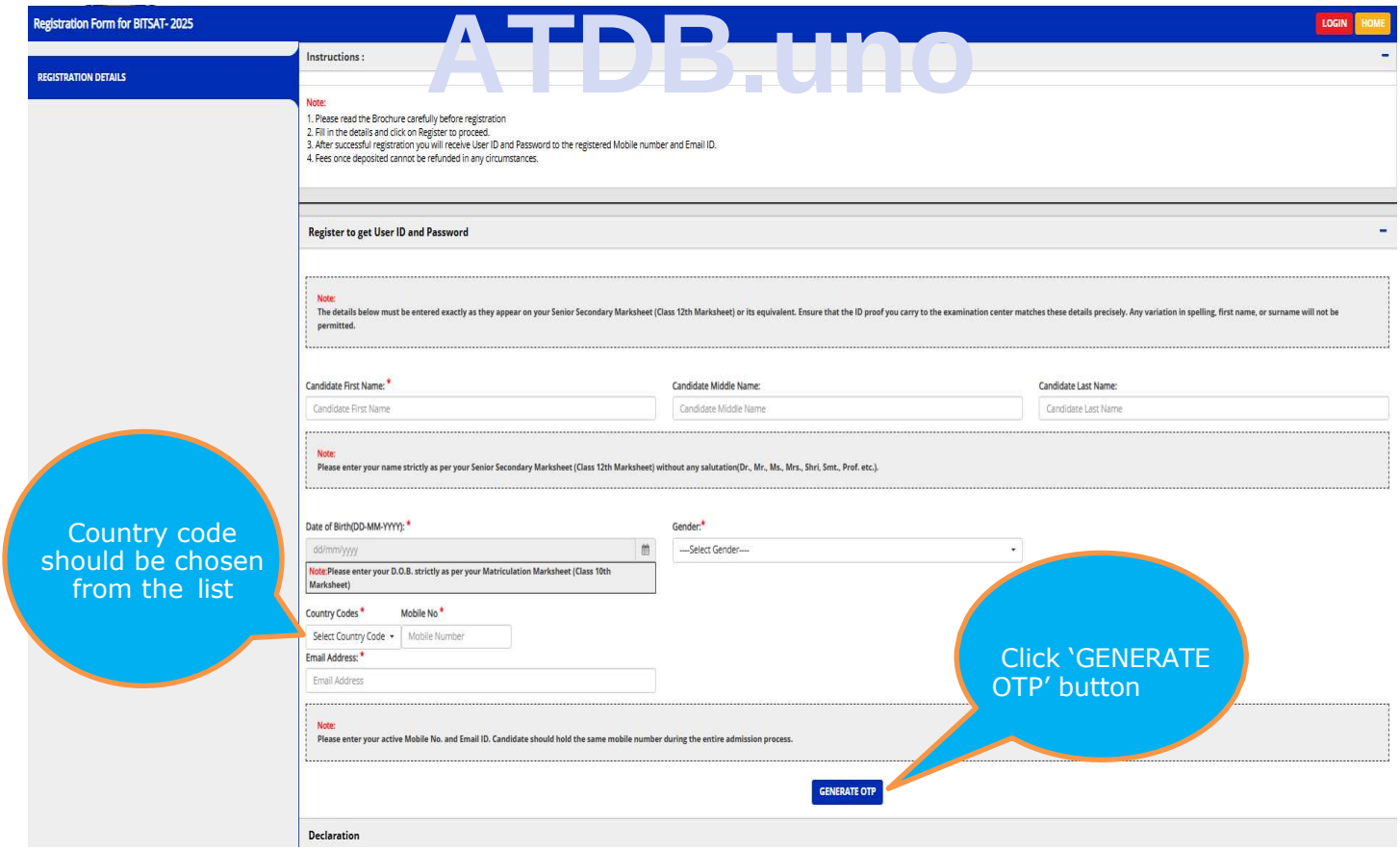
- Read the **IMPORTANT INFORMATION** thoroughly.
- If you are a new candidate, click on **REGISTER** button. If you have already registered for BITSAT-2025, click on **LOGIN** Button.
- Candidate must have good internet facility with reasonable speed and online payment facility (Internet Banking / Debit Card / Credit Card / UPI).

Registration Page Brief Details:

Before starting to fill up the on-line application form, keep at hand the following details/ information with you as per the requirement prescribed in the important information:

- Personal details (Name, Father's Name, Mother's Name, DOB, Parent's Contact number)
- Valid and Active Email ID and Mobile number to receive the OTP.
  - You are required to select the Country Code from the drop down menu. Candidates with Indian Mobile number are required to select '+91' country code for receiving the OTP and completing the registration process.
  - In case of International mobile number the OTP will only be sent through Email for validation. After validation the candidate can proceed further.



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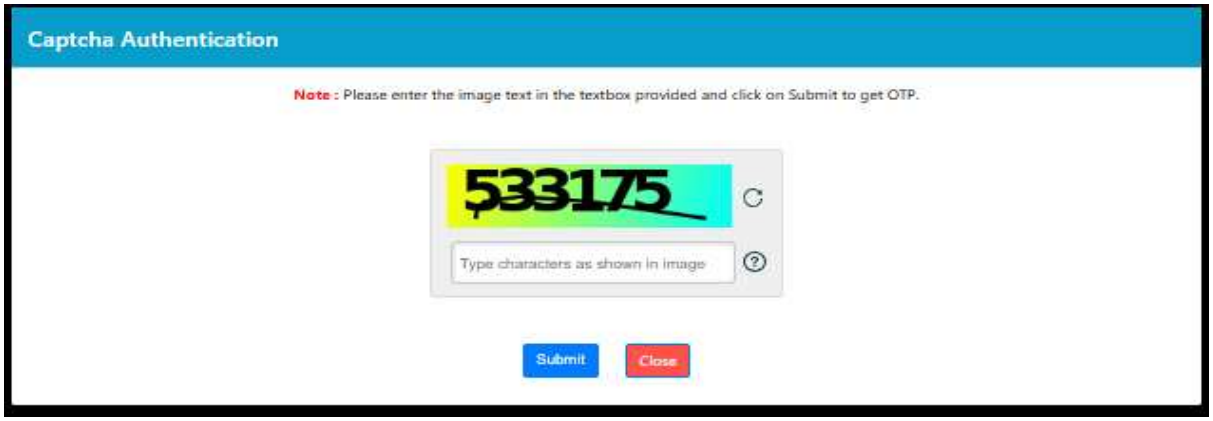

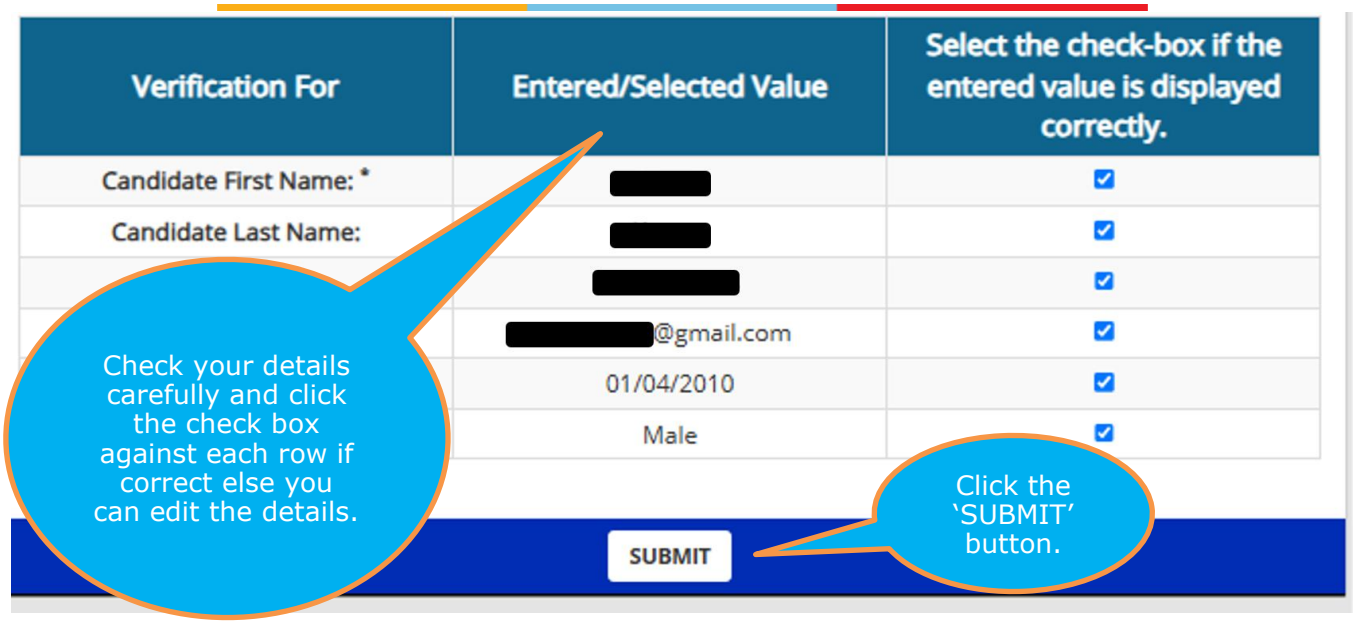

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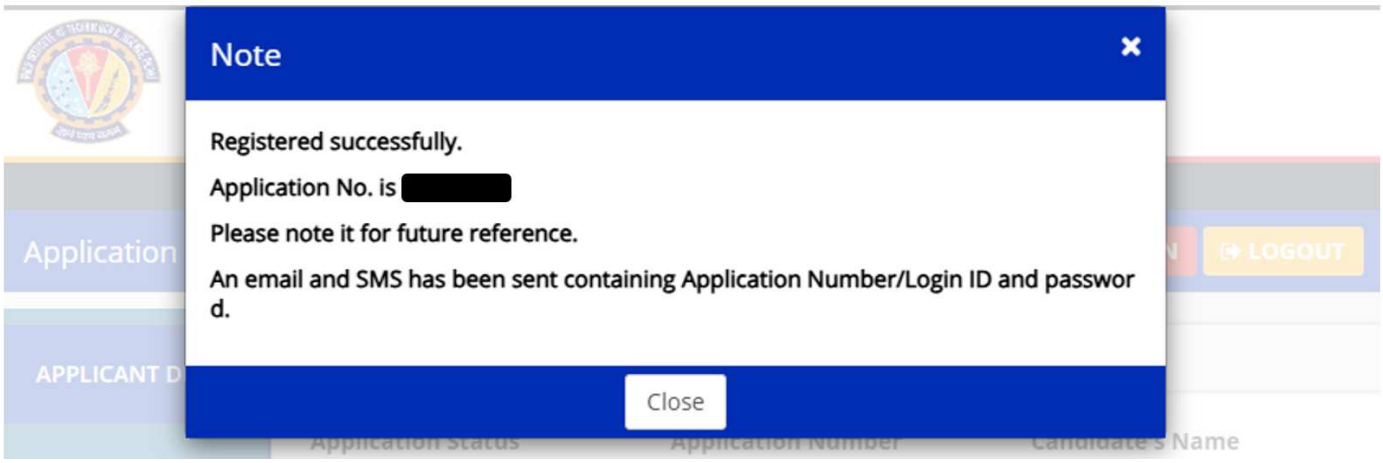

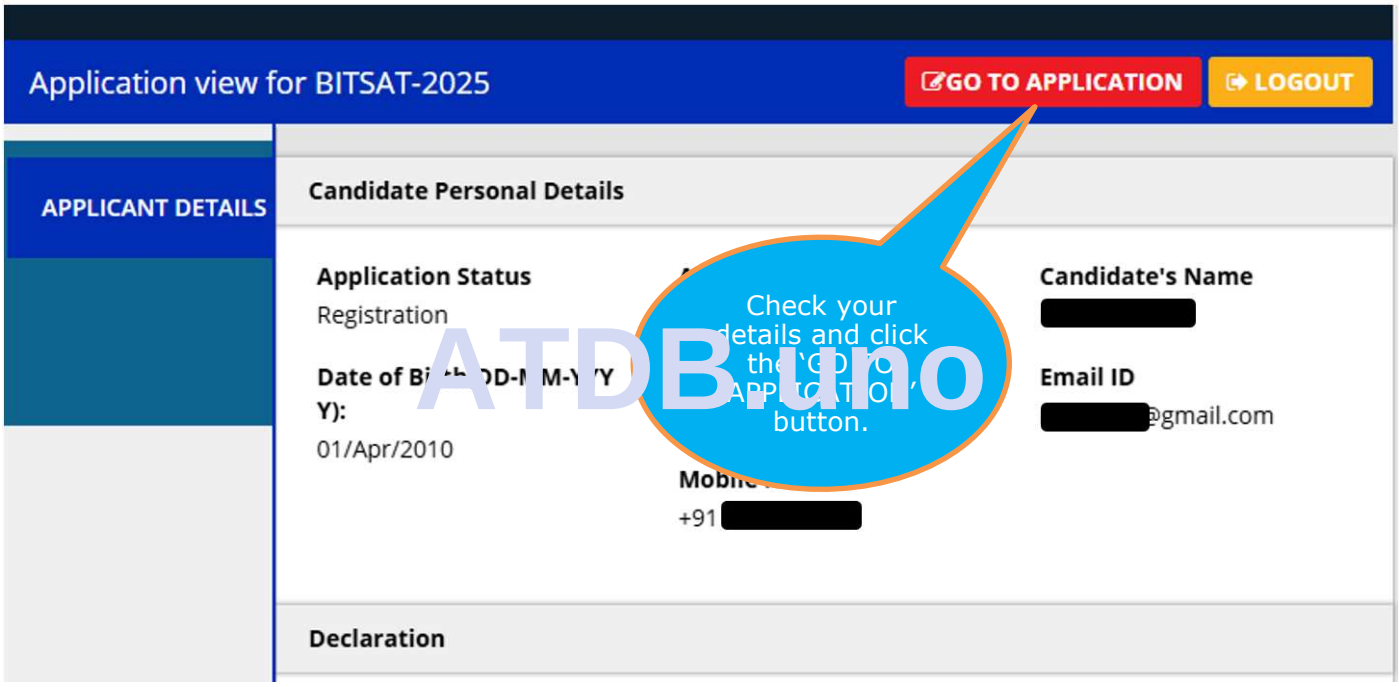

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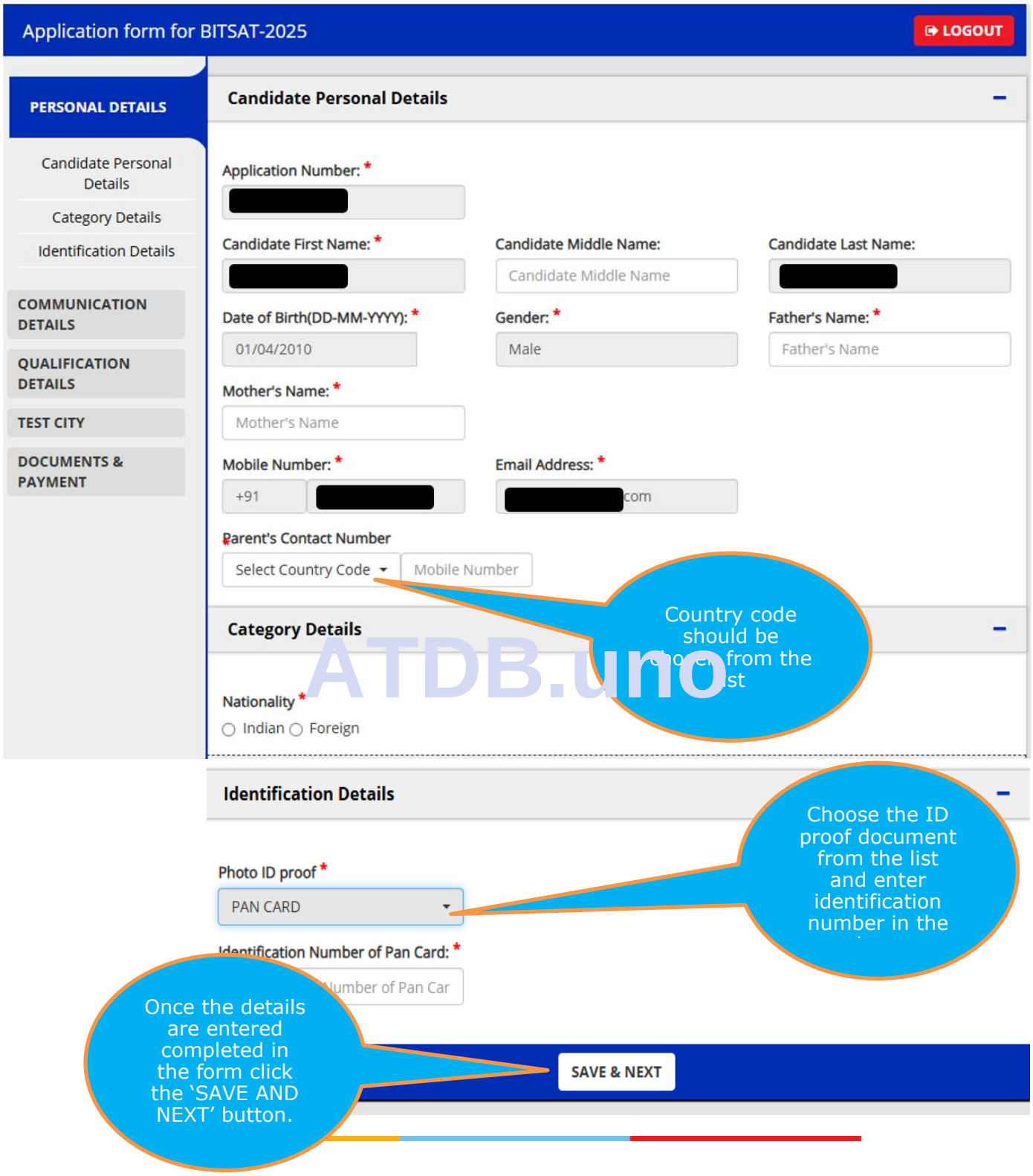

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Permanent Address
QUALIFICATION DETAILS
TEST CITY
DOCUMENTS & PAYMENT

Correspondence Address

Address Line 1 * Address Line 1
Address Line 2 Address Line 2
Address Line 3 Address Line 3
Country * Select Country
State * Select State
City/District * Select District.
Pincode/Postal Code * PIN Code
Is Permanent Address Same as Correspondence address? * ○ Yes ○ No

Permanent Address

Address Line 1* Address Line 1
Address Line 2 Address Line 2
Address Line 3 Address Line 3
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State* Select State
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BITSAT Test Options
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Intermediate (12th) Details

Name of School presently studying in /last attended * BITS
Name of the Examination* 12th Year or it's Equivalent
Select Name of Examination Board* Secondary Education - All India Senior School Certificate Examination [CBAT/CBSE]
Year of passing/appearing * 2024
Choose the subject to be taken for Part IV of BITSAT* ◉ Mathematics ○ Biology

Note:
"If you choose Biology as the subject to be taken in part IV of BITSAT, please note that you will be eligible to apply ONLY for B.Pharm. programme, and B.S. (Bachelor of Science) programmes. You will NOT be eligible for any other programme. Refer to the BITSAT-2025 brochure to know more about the syllabus and eligibility criteria."

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Please select your preferred Test Center Option* ◉ India and Nepal Centers ○ Dubai Center

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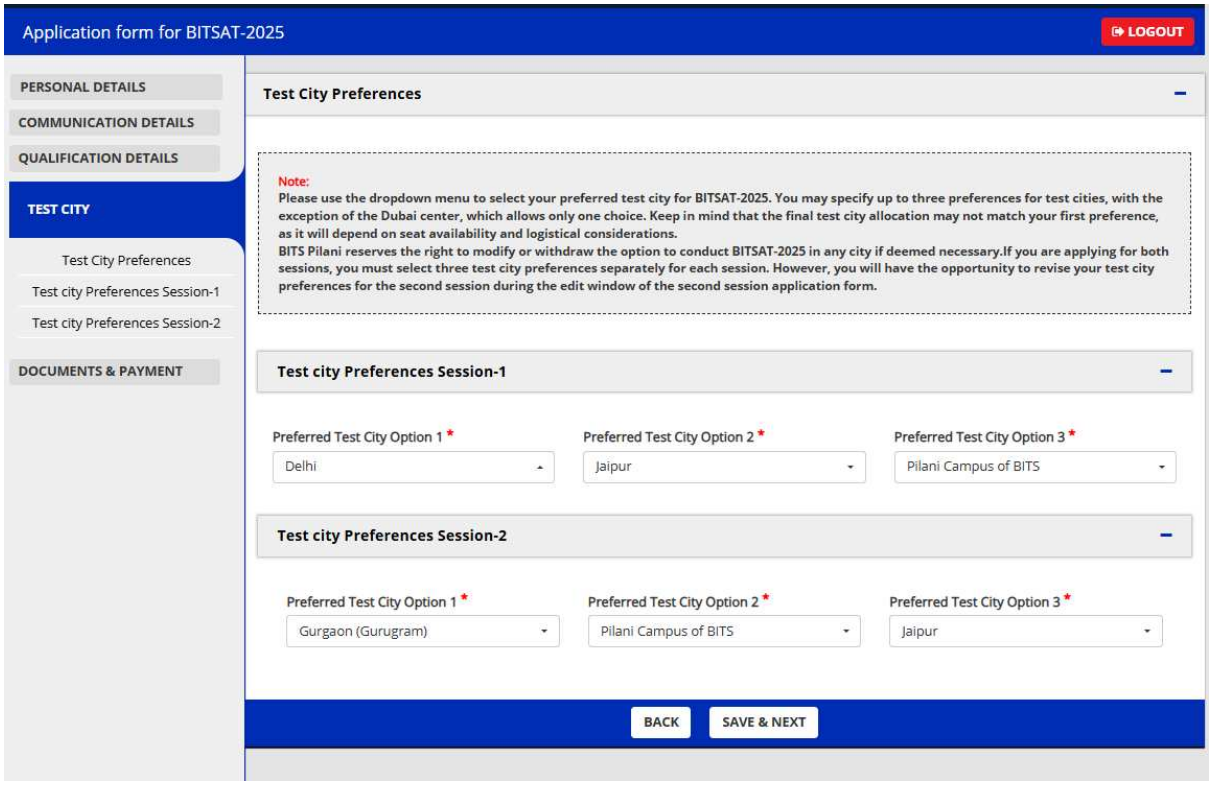

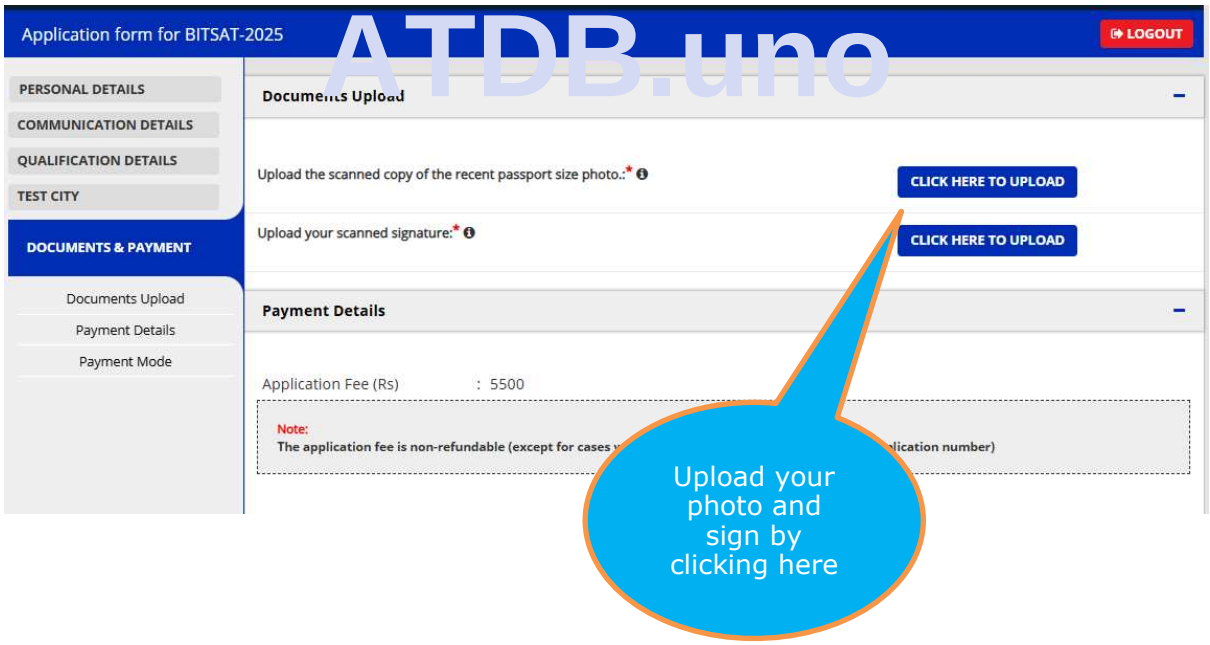

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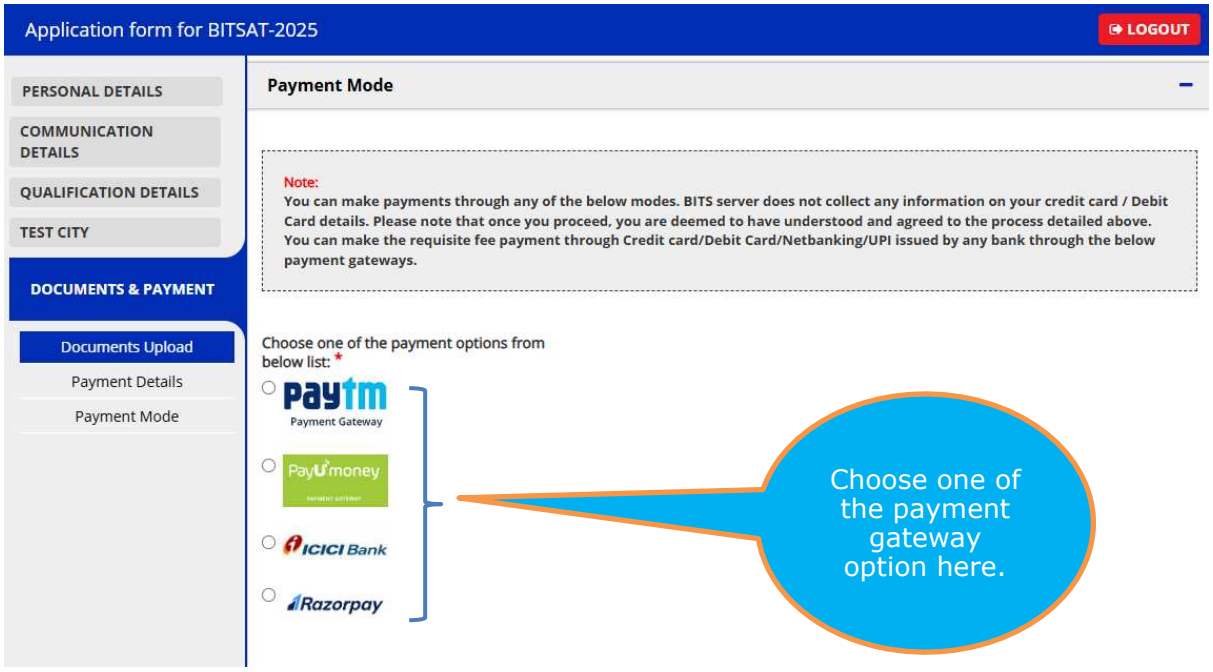

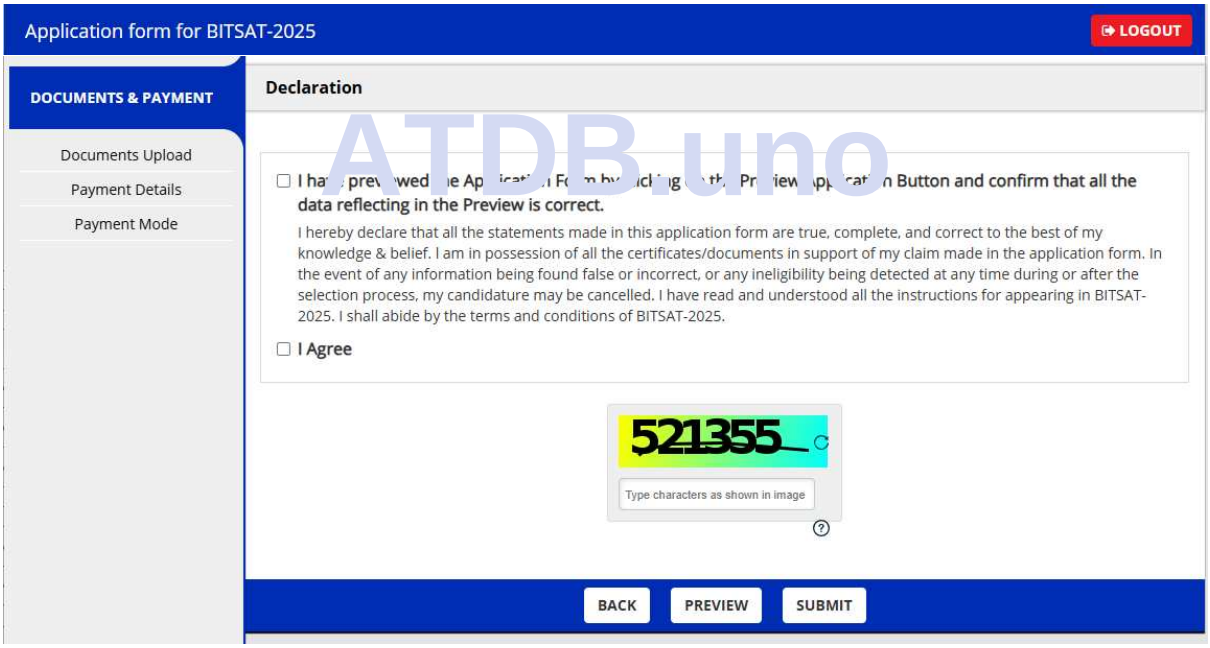

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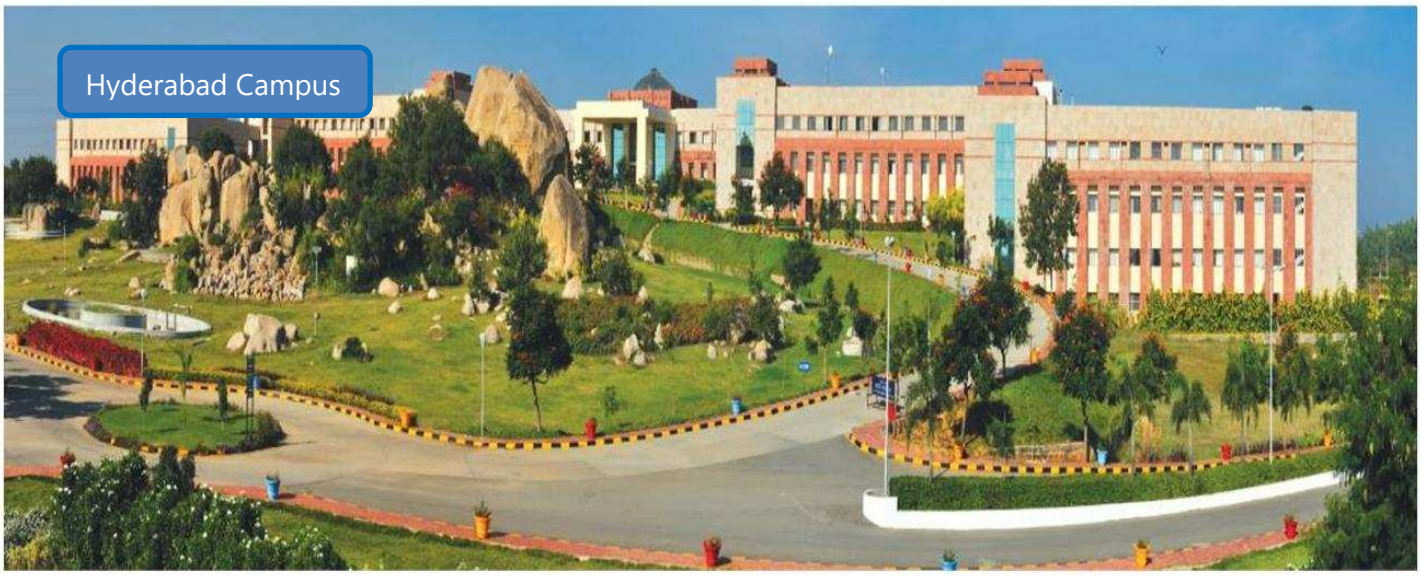

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