

INFORMATION BULLETIN

**Joint Entrance Test for admission into 2nd year of four-year
bachelor's degree courses in Engineering/ Technology/
Pharmacy**

JELET-2021

**Date of Examination
29.08.2021 (Sunday)**

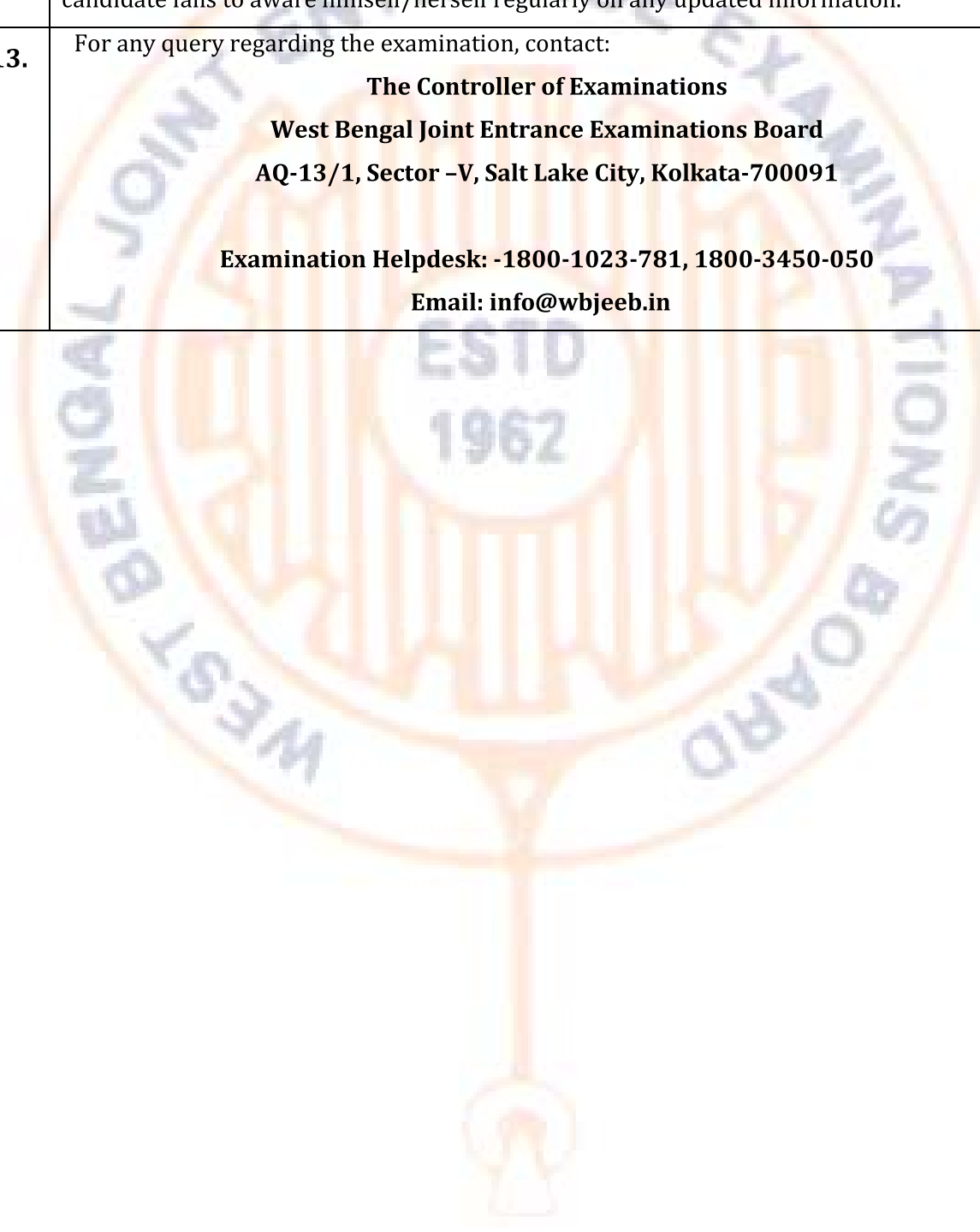


**West Bengal Joint Entrance Examinations Board
AQ-13/1, Sector V, Salt Lake City
Kolkata 700091
1800-1023-781, 1800-3450-050**

Release date: 28th March 2021

IMPORTANT INSTRUCTIONS FOR ONLINE APPLICATION	
Candidates are required to go through the Information Bulletin carefully before applying for the examination.	
Once an application is received, it will be construed that the candidate agrees to all terms & conditions, rules & regulations stipulated in the Information Bulletin and in the relevant notices published by the Board for the said purpose.	
Any application not in compliance with the conditions specified in the Information Bulletin is liable to be rejected.	
1.	Application for the examination must be done online only. No printed application form is available.
2.	Ensure filling genuine application form available online at www.wbjeeb.nic.in
3.	It is essential to have a mobile number and a unique email ID. All future communications will be sent to the registered mobile number and email ID. WBJEEB will not be responsible for non-receipt of any communication due to the mobile number and/or the email ID being wrong/non-existing/non-functional/changed or due to network condition.
4.	Once the registration details i.e., name, father's name, mother's name, gender, domicile and date of birth are entered and submitted, this information cannot be changed/modified/edited under any circumstances. Also, the information must match exactly with the school/college admit cards, mark sheets, certificates, photo identity cards, caste/category/income/EWS certificates etc. which a candidate has to produce at the time of entering the examination hall, during counselling/admission and registration with the University.
5.	Do not attempt to make any duplicate application.
6.	Do not share your application number; password, security question/answer with anyone.
7.	Upload scanned copy of photograph and signature as per the instructions provided in the Information Bulletin. If any candidate receives any SMS/email regarding discrepancy in photograph/ signature, he/she must take corrective action immediately within one day. Admit cards will not be issued if these images are illegible and thus not acceptable.
8.	If any information other than name, father's name, mother's name, gender, domicile and date of birth given in the application needs to be corrected, the rectification can be done by the candidate only within the notified ' Correction Period '. The Board cannot and will not make or allow any correction thereafter.
9.	The Examination Fees can be paid by Net Banking/ Debit Card/ Credit Card only. Application fee for the examination is Rs 500 (Rupees five hundred only) for General candidates and Rs 400 (Rupees four hundred only) for SC/ST/OBC-A/OBC-B candidates, plus the Bank's service charges as applicable. The fee once paid is not refundable under any circumstances. Do not wait for the last day to make fee payment to avoid payment failure by Bank or EPG.
10.	Keep copies of confirmation page, admit card in safe custody.

11.	Candidates are requested to go through the Board's website (www.wbjeeb.nic.in/wbjeeb.in) regularly to update themselves for the latest information.
12.	For any information on required Academic Qualification in respect to admission into different University/Institution and in respect to other specific criteria issued by the Government/Regulatory bodies from time to time, the candidates are requested to regularly go through the websites of the respective University/Institution/Regulatory body and the Board's website. Board will not be held responsible by any way, if any candidate fails to aware himself/herself regularly on any updated information.
13.	<p>For any query regarding the examination, contact:</p> <p style="text-align: center;">The Controller of Examinations West Bengal Joint Entrance Examinations Board AQ-13/1, Sector -V, Salt Lake City, Kolkata-700091</p> <p style="text-align: center;">Examination Helpdesk: -1800-1023-781, 1800-3450-050 Email: info@wbjeeb.in</p>



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1.0	Introduction:													
	The West Bengal Joint Entrance Examinations Board													
	<p>The West Bengal Joint Entrance Examinations Board (WBJEEB) was established in 1962 by Government of West Bengal in exercise of the powers conferred under article 162 of the Constitution of India in pursuant to No. 828-Edn(T), dated 02.03.1962. Subsequently, the Board was recognised as a Statutory Body vide West Bengal Act XIV of 2014 and was authorised for conducting the Joint Entrance Examination (WBJEE) in respect to admission to various institutions in West Bengal imparting education in Medical, Engineering and Technological courses.</p> <p>The Board is empowered to conduct Common Entrance Examinations for admission to Undergraduate and Postgraduate Professional and Vocational Courses.</p> <p>WBJEEB has been instrumental in the admission process based on online application and allotment through e-Counselling since 2012. It advocates fairness and transparency, ensures no-error, and adopts state-of-the-art technology.</p>													
2.0	JELET-2021													
2.1	<p>The examination: For 2021–2022 academic sessions, the Board will conduct common entrance examination titled JELET-2021 for admission into 2nd year (3rd semester) of four-year bachelor's degree courses in Engineering/ Technology/ Pharmacy (except Architecture) in Universities, Government Colleges as well as Self Financing Engineering & Technological Institutes in the State of West Bengal.</p>													
2.2	Syllabus – see APPENDIX-7													
2.3	<p>Schedule of JELET-2021</p> <p>29th August 2021 (Sunday), 11 a.m. to 1:00 p.m.</p> <p>JELET-2021 will be held once only and there shall be no further examination under any circumstances for those who are unable to appear on the above date and time.</p>													
2.4	<p>Pattern of Question Papers.</p> <p>The test will be on one (1) paper only. The paper will contain one hundred (100) MCQ (Multiple Choice Question) type questions, with four answer options each. Each question carries 1-mark, full mark of the paper is 100 and duration of the test is 2 hours. The questions will be in English language only.</p> <p>The paper consists of various sections depending on the qualifying Diploma/B. Sc. examination the candidate has passed/appeared/appearing. The detail is given in the table below.</p> <table border="1"> <thead> <tr> <th>Qualifying examination passed/appeared/appearing</th> <th>Topic</th> <th>No. of questions</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Compulsory for all candidates with Diploma in Engineering / Technology.</td> <td>Engineering Mathematics</td> <td>20</td> </tr> <tr> <td>Electrical Technology</td> <td>15</td> </tr> <tr> <td>Computer Application</td> <td>20</td> </tr> <tr> <td>Environmental Engineering</td> <td>15</td> </tr> </tbody> </table>		Qualifying examination passed/appeared/appearing	Topic	No. of questions	Compulsory for all candidates with Diploma in Engineering / Technology.	Engineering Mathematics	20	Electrical Technology	15	Computer Application	20	Environmental Engineering	15
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	For candidates with Diploma in Engineering / Technology except Printing Technology and Agricultural Engineering	Engineering Mechanics	15
		Strength of Materials	15
	For candidates with Diploma in Printing Technology	Basic Printing Engineering	15
		Printers' Materials Science	15
	For candidates with Diploma in Agricultural Engineering	Soil & Water	10
		Farm Machinery and Power	10
		Food Processes and Food Harvest Engineering	10
For candidates with B. Sc. Degree	Mathematics	100	
For candidates with Diploma in Pharmacy	Pharmacy	100	
2.5	Mode of answering in the examination.		
	<p>a) Questions are to be answered on specially designed optical machine-readable response (OMR) sheet, which will be evaluated by Optical Mark Recognition method. Thus, it is very important to follow the correct method of marking.</p> <p>b) There will be four alternative answers for each question. Candidates will indicate response to the questions by darkening the appropriate circle completely with blue/black ball point pen.</p> <p>c) Any other kind of marking e.g., filling the bubble incompletely, filling with pencil, cross mark, tick mark, dot mark, circular mark, over writing, scratching, erasing, white ink, marking outside the bubble etc. may lead to wrong/partial/ambiguous reading of the response. WBJEEB will be, in no way, responsible for such eventuality.</p> <p>d) Response marking cannot be edited/changed/erased/modified.</p>		
2.6	Scoring Methodology		
	<p>a) All questions will have four answer options.</p> <p>b) Only one option is correct.</p> <p>c) Correct response will yield 1 (one) mark.</p> <p>d) Incorrect response will yield -1/4 (25% negative) marks.</p> <p>e) For any combination of response with more than one option, the said answer will be treated as incorrect and will yield -1/4 (25% negative) marks.</p> <p>f) Not attempting the question will fetch zero mark.</p>		
2.7	Ranking Methodology and publication of Merit Lists		
	<p>WBJEEB will prepare merit ranks based on the candidates' score in the entrance tests. Individual candidates will be able to view and download his/her Rank Card, which will contain score and rank. WBJEEB does not publish any general ranks/score list.</p> <p>a) Ranking shall be done in the descending order of marks scored in the entrance test. In case of ties, tie-breaking rules as given in section 2.8 shall be</p>		

	<p>applicable.</p> <p>b) The rank shall be in the name and style of 'GMR' (General Merit Rank) for Diploma in Engineering & Technology candidates and B. Sc. Candidates. The rank shall be in the name and style of 'PMR' (Pharmacy Merit Rank) for Diploma in pharmacy candidates.</p> <p>c) Since B. Sc. Candidates are considered for admission only if vacancies remain even after filling the seats with available Diploma holder candidates, GMR of B. Sc. Candidates will start after the end of GMR for Diploma in Engineering & Technology candidates.</p> <p>d) Ranking shall be done in the descending order of marks scored in the entrance test. In case of ties, tie-breaking rules as given in section 2.8 shall be applicable.</p> <p>e) Separate reserved category merit position will also be indicated for respective category of students e.g., SC Rank, ST Rank, OBC-A Rank, OBC-B Rank, PwD Rank, as applicable.</p> <p>f) Counselling/allotment of seat/admission will be done based on GMR only (not on category ranks). Category ranks are only for information to candidates.</p> <p>g) Category ranks are generated based on the category information given by the candidates during online application. If during verification, any candidate's claim is found invalid, his/her category rank will be cancelled and the candidate will be considered in general category with his/her GMR. Category ranks of other candidates will not be revised.</p>
2.8	<p>Tie-breaking Methodology in Merit Rank:</p> <p>A. For Diploma holders in Engineering & Technology except Printing Technology and Agricultural Engineering:</p> <ol style="list-style-type: none"> I. Less negative marks in total II. More positive marks in Engineering Mechanics and Strength of Materials taken together. III. Less negative marks in Engineering Mechanics and Strength of Materials taken together. IV. More positive marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together. V. Less negative marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together. <p>B. For Diploma holders in Printing Technology:</p> <ol style="list-style-type: none"> I. Less negative marks in total II. More positive marks in Basic Printing Engineering and Printers' Materials Science taken together. III. Less negative marks in Basic Printing Engineering and Printers' Materials Science taken together. IV. More positive marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together. V. Less negative marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together.

	<p>C. For Diploma holders in Agricultural Engineering:</p> <ol style="list-style-type: none"> I. Less negative marks in total II. More positive marks in Soil & Water, Farm Machinery and Power and Food Processes and Food Harvest Engineering taken together. III. Less negative marks in Soil & Water, Farm Machinery and Power and Food Processes and Food Harvest Engineering taken together. IV. More positive marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together. V. Less negative marks in Engineering Mathematics, Electrical Technology, Computer Application and Environmental Engineering taken together. <p>D. For B. Sc. candidates:</p> <ol style="list-style-type: none"> I. Less negative marks in total <p>E. For Diploma holders in pharmacy:</p> <ol style="list-style-type: none"> I. Less negative marks in total F. If tie exists still thereafter, same will be broken by the date of birth (DOB) of the concerned candidates; the older candidate will be given preference over the younger one.
2.9	Rules of the examination (JELET-2021): Rules to be followed during the examination is given in APPENDIX-5
3.0	Eligibility and academic qualification criteria
3.1	<p>Eligibility criteria for application:</p> <ol style="list-style-type: none"> a) Citizenship: Applicant must be a citizen of India. b) Age Restriction: <ol style="list-style-type: none"> I. There is no upper age limit for Diploma holders in Engineering/ Technology/ Pharmacy. II. For B. Sc. Candidates, the upper age limit is 27 (twenty-seven) years as on 31.12.2021. III. For Diploma holders in marine Engineering, the upper age limit is 25 (twenty-five) years as on 31.12.2021.
3.2	<p>Eligibility criteria for admission:</p> <p>(A) Diploma holders seeking admission into Engineering & Technology Degree Courses:</p> <ol style="list-style-type: none"> i. The candidate must pass Diploma in ANY branch from an institute approved by AICTE for admission in ANY branch of Engineering & Technology. ii. The candidate must secure at least 45% (40% for SC/ ST/ OBC-A/ OBC-B/ PwD) marks or equivalent CGPA in diploma examination in relevant branch. iii. But for admission in Jadavpur University, the candidate must secure at least 60% (45% for SC/ ST/ OBC-A/ OBC-B/ PwD) marks or equivalent CGPA in diploma examination in relevant branch. iv. All relevant norms of D. G. Shipping will be applicable for admission into Degree Course in Marine Engineering.

(B) B. Sc. candidates seeking admission into Engineering & Technology Degree Course:

- i. The candidate must pass B. Sc. Degree from any University recognized by UGC with at least 45% (40% for SC/ ST/ OBC-A/ OBC-B/ PwD) marks
- ii. Also, the candidate must have passed 12th standard school examination with Mathematics as a subject.
- iii. The candidate, if admitted, will have to clear the subjects of Engineering Mechanics and Engineering Graphics / Engineering Drawing of the 1st year Degree Course in Engineering/Technology along with their second-year subjects.
- iv. B.Sc. candidates will be considered for admission only if vacancies remain even after filling the seats with available Diploma holder candidates.
- v. B. Sc. Candidates are **not eligible for admission into Degree Course in Pharmacy.**
- vi. B. Sc. Candidates are **not eligible for admission in Jadavpur University through lateral entry.**

(C) Both B. Sc. Candidates and Diploma holders Engineering & Technology will also be eligible for admission to the 1st year Engineering Degree Courses, subject to vacancies in the 1st year classes in case the vacancies as lateral entry at second year are exhausted. However, the admission shall be based strictly on the eligibility criteria as mentioned above.

(D) Diploma holders in Pharmacy seeking admission into Degree Course in Pharmacy

- i. The candidate must pass Diploma in Pharmacy from an institution approved by the Pharmacy Council of India under section 12 of the Pharmacy Act.
- ii. The candidate must secure at least 45% (40% for SC/ ST/ OBC-A/ OBC-B/ PwD) marks or equivalent CGPA.
- iii. Such candidates will also be eligible for admission to the 1st year Degree Course subject to vacancies in the 1st year classes in case the vacancies as lateral entry at second year are exhausted. However, the admission shall be based strictly on the eligibility criteria as mentioned above.

3.3 Verification of eligibility criteria.

Admit cards for the examination are issued based on the information provided by the candidate. All verifications are done during and after counselling. Hence candidates cannot assume that the personal information shown in the admit card are accepted by the Board.

If it is found during counselling that any information given by the candidate is/are not correct or if the candidate is unable to produce certificate/document/proof for the same, his/her information will be corrected/modified accordingly which may even make him/her ineligible for some/any course(s).

Similarly, if at any stage during or after counselling it is found on scrutiny that the information/document(s) provided by the candidate is false/incorrect, his/her candidature shall be treated as cancelled even if he/she secured a Merit Rank and/or a seat has been allotted to the candidate. Hence, securing a Rank does not constitute a right/guarantee in favour of a candidate for his/her claim for admission

	if he/she fails to comply with the required criteria.
4.0	<p>Seat Matrix:</p> <p>The seat matrix for last year i.e., for the academic session 2020-21 is given in Board's website.</p> <p>Seat matrix for the academic session 2021-22 will be declared by the competent Authority in due course of time and will be published at Board's web site before counselling.</p> <p>Note that there may be other seats available in some institute/course which are not offered through e-counselling and hence are not shown in the seat matrix</p>
5.0	<p>Reservation of Seats for SC/ST/OBC-A/OBC-B/PwD category of students</p> <p>a) Reservation of Seats will be available for SC/ST/OBC-A/OBC-B/PwD category of candidates as per applicable rules depending upon the type of institute.</p> <p>b) Such reservation shall be restricted to candidates who are Indian citizen and domiciled in West Bengal.</p> <p>c) List of reserved seats will be announced by the concerned authority before counseling.</p> <p>d) Candidates claiming such reservation must submit relevant Certificate issued from any of the competent Authorities as given below.</p> <p>e) The certificate is to be produced during counselling, admission etc. If the certificate is then found to be invalid, the candidate will lose the opportunity of admission in reserved category.</p>
6.0	<p>Requirements in terms of Residential/Domicile Criteria</p> <p>a) The candidate must be a domicile of Home State i.e., West Bengal for admission in,</p> <p>i. Any seat including general category seats in any Government aided Engineering / Technology / Pharmacy Colleges.</p> <p>ii. Any seat including general category seats in Aliah University, Jadavpur University and West Bengal University of Animal & Fishery Sciences.</p> <p>iii. Any reserved category seat (SC, ST, OBC-A, OBC-B, PwD) in any institute.</p> <p>b) The candidate needs to download the required proforma as per the detail given in section 3.4.1 and keep the certificate ready to be produced during counseling, admission etc.</p> <p>c) However, Diploma holders in Fashion Technology from Govt. Polytechnic Institutions from Tripura are eligible for admission to Degree level Apparel Production & Management Course and Textile Technology Course in Govt. College of Engineering and Textile Technology, Serampore and Berhampore under Lateral Entry Scheme with relaxation of (West Bengal) domicile criteria.</p>
6.1	<p>Criteria to be treated as domicile of West Bengal and applicable proforma of certificate.</p> <p>Only those candidates will be treated as domicile of West Bengal who are either,</p> <p>a) residing in West Bengal continuously at least for last 10 (ten) years as on 31.12.2020.</p> <p style="text-align: center;">OR</p> <p>b) whose parent(s) is/are permanent resident(s) of West Bengal having permanent</p>

	<p>address within the State of West Bengal.</p> <p>In case of a) above, a certificate is to be obtained as per proforma 'a1'.</p> <p>In case of b) above, a certificate is to be obtained in pro forma 'b' or the candidate must produce in original any two of Voter ID card/ Adhaar card/ Passport/ Ration card belonging to his/her parents. The said documents must justify that the residential address of parent(s) is in West Bengal.</p> <p>Proforma 'a1' and 'b' are to be certified by Government Officials as detailed below.</p> <p>The domicile certificate must be issued on or after 31.12.2020.</p> <p>During counselling etc. if SC/ST/OBC-A/OBC-B candidates cannot produce required domicile certificate, they can produce/upload their category certificates in lieu of domicile certificate. But in that case if the category certificate is rejected during verification, their domicile status is also converted to NON-West Bengal.</p>
6.2	<p>Competent authority to issue domicile certificate</p> <p>A. Proforma 'a1' or 'b' must be signed and certified by any of the following competent authorities from Central Government or State Government <i>having local jurisdiction over the place of the permanent residence of the concerned candidate or his/her parents viz.</i></p> <ol style="list-style-type: none"> a) District Magistrate, Additional District Magistrate, Deputy Magistrate, Deputy Collector, Sub – Divisional Officer, Block Development Officer. b) Superintendent of Police, Additional Superintendent of Police, Sub Divisional Police Officer, Deputy Superintendent of Police, c) Commissioner, Additional Commissioner, Joint Commissioner, Deputy Commissioner, Assistant Commissioner of Police Commissionerate. d) Judicial Magistrate of any rank or position in the concerned district or Metropolitan locality or Hon'ble High Court at Calcutta or Hon'ble Supreme Court of India. e) Corporation Area - Commissioner, Additional Commissioner, Joint Commissioner, Assistant Commissioner. f) Assistant Secretary or above in the Secretariat to the Government of West Bengal (including GTA) or Central Government. g) Deputy Director or above in the Directorate to the Government of West Bengal or Central Government. <p>B. Officials issuing domicile certificates MUST provide his/her full name, designation, place of posting with address, land line/mobile number. He/she should also provide his/her identity card number if available.</p> <p>C. Note: Domicile certificates issued by any elected people's representative such as municipal commissioner, Councillor of Municipal Corporation/ Municipality, Member of three-tier Panchayat system or GTA, MLA or MP are not acceptable.</p>
7.0	<p>Competent Authorities for the issuance of SC/ST Certificate for candidates claiming under such reserve category of seats.</p> <p>SC/ST Certificates are to be issued by any of the following authorities:</p> <ol style="list-style-type: none"> (i) Sub-Divisional Officers for all districts except Kolkata

	(ii) District Welfare Officer, Kolkata & Ex-Officio Joint Director, B.C.W. in case of Kolkata Municipal Area (as defined in clause (9) of Section 2 of K.M.C Act, 1980
8.0	<p>Competent Authorities for the issuance of OBC-A / OBC-B Certificate for candidates claiming under such reserve category of seats:</p> <p>As per Notification vide No. 374(71)-TW/EC/MR-103/94 dated 27/7/1994, read with Memorandum No. 1204-SBCW/MR-67/10 dated 27/7/2015 issued by Backward Classes Welfare Department. Govt. of W.B., the Sub Divisional Officer of a Sub- Division in a District is the certificate issuing authority. In Kolkata such certificate is issued by such an officer as the State Government by modification authorizes. Accordingly, the District Welfare Officer, Kolkata and Ex-officio Joint Director, BCW has been notified to act as the certificate issuing authority in respect of Kolkata covering the jurisdiction of the Kolkata Municipal Corporation.</p>
9.0	<p>Reservation of seats for PwD candidates</p> <p>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.</p> <p>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.</p> <p>Accordingly, reservation in PwD seats will be available for the following types of disabilities, percentage of disability being not less than 40%.</p> <ol style="list-style-type: none"> 1. Locomotor disability as specified in the Schedule of RPwD Act, 2016 2. Visual impairment as specified in the Schedule of RPwD Act, 2016 3. Hearing impairment as specified in the Schedule of RPwD Act, 2016 4. Speech & language disability as specified in the Schedule of RPwD Act, 2016 5. Intellectual disabilities as specified in the Schedule of RPwD Act, 2016 6. Mental illness. 7. Disabilities caused due to chronic neurological conditions and blood disorder. 8. Multiple disabilities including deaf blindness. <p>PwD certificates are to be issued by any of the authorities as given in the Order No. 289-HF/O/PHP/IR-05/2017 dated 29.08.2018 by the Government of West Bengal, Health & Family Welfare Department (PHP Branch)</p>
9.1	<p>Special facilities to PwD candidates for appearing in the examination.</p> <p>a) Concessional application fees: PwD candidates are eligible for 40% concession on application fees. To avail the same, the candidate must formally apply in writing (enclosing a copy of his/her confirmation page and PwD certificate) to the Chairman, WBEEB and send/submit the application to the Board office within the last date of online application.</p> <p>b) Compensatory time: Twenty minutes per hour compensatory time as per duration of examination (On pro-rata basis) will be allowed to the PwD candidates with benchmark disabilities. The candidate must formally apply in</p>

	<p>writing (enclosing a copy of his/her confirmation page and PwD certificate) to the Chairman, WBJEEB and send/submit the application to the Board office within the last date of online application. Special arrangement will be made in the office of the Board in Kolkata for such candidates to sit for the examination.</p> <p>c) Scribe/reader: Facility of own Scribe/Reader will be allowed to a candidate with benchmark disability and has limitation in writing including that of speed if so desired by him/her. To avail this facility, the candidate must formally apply in writing (enclosing a certificate in the format as given in appendix-3 and a letter of undertaking in the format as given in appendix-4) to the Chairman, WBJEEB and send/submit the application to the Board office within the last date of online application. Special arrangement will be made in the office of the Board in Kolkata for such candidates to sit for the examination.</p> <p>d) The Board's decision in this regard will be final and binding on the candidate.</p>
10.0	<p>Legal jurisdiction</p> <p>a) All matters pertaining to conduct of the examination and counselling shall fall within the jurisdiction of Kolkata only.</p> <p>b) The Board will not be a party pertaining to any dispute arising in the process of admission</p>
11.0	<p>Procedure for submission of application form, payment of examination fees.</p>
11.1	<p>Registration</p> <p>a) The candidate will enter personal details such as, name, father's name, mother's name, date of birth, gender, identification type and number, present and permanent address, mobile number, email ID etc.</p> <p>b) Candidates must be careful while entering name, father's name, mother's name, date of birth, gender and domicile. This information cannot be changed/edited/modified under any circumstances.</p> <p>c) Then the candidate has to create password, choose security question/ answer, review and submit the registration.</p> <p>d) An application number will be generated and will appear on the screen. Also, SMS/email will be sent to the candidate.</p> <p>e) Candidate must remember his/her application number, password and security question/answer. If the candidate forgets the password, he/she has to recover it through "Forgot Password" option. There is no other way to recover the password.</p> <p>a) It is not possible for any person/agency to change/edit/input any information without knowing the password. Hence candidates must not share their password with anybody. The Board will not be responsible for any change resulting from sharing/ divulging of the password.</p>
11.2	<p>Application</p> <p>a) At this stage, the candidate needs to fill up various other information such as, domicile, category, PwD status, family income status, religion, nationality, academic details etc.</p> <p>b) Thereafter the candidate needs to choose any three zones of examinations in order of his/her choice and submit the application.</p>

11.3	<p>Uploading of images</p> <p>a) The candidate is required to upload JPG/JPEG images of his/her recent colour photograph (10 to 200kB) and signature (4 to 30 kB).</p> <p>b) If any document e.g., certificate/marksheet etc. is to be uploaded, it must be in PDF format (50 to 300kB)</p> <p>c) All documents are to be uploaded in one go.</p>
11.4	<p>Payment of Examination Fees</p> <p>a) The Examination Fees can be paid by Net Banking/ Debit Card/ Credit Card only.</p> <p>b) Application fee for the examination is Rs 500 (Rupees five hundred only) for General candidates and Rs 400 (Rupees four hundred only) for SC/ST/OBC-A/OBC-B candidates, plus the Bank's service charges as applicable.</p> <p>c) The fee once paid is not refundable under any circumstances.</p>
11.5	<p>Confirmation Page</p> <p>On successful completion of all the above steps, candidate shall be directed to download the 'Confirmation Page' which means that the application is complete.</p> <p>APPLICATION IS NOT COMPLETE UNTIL THE CONFIRMATION PAGE IS GENERATED.</p> <p>The confirmation page contains information as given by the candidate. Also, the same information will be repeated in the admit card and the rank card. As such, the Board is in no way responsible for any mistake in it due to incorrect entry given by the candidate.</p> <p>Candidate should take a Print-out of the Confirmation Page and should preserve the same carefully. The confirmation page cannot be regenerated after completion of the declared e-counselling and admission process conducted by the Board. Hence it is the responsibility of the candidate to preserve it safely.</p> <p>a) If any candidate loses his/her confirmation page, a duplicate can be provided by the Board, but only till 60 days after the date of declaration of result. In order to get a duplicate confirmation page, the candidate must apply to the Board and pay a processing fee of Rs. 500/- by a bank draft in the name of "West Bengal Joint Entrance Examinations Board" payable in Kolkata.</p>
11.6	<p>Correction of application form</p> <p>a) It is not possible to correct any primary registration data i.e., Name, Father's Name, Mother's name, gender, domicile and Date of birth.</p> <p>b) If any candidate intends to correct any other information in his/her application, he/she can do so after logging in during the given correction period. The Board cannot entertain any request for any correction under any circumstances beyond the correction period.</p>

	<p>c) Also, the Board will not make any correction on behalf of any candidate.</p> <p>d) Confirmation page, admit card, rank card etc. will be issued with the personal detail as is given by the candidate. In case of any problem to the candidate during admission or thereafter due to any mistake committed by him/her, the Board is not able to render any help e.g., issuing any letter of correction. The candidate must take corrective actions at his/her end with the institute, where he/she takes admission.</p>
12.0	<p>Admit Card</p> <p>a) Admit cards will be generated on the notified date for the student to download and take a print. Candidate must carry a printed hard copy of the admit card to the examination centre.</p> <p>b) Candidates must ensure that the admit card is not mutilated/ distorted/ soiled even by accident. Candidates with such mutilated/ distorted/ soiled admit cards will not be allowed to appear in the examination.</p> <p>c) If a candidate needs a duplicate admit card after the examination, the same can be provided by the Board, but only till 60 days after the date of declaration of result. In order to get a duplicate, the candidate must apply to the Board and pay a processing fee of Rs. 500/- by a bank draft in the name of “West Bengal Joint Entrance Examinations Board” payable in Kolkata.</p>
13.0	<p>Allocation of examination centre.</p> <p>a) Allocation of examination centre will be based on the choices given by the candidate during online application. However, discretion of the Board in allocation of examination centre shall be final. No request for change of allocated centre will be entertained under any circumstances.</p> <p>b) List of district-wise examination zones is given in APPENDIX-6.</p> <p>Any examination zone may be dropped if adequate numbers of candidates are not available or under any unavoidable circumstance. In such case the candidate will be allocated alternative examination zone</p>
14.0	<p>Evaluation and declaration of result</p> <p>a) WBJEEB does not publish any rank/score list.</p> <p>b) Result will be published in the form of Rank Card, which will contain all relevant ranks and total score.</p> <p>c) Candidates can view and download their rank card by logging in with their password.</p> <p>d) Duplicate rank cards cannot be generated at any later stage after completion of counselling and admission conducted by the Board. Hence candidates are advised to retain their rank cards carefully in a secured place for all future purpose.</p> <p>e) If a candidate needs a duplicate rank card even after completion of counselling and admission conducted by the Board, the same can be provided, but only till 60 days after the date of declaration of result.</p>

	<p>f) In order to get a duplicate rank card, the candidate must apply to the Board and pay a processing fee of Rs. 500/- by a bank draft in the name of “West Bengal Joint Entrance Examinations Board” payable in Kolkata</p> <p>g) Ranks cards with scores are be issued to all candidates, who appears in the examination. But all may not be awarded a rank and hence may not be eligible for counseling, for which a cut off rank and/or a cut off score will be decided by the board.</p>
15.0	<p>Counselling/seat allotment and provisional admission</p> <p>A separate notification with details of counseling/seat allotment and admission will be published in www.wbjeeb.in and www.wbjeeb.nic.in in due course after publication of result.</p>

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APPENDIX -1

PROFORMA-a1

Residential/Domicile Certificate for candidates residing in the State of West Bengal continuously for at least last ten (10) years as on 31.12.2020.

Certified that _____

Son / daughter of _____ is a resident/permanent resident of West Bengal at Village/House No. _____

Street _____

Post Office _____ Police Station _____

In the District of _____ under _____

Assembly Constituency and has been living in the State of West Bengal continuously / uninterruptedly at least for the last ten (10) years as on 31-12-2020.

Paste 4 cmx3 cm
size recent colour
photograph in this
box

Candidate's signature

Candidate must sign here in front of the certifying authority.

aph)

Signature of Certifying Authority _____

Designation with Official Seal _____

Full Name of Certifying Authority _____

Office Address _____

Office Phone No. _____ Mobile No: _____ (optional)

ID No: _____ (optional)

Note: Photograph is to be attested by the certifying authority.

The Certifying Authority should preserve a duplicate copy of this Certificate.

APPENDIX -2

PROFORMA-b

Residential/Domicile Certificate for candidates not residing in the State of West Bengal but whose parent(s) is (are) permanent resident(s) of West Bengal having their permanent home address within West Bengal.

Certified that _____

Father/ mother of _____ (the applicant) is/ are permanent Resident of West Bengal at Village/House No. _____

Street _____

Post Office _____ Police Station _____

In the District of _____

Under _____ Assembly Constituency

Paste 4 cmx3 cm size recent colour photograph of the candidate in this box

Paste 4 cmx3 cm size recent colour photograph of father/ mother of the candidate in this box

Father's/ Mother's Signature

Candidate's Signature

Candidate must sign here in front of the certifying authority

(Candidate's Photograph) (Father's/ Mother's Photograph)

Signature of Certifying Authority _____

Designation with Official Seal _____

Full Name of Certifying Authority _____

Office Address _____

Office Phone No. _____ Mobile No: _____ (optional)

ID No: _____ (optional)

Note: Photographs are to be attested by the certifying authority.

The Certifying Authority should preserve a duplicate copy of this Certificate.

APPENDIX – 3

Certificate regarding physical limitation to write in an examination.**Certificate No.** **Dated**

This is to certify that Mr./Ms.

Son/daughter of Mr. Ms.

Residing at

.....

Having WBJEE-2021 application No. has the following disability
(name of the Specified Disability)..... In percentage of
.....(in words)(in figures).

Please tick the specified disability (Assessment may be done on the basis of Gazette of India, Extraordinary, Part-II, Section-3, Subsection (ii)) Ministry of Social Justice and Empowerment)

Paste 4 cmx3
cm size recent
colour
photograph of
the candidate in
this box.

S. No.	Category	Type of Disability	Specified Disability
1	Physical Disability	Locomotor Disability	a) Leprosy cured person, b) Cerebral palsy, c) Dwarfism, d) Muscular dystrophy, e) Acid attack victims
		Visual Impairment	a) Blindness, b) Low vision
		Hearing Impairment	a) Deaf, b) Hard of hearing
		Speech & Language Disability	a) Permanent disability arising out of conditions such as laryngectomy or aphasia affecting one or more components of speech and language due to organic or neurological causes
2	Intellectual Disability		a) Specific learning Disability (Perceptual Disabilities, Dyslexia, Dyscalculia, Dyspraxia & Development Aphasia) b) Autism spectrum disorder
3	Mental Behaviour		a) Mental illness
4	Disability caused due to	i. Chronic Neurological Conditions	a) Multiple sclerosis b) Parkinsonism
		ii. Blood disorder	a) Haemophilia, b) Thalassemia, c) Sickle cell disease
5	Multiple Disabilities		a) More than one of the above specified disabilities including deaf blindness

This is to further certify that he /she has physical limitation which hampers his/her writing capabilities to write the examination owing to his/her disability.

Signature

Name

Chief Medical Officer/ Civil Surgeon/Medical Superintendent

Govt. Health Care Institution with seal

APPENDIX – 4

Letter of Undertaking for Using Own Scribe

I....., a candidate with.....
 (name of the disability) appearing for the
 (name of the examination) bearing Application No. do hereby state
 that (name of the scribe) will provide
 the service of scribe/reader for the undersigned for taking the aforesaid examination.

I do hereby undertake that his qualification is

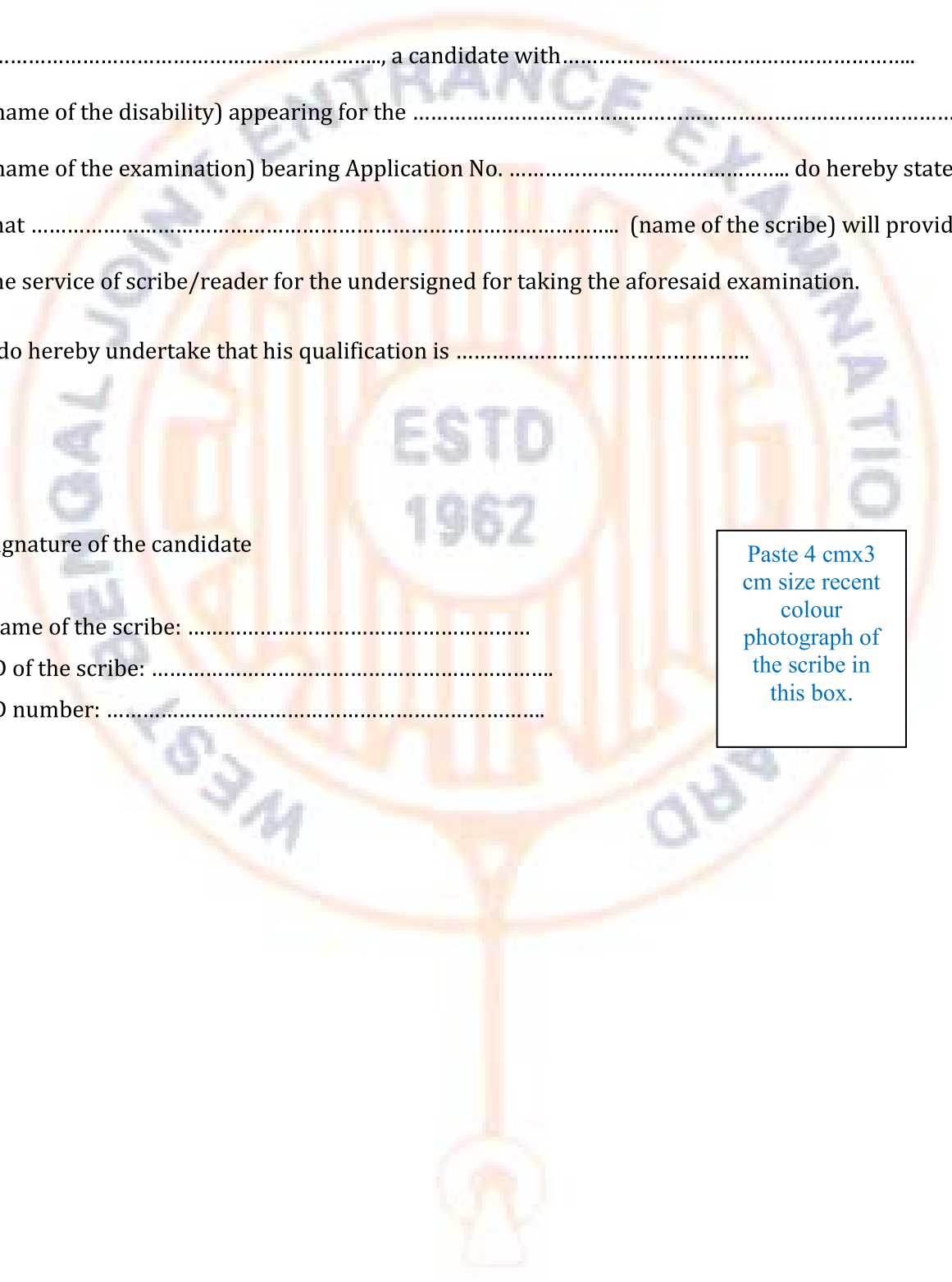
Signature of the candidate

Name of the scribe:

ID of the scribe:

ID number:

<p>Paste 4 cmx3 cm size recent colour photograph of the scribe in this box.</p>
--



APPENDIX: 5**Rules of the Examination**

1. Candidates are advised to enter the examination centres at least 30 minutes before commencement of the test.
2. Be sure about the exact location of your examination centre and means of commuting, in order to avoid any inconvenience on the day of examination.
3. No candidate will be allowed to seat for the test in any centre other than the one allotted to him/her and as is mentioned in the admit card.
Any candidate found to occupy a seat other than the one allotted to him/her will be **reported against** & his/her paper will be cancelled.
4. Carry the following documents to enter the examination centre.
 - a. A printed copy of admit card of JENPAS(UG)-2021.
 - b. A copy of colour photograph as was uploaded during online application.
 - c. Any photo identity card in original such as Aadhaar card/ Pan card / Passport/ 10th standard admit card/ School – ID card/ Voter ID/ Ration Card with Photograph/ Bank Passbook with Photograph/ Any other Valid Govt. Identity card With Photograph.
5. Frisking may be carried out while entering the centre for checking prohibited objects.
6. Candidates are advised to take their seats at least 15 minutes before the test.
7. No candidate will be allowed to enter the examination hall **beyond the scheduled time of commencement of the test under any circumstance.**
8. Candidates are not allowed to carry any written or printed material, calculator, pen, docu-pen, log table, wristwatch, any communication device like mobile phones etc. inside the examination hall. Any candidate found with such items will be **reported against** & his/her candidature will be summarily cancelled.
9. Question booklets will be distributed well before commencement of the test. Take out the OMR sheet without breaking seals of the question booklet and check that your OMR number & question booklet number are same. If not, ask the invigilator to replace the whole set from same series.
10. Put your signature on the top of question booklet.
11. Read the instructions given on OMR & on the cover page of question booklet very carefully.
12. Write question booklet number & roll number at the appropriate places on the OMR. Wrong entry of question booklet number & roll number may lead to rejection of the OMR or wrong scoring, for which the Board will not remain responsible. If any candidate makes any mistake, he/she must **not** overwrite. Request the invigilator to strike it out & rewrite the correct numbers and put his/her signature.
13. Darken appropriate bubbles of question booklet number & Roll number.

14. Write your name in BLOCK LETTERS, name of the centre & put your signature in appropriate places on the OMR. Do not put any stray mark anywhere else; it may lead to rejection of OMR.
15. Check that your Roll number, photograph, spelling of your name in the attendance sheet matches with those given in your admit card. If any correction is needed, bring it to the notice of the invigilator.
16. Question booklet seals can be opened only at the time of commencement of test and as will be announced by the invigilator. Check all the pages of question booklet. If there is any damage or missing page or any difficulties to read the question booklet, ask your invigilator to replace the whole set from the same series.
17. Maintain silence during the test. Any conversation/gesticulation or creation of disturbances will be deemed as misdemeanor. If any candidate is found adopting any unfair means, his/her candidature will be cancelled, and / or he/she will be debarred either permanently or for a period of time as is deemed fit by the Centre- in- Charge.
18. No discussion will be allowed with the invigilator regarding any question.
19. Candidates may do rough work in the space provided in the question booklet.
20. No candidate will leave his/her seat without permission of the invigilator until the test is over.
21. No candidate will leave the hall till the end of the test & all OMRs are collected & tallied by the invigilator.
22. Candidates can take his/her question booklet after the test.
23. If any Examinee is found impersonating, he/she will be **handed over to the police** & candidature of the original candidate will be cancelled outright.
24. Candidates must follow social distancing and other COVID-19 instructions as applicable.

APPENDIX –6**Examination zones for JELET-2021**

Sl. No.		Zone
1.	Bankura	Bankura
2.	Cooch Behar	Cooch Behar
3.	Darjeeling	Siliguri
4.	Hooghly	Serampore
5.	Howrah	Salkia/Bally/Uttarpara
6.	Howrah	Howrah Maidan/Shibpur
7.	Howrah	Santragachi/Domjur
8.	Howrah	Uluberia
9.	Kolkata	Central Kolkata (Moulali/Beliaghata/Narkel Danga/Phool Bagan/Kakurgachi/Park Circus)
10.	Kolkata	North Kolkata (Shyam bazar/ Bagh Bazar/Girish Park/Burra Bazar/ College Street/Sealdah)
11.	Kolkata	Salt Lake/New Town (Salt Lake/Lake Town/New Town/Rajar Hat)
12.	Kolkata	South Kolkata (Ballygaunge/Minto Park/Bhowanipore/Tollygaunge/Jadavpur)
13.	Kolkata	West Kolkata (Joka/Behala/Alipore/Chetla/Khidirpore/Budge Budge)
14.	Malda	Malda
15.	Murshidabad	Berhampur
16.	Nadia	Kalyani
17.	North 24 Parganas	Barrackpur (Dum Dum Jn. To Barrackpur)
18.	Paschim Burdwan	Asansol
19.	Paschim Burdwan	Durgapur
20.	Paschim Medinipur	Kharagpur
21.	Paschim Medinipur	Medinipur
22.	Purba Burdwan	Burdwan
23.	Purba Medinipur	Haldia
24.	South 24 Parganas	Garia/Sonarpur/Baruipur
25.	Tripura	Agartala

- a) **Candidates domiciled in West Bengal must select any three zones except Tripura-Agartala in order of their preference from the above list.**
- b) **Candidates domiciled in Tripura must select any three zones in order of their preference from the following list.**

Districts of W B.	Zone
Tripura	Agartala
Kolkata	Salt Lake/New Town (Salt Lake/Lake Town/New Town/Rajar Hat)
Kolkata	South Kolkata (Ballygaunge/Minto Park/Bhowanipore/Tollygaunge/Jadavpur)
Kolkata	West Kolkata (Joka/Behala/Alipore/Chetla/Khidirpore/Budge Budge)

- c) **Candidates domiciled in states/UTs other than West Bengal and Tripura must select any three zones in order of their preference from the following list.**

Districts of W B.	Zone
Howrah	Salkia/Bally/Uttarpara
Kolkata	Salt Lake/New Town (Salt Lake/Lake Town/New Town/Rajar Hat)
Kolkata	South Kolkata (Ballygaunge/Minto Park/Bhowanipore/Tollygaunge/Jadavpur)
Kolkata	West Kolkata (Joka/Behala/Alipore/Chetla/Khidirpore/Budge Budge)
Paschim Burdwan	Asansol
Paschim Burdwan	Durgapur

WBJEEB attempts to allocate the examination centre at the candidate's 1st choice. But it may not be possible in all cases. **Discretion of the Board shall be final in this regard. No request for change of allocated centre will be entertained under any circumstances.** Also, any examination zone may be dropped in unavoidable circumstances.

APPENDIX –7

Syllabus for JELET

1. For B.Sc. candidates - Mathematics pass course syllabus of the University of Calcutta. (question nos. 1 to 100)
2. For Diploma holders in Pharmacy - Diploma Level syllabus in Pharmacy as prescribed by the Pharmacy Council of India. (question nos. 1 to 100)
3. Common to all diploma holders in engineering and technology- (question nos. 1 to 70)

(A) ENGINEERING MATHEMATICS:

a) Matrix and vector

Matrix - Definition - Order of a matrix - Leading element - Principal diagonal. Types of matrices - Null matrix - Square matrix - Identity matrix - Upper and lower triangular matrix - Symmetric matrix.

Determinant of a square matrix - Minors and cofactors - Procedures for evaluation - Properties of determinants (no deduction) - Evaluation of determinant by Ohio's method (4th order) - Problems.

Concept of vector-Addition and subtraction of vectors- Multiplication of a vector by a scalar - Position vector of a point - Ratio formula - Rectangular resolution of a vector - Dot and cross product - Geometrical interpretation -Distributive law - Applications.

b) Numerical methods

Meaning of interpolation - Difference table - Newton's forward interpolation formula (no deduction) - Problems. Introduction to numerical integration - Formulae for composite trapezoidal and Simpson's 1/3 rule (no deduction) - Related problems. Numerical solution of non-linear equations - Formula for Newton-Raphson method (no deduction) - Problems. Numerical solution of system of linear equation - Gauss-Elimination Method (no deduction) - Problems.

c) Differential equations

Definition - Order and degree of a differential equation - Differential equations of 1st order and 1st degree - Separation of variables - Problems. Homogeneous differential equations - Equations reducible to the homogeneous form - Problems. Exact differential equations - equations reducible to the exact form - problems. Linear equations - Bernoulli's equations. Differential equations of 2nd order with constant coefficients - Complementary function and particular integral – Problems

d) Partial differentiation

Function of two or more variables - Definition and meaning of partial derivatives (1st \ order). Homogeneous functions - Euler's theorem on homogeneous functions (no deduction) - Problems.

e) Probability and statistics

Introduction - Random experiment - Sample space - Events. Classical and axiomatic definition of probability. Addition and multiplication theorem - Related problems. Statistics - Frequency distribution. Measure of central tendency - Mean - Median - Mode - Standard deviation - Simple problems

(B) Electrical technology

a. Kirchoff's law

Kirchoff's voltage and current laws, Star-delta transformations - Simple problems on all topics.

b. A. C. fundamentals

Concept & significance of R.M.S. value, peak value, average value, crest factor and form factor of sinusoidal voltage/current - Equation of instantaneous value of sinusoidal voltage / current - Simple problems on all.

c. A. C. series circuit

R-L & R-C A.C. series circuit (no deduction, only the expressions of voltage, current & power for sinusoidal sources), power factor, power triangle simple problems.

d. Storage cell, transformer, motors etc.

Basic Principle of: Storage cell, DC. motors, Transformer, A.C. generators & motors (No deduction & problems).

e. Magnetic circuit

Concept on magnetic circuit, Definitions and units of magnetic flux, m.m.t. and reluctance, analogy with electrical circuit, simple problems.

f. Motor starter

Need of motor starter mentioning some names useful for D.C. motors & A.C. motors.

g. Motors for industrial uses

Simple Electrical Circuit for motor installation, using block diagram of different components.

h. Power generation, transmission and distribution

Brief idea about the power generation, transmission and distribution using block diagram of different stages.

i. Voltage stabilizer and UPS system

Brief idea about the operational principle of voltage stabilizer and UPS system (no description of internal circuit)

j. House wiring

Simple idea house wiring starting from commencement of supply, using necessary diagram, role of fuses / MCB, fault finding & earthing concept.

k. Lighting schemes

Types of lighting scheme and factors considered for designing lighting schemes i.e. illumination level, uniformity of illumination, colour of light, glare, mounting height, spacing between luminaries, colour of surrounding walls etc.

l. Wattmeter and Meggar

Uses & connection diagram of Wattmeter - Use of Meggar with circuit diagram.

m. Electrical energy and measurement

Electrical energy measurement (no mathematical deduction & description of apparatus) - circuit diagram for single phase energy-meter connection.

(C) COMPUTER APPLICATIONS & PROGRAMMING

a. Introduction to computer

Brief history of evolution of computers

Various components of computer (brief knowledge)

Hardware-CPU, inputs output system, primary memory, secondary memory.

Peripherals devices - Printers, plotter, scanners, digital cameras, web cam. sound card & speaker systems, dicta phone

Software Operating system, system software like compilers and device drivers, and various application software (definitions only).

b. Information representation

Number system: Binary, Octal & Hexadecimal

Conversion of number systems, signed and unsigned representation

Binary arithmetic & compliments,

Character codes: ASCII. BCD & Gray codes

c. Basics of software

Classification of Software systems-system software and application software.

Basic concepts of compilers, interpreters, assemblers and device drives

Operating system - Single user, multi user, graphical user interfaces and characters user interfaces.

Case studies: MS - DOS, Windows

d. Introduction to programming

Algorithm and flowchart

Different types of programming languages - machine level, assembly level and high-level languages (basic concepts only)

Brief introduction to different high-level languages including C

Basics of C-Language

Branching and looping statements

Arrays and user defined functions

e. Computer networking and internet

Basics of Computer Networking - LAN, MAN, WAN (definitions only)

Client - Server architecture (elementary level)

Internetworking concepts of world wide web, domain name system emails

Web browsing, use of search engines, web site hosting (elementary level).

(D) ENVIRONMENTAL ENGINEERING

a. Air and environment

Man & Environment. Overview {socio-economic structure & occupational exposures}
- Scope of Environmental Engineering - pollution problem due to urbanisation & industrialisation

b. Air pollution

Causes of air pollution - types & sources of air pollutants - Climatic & Meteorological effect on -air pollution concentration -formation of smog & fumigation

c. Analysis of air pollutants

Collection of Gaseous Air Pollutants - Collection of Particulate Pollutants -Analysis of Air Pollutants like: Sulphur dioxide - Nitrogen oxide - Carbon monoxide - Oxidants & Ozone - Hydrocarbons - Particulate Matter

d. Air pollution control measures and equipment

Control of Particulate Emission - Control of Gaseous Emission - Flue Gas Treatment Methods: Stacks Gravitational and Inertia! Separation. Settling Chambers, Dynamic Separators. Cyclones. Filtration, Liquid Scrubbing. Spray Chambers. Packed Towers. Orifice and Venturi Scrubbers, Electrostatic Precipitators. Gas/ solid Absorption, Thermal Decomposition.

e. Methods and approach of air pollution control

Controlling smoke nuisance — Develop air quality criteria and practical emission standards - creating zones suitable for industry based on micrometeorology of air area — Introducing artificial methods of removal of particulate and matters of waste before discharging to open atmosphere

f. Water and environ water sources

Origin of waste water — Type of 'water pollutants and their effects

g. Different sources of water pollution

Biological Pollution (point & non-point sources) - Chemical Pollutants: Toxic Organic & Inorganic Chemicals - Oxygen demanding substances - Physical Pollutants: Thermal Waste - Radioactive waste - Physiological Pollutants: Taste affecting substances - other forming substances

h. Water pollution and its control

Adverse effects on: Human Health & Environment, Aquatic life, Animal life, Plant life — Water Pollution Measurement Techniques - Water Pollution Control Equipment & Instruments - Indian Standards for Water Pollution Control

i. Soil polluting agencies and effect of solution

Liquid & Solid Wastes - Domestic & industrial Wastes - Pesticides - Toxic: Inorganic & Organic Pollutants - Soil Deterioration - Poor Fertility, Septicity. Ground Water Pollution, Concentration of Infecting Agents in Soil

j. Solid waste disposal

Dumping domestic & Industrial Solid Wastes: Advantages & Disadvantages - Incineration: Advantages & Disadvantages - Sanitary Land Field: Advantages & Disadvantages - Management of Careful & Sanitary Disposal of Solid Wastes

k. Noise and environmental management system, noise pollution and control

Noise Pollution: Intensity, Duration - Types of Industrial Noise - III effects of Noise - Noise Measuring & Control - Permissible Noise Limits

l. Environmental legislations, Authorities and systems

Air & Water Pollution Control Acts & Rules (Salient Features only) - Functions of State / Central Pollution Control Boards - Environmental Management System ISO 14000 (Salient Features only).

4. Only for diploma holders in engineering and technology except agricultural engineering and printing technology - (question nos. 71 to 100)

(A) Engineering mechanics

a. Group - A

(i) Module 1 – Introduction - Concept of Engineering Mechanics - Statics & Dynamics - Scalar Quality – Vector Quality - Addition & Subtraction of Vectors - Basic units - Derived Units - SI units - Principles of dimensional homogeneity.

(ii) Module 2 – System of forces - Definition of a force with explanation - Linear representation of force - System of co-planar forces - Parallelogram Law of Forces - Composition and Resolution - Transmissibility of forces - Action and Reaction - Triangle Law & Polygon Law of forces - Determination of Resultant by Analytical and graphical method with equal-train space diagram – Vector diagram.

- (iii) Module 3 – Moments and couples - Definition of moment of a force about a point - Physical significance of moment - Moment of a system of parallel and inclined forces - Varignon's Theorem - Definition of moment of a couple - Physical significance of Couples Equivalent couples - Resultant of any number of coplanar couples - Replacement of a force about a point by an equal like parallel force together with a couple - Properties of couples.
- (iv) Module 4 – Condition of equilibrium - Lami's Theorem - Triangle Law & Polygon Law of equilibrium - Conditions of equilibrium of co-planer system of concurrent forces - Conditions of equilibrium of co-planar system of non-concurrent parallel forces (like & unlike) - Conditions of equilibrium of co-planar system of non-concurrent non-parallel forces (simple problems excluding statically indeterminate).

a. Group - B

- (i) Module 5 – Friction - Definition - Useful and harmful effects of friction - Laws of Static friction - Coefficient of friction - Angle of friction - Angle of repose - Equilibrium of a body on a rough inclined surface with and without external force.

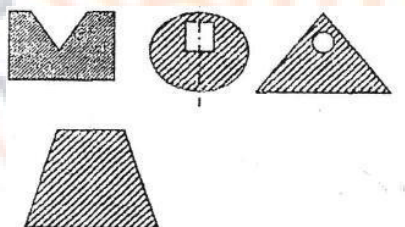
- (ii) Module 6 – Centre of gravity - Concept & definition - Centre of mass - Centroid

Methods of finding out centroids of simple area by (i) Geometrical consideration and (ii) Method of Moments. [**Method of integration should be learnt in Strength of materials on 2nd Semester]

Finding the centroid of the following areas by any method:

uniform triangular lamina, (ii) uniform rectangular lamina, (iii) uniform circular lamina,

Finding the centroid of the following sections using the method of moment: (i) T-section, (ii) equal and unequal angle-sections, (iii) equal and



unequal I-sections, iv) different cut-out sections as shown in the following figures.

- (iii) Module 7 – Moment of inertia - Definition and unit; M I of a lamina; Theorems of finding out M I by Parallel axis theorem and Perpendicular axis theorem; Radius of Gyration; Finding out M I of the following sections using formula only (i) Rectangular section, (ii) Square section, (iii) circular section, (iv) triangular section; M I of irregular areas such as I-sections, T-sections, - Related simple problems.
- (iv) Module 8 – Simple machines - Definition of Machine - Difference between Machine & Lever - Mechanical Advantage, Velocity Ratio and Efficiency with their relationship - Frictional Effort Load - Condition of reversibility / irreversibility - Law of Lifting Machines - Maximum mechanical advantage - Maximum efficiency - Effort vs. load curve - Efficiency vs. load curve - Different types of lifting machine with their mechanical advantage, velocity ratio & efficiency such as wheel and axle (simple & differential), Crab winch (single & double purchase), Weston pulley block, worm & worm wheel, simple screw jack.

b. Group-C

- (i) Module 9 – Rectilinear motion - Motion equations (with deduction $S=Vt$, $V=u \pm ft$, $S=ut \pm \frac{1}{2}ft^2$, $V^2=U^2 \pm 2fS$) Newton's Second Law of linear motion $P = mf$ (deduction) - Conservation of momentum of a body -No Numerical problems.
- (ii) Module 10 – Curvilinear motion - Angular displacement -Angular speed -Angular velocity- Relation between angular speed & angular velocity - Angular acceleration - Relation between linear & angular velocity - Relation between linear & angular acceleration -Centripetal and centrifugal force (numerical problems)
- (iii) Module - 11 – Work, power, energy - 2 Definitions. Units, Potential Energy (mgh), Kinetic Energy ($\frac{1}{2} m v^2$), Laws of conservation of Energy. Change of Kinetic energy=Work done by acting force. Simple numerical problems.

(B) Strength of materials

a. Group — A

(i) Module 1 – Simple stress and strain

Scope of subjects Use of structure, importance of knowledge of stress, strain and deformation in structure, safety and economy. Engineering materials: Definitions and examples Mechanical properties of engineering materials: Elasticity, Plasticity, Ductility, Hardness. Fatigue, Creep Brittleness (definition, examples and applications).

Stress and strain: Tensile, Compressive, Shear

Stress-strain diagram: Principles of tensile testing in universal testing machines showing salient points such as elastic limit, proportional limit, yield points, breaking points etc., ultimate stress, working stress and factor of safety.

Stress - Strain relations: Hooke's law, Young's Modulus, Modulus of rigidity, Poission's ratio.

b. Group — B

i. Module 2 – Shear force and bending moment

Definition and Types of beams, supports and loads.

Shear force and bending moment in beams: Definitions, sign conventions and inter-relationships

Shear force and bending moment diagrams (with simple problems):

Cantilever beams with point loads and Uniformly Distributed Loads (DDL),

Simply supported beams with point loads and UDL.

Simply supported overhanging beam with point load.

ii. Module 3 – Bending stress in beams

Pure bending of beam: Assumptions, deduction of bending equation with usual notations, moment of resistance, section modulus.

Problems on bending stress about axis parallel to the plane of bending: For rectangular circular & l- section.

c. Group — C

i. Module 4 – Deflection of beams

Differential equation of elastic curve — Relation among deflection, slope, shear force, bending moment and rate of loading — Sign convention of slope and deflection.

Standard formula (no proof, only simple problems) for maximum slope of deflection of cantilever beam subjected to point load at free end, uniformly distributed load on entire

span;

simply supported beam carrying a point load at mid span, uniformly distributed load on entire span.

ii. Module 5 – Columns and struts

Definitions of Columns & Struts — Long, Medium & Short columns — Effective Length — Slenderness Ratio — Critical load — Safe load — Different kinds of end conditions — Euler's formula for critical load (no deduction and no problem).

5. Only for diploma holders in agricultural engineering- (question nos. 71 to 100):

(A) Soil and water engineering

a. Module 1: Watershed Hydrology

Hydrologic cycle, Precipitation-forms, rainfall measurement, mass curve, point rainfall, frequency analysis of point rainfall, plotting position, Interception, infiltration, evapotranspiration- estimation and measurement, Stream number, stream length, stream area, stream slope, Runoff-factors affecting, measurement of runoff, Hydrograph - Components, base flow separation, Unit hydrograph theory, Synthetic unit hydrograph, Flood routing - graphical methods of reservoir flood routing, Drought and its classification.

b. Module 2: Surveying and Leveling

Introduction-classification and basic principles, Principle and method of Chain surveying, Plane table surveying, Compass surveying. Errors in measurements-their elimination and correction. Leveling, Contouring. Computation of area and volume, Theodolite surveying, traversing and adjustment of errors.

c. Module 3: Fluid Mechanics

Definition and Properties of fluids, Unit measurement, Fluid statics, Dynamics of fluid flow, Bernoulli's theorem, venturi-meter, orifice-meter and nozzle, siphon; Laminar flow: Stress-strain relationships, General equation for head loss in pipes, energy losses through pipe fittings, Darcy Equation, flow through network of pipes, hydraulic gradient and energy gradient, Measurement of discharge through pipes and open channel.

d. Module 4: Soil Mechanics

Classification of soil, Index properties of soil- void ratio, porosity, density, water content, particle size distribution, consistency limits and permeability, seepage flow-net and drainage, compaction, consolidation, earth pressure and retaining structure, shear strength, soil stabilization, soil exploration, stability of slope, Foundation Engineering.

e. Module 5: Soil and Water Conservation

Mechanics and types of erosion and their causes, Estimation of Soil loss, Biological control measures, Stream bank erosion, Wind erosion control, Design of permanent soil conservation structure: chute, drop and drop inlet spillways, Design of Contour bunds, contour trenches, contour stone walls, contour ditches, Terraces.

f. Module 6: Ground Water, Pump and Well Technology

Introduction: geologic formations, Types of aquifer and wells, Ground water exploration technique, Aquifer properties, Various types of tube wells, hydraulics of well and well performance, installation of well screen, joining of pipes, completion and development of well, Water lifting devices, Pump Characteristics and Pump selection, installation and troubleshooting.

g. Module 7: Irrigation and Drainage

Soil-water-plant relationship, irrigation and drainage for sustainable crop production, Land grading and land preparation for Irrigation and Drainage, Design of Irrigation channel, Water

conveyance and Control Structures, Irrigation water requirement, Methods of Irrigation- Flood, boarder, furrow, check basin, Sprinkler and drip irrigation systems. Types of drain- age systems and drainage materials.

h. Module 8: Building materials and Structures

Simple stress-strain, stress-strain-tension, compressive, shear, stress-Strain relation-ship, elasticity, Hooke's law, Young's modulus, modulus of rigidity, Poisson's ration, Mohr's circle, shear force and bending moments diagram, moment of inertia, middle third rule, Column and struts.

i. Modules 9: Remote Sensing and GIS

Definition: History of Remote Sensing: Abroad\India, Concepts of scale, Resolution, Electromagnetic Spectrum: Optical \ Microwave, Visible region: Blue, Green and Red wave-length portion, Wavelength and frequency: their relation and units of measurement, Polarization; Coherent & Incoherent radiation; Doppler Effect, Energy transmission, atmospheric characteristics, Map - Definitions - Representations - Point line polygon common coordinate systems.

(B) Farm machinery and power

a) Module 1: Crop Production Technology

Climatic zones of West Bengal and its characteristics, Classification of crop, Effect of different weather parameters on crop growth and development, Principles of tillage, Tilt and its characteristics, Tillage implements, Conservational Tillage, Conventional Tillage, Soil-water-plant relationship, Crop rotation, cropping systems, mono, double and multiple cropping, Sowing, Intercultural operation, harvesting, processing, storage and protection of crops, Soil forming rocks and minerals- origin, classification and composition, Weathering of rocks and minerals, Soil forming process and the factors, Soil profile, Soil Properties- Physical - soil texture, structure, densities, pore spaces, Chemical properties - pH, Soil water composition and classification, Soil moisture constants and function, Soil air, Soil temperature.

b) Module 2: Farm Machinery

Status and scope of farm mechanization, Classification and constructional details and principles of operation of manually operated, animal drawn and power operated implements and machinery for primary and secondary tillage, puddling, Sowing and planting equipment, fertilizer application, Description, operation and calibration, Inter-cultivation tools, plant protection equipment, Principle of crop harvesting and threshing, Chaff cutters and silage filling equipment, Land development machinery, Human engineering and safety in farm machinery, Selection.

c) Module 3: Farm Engine and Tractors

Power availability on the farms from animate and inanimate sources of energy, their capacities and efficiencies, Tractor engine components and their principle of working, Engine valve and valve mechanism and valve timing diagram, Fuel and Air supply system, Cooling and Lubrication System, Ignition and starting and electrical system, Engine Governing, Transmission systems of wheel and track type tractors, Clutch and brake, gearbox, differential, PTO, Belt pulley and draw-bars and final drive mechanisms, Power tiller and small farm engines for farm operation, Performance and cost analysis of farm tractors and power tillers.

d) Module 4: Renewable Energy Sources

Introduction to conventional and non-conventional energy sources, Patterns of fuel consumption, Potential of solar, wind, biogas, biomass, geothermal and other renewable energy sources, Solar Cooker, Water Heater, Drier, solar still, solar pond, PV system etc. Aerobic and anaerobic bio-conversion process, Pyrolysis, gasification and their economics, selection of size of biogas plants, Wind energy potential, Installed capacity, Study of various

types of wind mills.

e) Module 5: Thermodynamics and Heat Engines

Thermodynamics properties, closed and open system, flow and non-flow processes, gas laws, laws of thermodynamics, internal energy, Thermodynamic process of perfect gases, P-V, P-T and T-S diagrams of pure substances, Second law of thermodynamics, Difference between heat and work, cyclic heat engines, Kelvin-Planck and Clausius statements, refrigeration and heat pumps, reversibility and irreversibility of process, Boiler performance; boiler efficiency, Thermodynamic cycles of I.C. engines.

(C) Food processing and post-harvest engineering

Food constituents, micro-organism in deterioration and Preservation of food, Modes of heat transfer, one dimensional steady-state and unsteady-state heat transfer in simple geometries, Newton's law of cooling, Free and forced convection, correlations, heat transfer coefficient, Introductory radiation heat transfer, Types of heat exchanger, log mean temperature difference, heat exchanger performance, Introduction to mass transfer process, Fick's law, Molecular diffusion in fluids and solids, Convective mass transfer coefficients, Mass transfer correlations, Processing equipment and machinery, Utilization of agricultural by product, Unit operation of various dairy and food processing systems; Process flow charts for product manufacture, Manufacture of flavoured milk - cream - butter-condensed milk - Ghee, ice cream etc, Beverages - "alcoholic and non-alcoholic - carbonated and non-carbonated, Working principles of equipment for receiving, pasteurization, sterilization, homogenization, filling and packaging, butter manufacture, evaporation, drying, freezing, juice extraction, filtration, Process parameters and equipment for various operations- Cleaning, sorting and grading, Washing, Handling, Peeling and slicing. Blanching, Mixing, Packaging and storage, Cooling and Cold storage, drying and dehydration-Pre-drying techniques, Theory of drying, Various types of dryers and their operation, Quality changes in dried products, quality control techniques and application.

6. Only for diploma holders in printing technology- (question nos. 71 to 100):

(A) Basic engineering for printing

a) Simple stress and strain

Introduction — Elasticity — Stress and Strain. Types of Stresses: Tensile Stress and compressive Stress. Elastic Limit— Hook's' Law— Modulus of Elasticity (Young's Modulus) Deformation of a body due to Force acting on it — Simple problems. Principle of Superposition — Simple problems on uniform cross-section.

b) Mechanical drive

Different types of Mechanical drive and their uses only. Belt & pulley drive: Different types belt and pulley drive — Open belt drive and cross belt drive. Types of belt and types of pulley — Velocity ratio. Simple problems.

c) Gear drive

Types of gear and their uses. Definition of different parts of Spur gear. Velocity ratio of spur gear. Simple problems.

d) Measuring instruments

Types of measuring instruments and their uses. Description, working principle, care & maintenance of Vernier Callipers and outside micrometer. Reading of Vernier callipers and outside micrometer.

e) Fastening method

Different types of fastening method with examples. Types of nuts, bolts and their uses. Welding, Soldering & Brazing and their uses. Different types of rivet and riveted joints.

(B) Printers' material science

- a) Colloids - Definition of colloid, properties of lyophilic and lyophobic colloids, stability of colloids, protective action of lyophilic colloids, gold number, definition of gel and emulsion, application of colloids, gels and emulsions in printing.
- b) Polymers - Uses of natural polymers (casein, cellulose, dextrin, egg albumen, gelatine, fish glue, gum Arabic and starch) and synthetic polymers (polyethylene, polypropylene, Teflon, polyvinyl acetate, polyvinyl alcohol, polyvinyl chloride, phenolic resin, amino resin and polyester resin) in printing.
- c) Chemistry of photography - Constituents of a photographic emulsion, uses of gelatine, preparation of the emulsion, lattice structure of silver chloride and silver bromide, lattice defects, latent image formation by Gurney-Mott Theory, chemistry of photographic development, fixing, photographic reduction and chemical intensification, chemical reversal, elementary idea of silverless films.
- d) Chemicals required for Image carriers - a) letterpress and flexography - photo polymeric stereo making, b) lithography - (graining, coating, developing, etching, lacquering, stencil removing, gumming, desensitizing) (i) negative working plates-albumen plate, P.S. diazo and photopolymer plates, driographic (waterless) plate (ii) positive working plates - gum deep etch plate, P.S. plate, diffusion transfer plate c) gravure - cylinder making (sensitising, developing, etching, finishing) d) silk screen - (coating, developing, hardening, stencil removing) direct, indirect, direct- indirect and capillary method.

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