



State Medical Faculty of West Bengal

INFORMATION BROCHURE

FOR

DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY 2015

State Medical Faculty of West Bengal

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INTRODUCTION:

State Medical Faculty of West Bengal was established as a statutory body by the Government of West Bengal in the Year 1914. The Faculty was entrusted with conduction of Licentiate Courses in Medical Sciences (L.M.F.). Subsequently the Faculty started conducting examination of Diploma in Pharmacy.

With the rapid growth of medical sciences it was felt necessary to train the paramedical personnel of the State. With this object in view, the State Medical Faculty started conduction of different diploma and certificate courses with the approval of the Government of West Bengal. It is essential to have a uniform standard while conducting the courses not only in Government Institutions but also in the Private Organizations and as such, the Faculty has already stipulated minimum requirement for starting conduction of different Para Medical Courses.

As per provision of Clinical Establishment Act of West Bengal any Diagnostic Laboratory possessing Valid Licence under the said Act can start the Training Course with the permission of appropriate authority provided the diagnostic laboratory fulfills the minimum requirements as stipulated by the State Medical Faculty of West Bengal.

Any Institution desirous of starting Para Medical Courses with the affiliation of State Medical Faculty of West Bengal has to fulfill the stipulated requirements and to follow the syllabus as prescribed by the Faculty. The State Medical Faculty also acts as an Examining Authority for such courses.

Conduction of a Para Medical Course in Affiliated Institutions is being monitored by the Faculty so that uniformity is maintained while conducting the same course in different institutions.

Presently, the State Medical Faculty of West Bengal is considering grant of recognition to Institutions for conducting the following courses:

<u>Sl.</u>	<u>Name of the Courses</u>
1.	Diploma in Medical Laboratory Technology
2.	Diploma in Radiography
3.	Diploma in Radiotherapeutic Technique
4.	Diploma in Optometry with Ophthalmic Technique
5.	Diploma in Perfusion Technology
6.	Diploma in Neuro Electro Physiology
7.	Diploma in Cath-Lab-Technician
8.	Diploma in Dialysis Technician
9.	Diploma in Critical Care Technology
10.	Diploma in Operation Theatre Technology

COMMON PROCEDURE FOR OBTAINING AFFILIATION FOR ANY DIPLOMA COURSE RUN BY THE FACULTY

PART – I

The intending institute which wants to start a particular course is required to collect the booklet "**Information Brochure**" for that particular Course by paying the requisite fee of **Rs.500/-**.

The Institute should create the facilities required for starting the course as per norms of the course.

The Institute after fulfilling the norms for the course is required to apply in the prescribed form annexed in **Part-II** alongwith the requisite Inspection Fee of **Rs. 5000/- for each course**. Inspection fee is not refundable.

The Faculty will send Inspection Team for physical verification of the facilities to start the course.

On the basis of report received from the Inspection Team, the Faculty may ask the Institute for compliance or modification, as the case may be, or accord permission to start the course.

Caution Money Deposit:

- i) Private Institutions to be recognized are required to deposit with State Medical Faculty of West Bengal Caution Money of Rs.50,000/- per course.
- ii) Caution Money will be treated as one-time payment till students of private institutions continue their studies.
- iii) Caution Money deposited by Private Institutions will not accrue any interest payable to the concerned depositors.
- iv) Caution Money will be refunded without any interest at the time when the institute closes their course of studies with prior intimation to the Faculty.
- v) In the event of de-recognition of the institution by the Faculty, Caution Money deposited would be forfeited.
- vi) Caution Money deposit is applicable in case of new Institute / existing Institute to conduct new course(s).

Conduction of Paramedical Courses:

Paramedical Courses should exclusively be conducted at the institute premises under the control of the Affiliated Institute, save and except Blood Bank Training for DMLT [Tech] Course, which could be done in any Government Hospital or any Private Hospital with their consent. Consent letter to be attached in Application Form for recognition.

In case of rented building of the institute, three years' rental agreement with the owner of the premises be submitted with the Application Form for grant of recognition/extension of recognition.

Fire Safety Measures:

Fire Safety Measures should be ensured. Provision for alternative exit be arranged.

In case of non-availability of Fire Safety Measures, the same may be informed and also their plan of actions for introduction/improvement of Fire Safety Measures.

Duration of Course:

Duration of Para Medical Courses is 2 years followed by 6 months compulsory Post Examination Practical Training of minimum **600 hours in 6 months** after passing of Final Examination of Para Medical Courses.

Eligibility:

Any person seeking admission into the course of study in Para Medical Courses must fulfill the following conditions:

- a) That he/she has passed the Higher Secondary or an equivalent Examination of any Indian University or duly constituted Board, with pass mark in Physics, Chemistry and Biology.
- b) That he/she has attained the age of 17 years on 1st September of the respective year of his/her admission into the course in an approved institution.
- c) That he/she has furnished a certificate of physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.

Selection:

Selection will be made on the basis of pass marks obtained in Physics, Chemistry and Biology in the Qualifying Examination [i.e. Higher Secondary and/or equivalent Examination]. The Faculty will, however, reserve the right to amend/alter/modify the selection procedure at its sole discretion.

Fees:

The admission and tuition fees will be charged by the individual institution with the approval of the Faculty. The Tuition Fees will be Rs.15,000/- per course per annum in respect of all Affiliated Institutions.

The Registration Fees of Rs.500/- per student per course and Examination Fees of Rs.400/- per student per examination will be charged by the State Medical Faculty of West Bengal separately in respect of students admitted in Para Medical Courses in Affiliated Institutions. Students of **ESI Hospitals, Kolkata Port Trust Centenary Hospital, Chittaranjan National Cancer Institute** are required to pay **Registration Fees and Examination Fees.**

Academic Session:

The Session will commence ordinarily in September of every year. The exact date is to be announced at the time of admission.

Inspection, Counseling, etc.:

Inspection is to be carried out to all Institutions including existing Institutions.

All affiliated Institutions have to join Counseling of the Faculty on scheduled date, time and venue. Seed money for joining the Counseling is Rs. 4000/- for each course. However, if they do not get students in Joint Counseling then they will be allowed for second counseling at their end.

Prospectus and Application Forms, etc. are to be issued by the Affiliated Institutions by their own arrangements for the second counseling, if any. Subject to the approval of the Faculty.

Students of the Non-Government Institutions, selected in the Joint Counseling, have to deposit Rs.15,000/- preferably by Demand Draft in favour of State Medical Faculty of West Bengal at the time of admission in the Counseling Hall. Faculty will remit this amount to the concerned Institution in due course.

Affiliated Institution has to pay Rs.500/- per student per month for six months as stipend to the students during Internship (Clinical) and/or Post-Examination Practical Training.

Affiliated Institution has to pay Recognition Fee of Rs. 10,000/- per course per annum.

Affiliated Institutions have also to pay Rs.4000/- as Examination Fee per examination per course.

Internship for all the passed out students of Diploma Courses is compulsory and that same should be commenced just after passing the Final Examinations.

All Affiliated Institutions, conducting DMLT [Tech] Course, are required to submit Attendance of their students in Blood Bank Training. As per the rule,, three months Blood Bank Training for all students of DMLT [Tech] Course is compulsory.

No Objection Certificate

I. In case of new Institute proposed for affiliation to conduct different Para Medial course(s) is required to submit Noc from State Govt

II. Similarly existing Institutes intend to conduct new Para Medical course(s) is also required to submit Noc from State Govt.

PART II

**Application for obtaining fresh affiliation or extension of affiliation of
State Medical Faculty of West Bengal for conducting _____
(Name of the Course(s))**

1. Name and address of the Institution:

Name _____

Address with Pin Code _____

Phone No. _____ Fax No. _____ E-mail _____

2. Whether any other training course(s) are running by the Institute: Yes/No

If yes, please indicate the name of other course(s): _____

3. Status of the Institution: _____

4. Details of the Institution: _____

A. If it is Society/Trust _____

The Society Registration Act No. or the Trust No. under which the Society/Trust was formed:

(i) Registration No. -----

(ii) Date of Registration -----

(iii) Place of Registration -----

(Attached copy of Registration of Society/Trust alongwith detail of constitution/Memorandum of Association of the Society/Trust)

B. If other, specify:

- i) Name and complete postal address of the Institution / Proposed Institute.
 - ii) Name and address and Telephone No. of the authorized person for communication.
 - iii) Furnish the details of Resource and funding agencies.
 - iv) Number of students proposed to be admitted.
 - v) Year of starting/proposed date of starting the course.
 - vi) Registration No. of the establishment for Practical Training.
5. Details of Fire Safety Measures are as under :
(Attach separate sheet)
 6. Alternative exit arranged or not.
 7. Name of the authorized person to sign Registration forms, Admit Cards and other documents.
 8. Attach Blood Bank Attendance Sheets of students in case of DMLT(Tech) Course.

Note:-

- a) Copy of current license under Clinical Establishment Act of West Bengal be attached.
- b) In case of new Institution, copy of permission letter from the Government of West Bengal for conducting Para Medical Course be attached.
- c) In case of rented building of the institute, three years' rental agreement with the owner of the premises be submitted with the Application Form for grant of recognition/extension of recognition.
- d) Copies of **Blood Bank Facility (For DMLT [Tech] Course only)** provided by Govt. Hospital / Private Blood Bank if any.
- e) Copies of updated **Registration Certificate** of WBMC for Medical Faculty are attached.
- f) Copy of License under clinical Establishment Act is attached

Name :

Signature of the Head of Institute :

Date with stamp :

Availability of Existing Infrastructural Facilities:

1. Whether the Institution is/will be established in own building or in a rented building (Documentary evidence is required in case of owned building and in case of rented building the rent receipt and Agreement with the owner is required.)

Accommodation:-

The Institution must provide adequate ventilation, lighting and maintain good hygienic condition. The Institute should have adequate number of toilets separately for teaching staff and for male & female students.

Administrative area should consist of the following:

Sl. No.	Particulars	Size of the room	Remarks of Inspectors
	Head of Department Room		
	Staff Room:		
	Room for Teaching Staff/Faculty Members		
	Room for Technicians		
	Office Room		
	Store Room		

2. Academic Area should consist of the following:

Sl. No.	Particulars	Size of the room	Remarks of Inspectors
	Class Room		
	Library		
	Students' Common Room		
	Examination Hall		

3. Staff:

Non-Teaching staff -

(a) Regular :

Sl.No.	Designation	Name & Address	Qualification & experience	Date of Appointment	Inspector's Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Non-Teaching staff -

(b) Part Time :

Sl.No.	Designation	Name & Address	Qualification & experience	Date of Appointment	Inspector's Remarks
1					
2					
3					
4					
5					
6					
7					

Whether potable water is supplied :
 Whether Gas is provided :
 Whether electricity is provided :
 Whether waste disposal management system is followed :

Whether the following records are maintained :

1. Attendance for staff
2. Salary Payment Sheets
3. Cash Book
4. Store material receive and supply (Stock Ledgers)
5. Students Attendance
6. Student Register (Admission)
7. Dead Stock Register
8. Patients' Attendance Register/Daily Treatment Register in Clinic.

4. The Training Area should be provided with the following:

Sl. No.	Particulars	Size of the room	Remarks of Inspectors
1	Clinical Pathology/Hematology		
2	Clinical Biochemistry		
3	Clinical Microbiology		
4	Histopathology & Cytopathology		
5	Media Preparation Room		
6	Sterilization Room		
7	Animal Room		
8	Reception/Blood Collection Room		
9	Museum		

5. Teaching Staff:

(A) Regular Faculty :

Sl.No.	Designation	Name & Address	Qualification & experience	Date of Appointment	Regn No*	Inspector's Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

* In case of Doctor

(B) Guest Faculty :

Sl.No.	Designation	Name & Address	Qualification & experience	Date of Appointment	Regn No*	Inspector's Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

* **In case of Doctor**

6. List of Equipment:

Clinical Pathology, Hematology			
Sl. No.	Name of Equipment	Available	Inspector's Remarks
1	Microscope (Monocular)		
2	Microscope (Binocular)		
3	Centrifuge		
4	Waterbath		
5	Haemocytometer, haemoglobinometer, Counting Chamber, Haematocrit tube, Westergren Pipette		
6	Photoelectric colorimeter		
7	Blood Cell Counter (Semi/automated)		
8	Refrigerator		
9	Stop Watch		
10	Glass equipment		
11	Charts showing microscopic findings of stool & urine examinations		
Clinical Bio-chemistry			
	Name of Equipment	Available	Inspector's Remarks
12	Colorimeter		
13	Spectrophotometer		
14	Flame Photometer		
15	Semi-automated/Automated Analyser		

16	Water Bath		
17	Centrifuge		
18	Chemical Balance		
19	Incubator		
20	Refrigerator		
21	Glass Articles		

Microbiology			
	Name of Equipment	Available	Inspector's Remarks
22	Autoclave		
23	Hot Air Oven		
24	Serum Inspisatro		
25	Incubator		
26	Refrigerator		
27	Centrifuge		
28	Weigh Balance		
29	pH Meter		
30	Glass Equipment		
31	Platinum Loops		
Serology, Immonology, Hormone Assay			
32	Centrifuge Machine		
33	Incubator		
34	Water Bath 37'/56'C		
35	Refrigerator		
36	VDRL Shaker		
37	Glass articles		
38	Electrophoresis System		
39	Elisa Reader		
40	Hormone Assay System		
41	Hormone Assay System		
Histopathology & Cytopathology			
42	Tissue processor		
43	Microtome		
44	Parrafin Bath		
45	Floatation Bath		
46	Centrifuge		
47	Staining System		
Blood Bank as per specification of the Drug Controller, Government of India			

Name :

Signature of the Head of Institute :

Date with stamp :

Phone No. :

PART III**Standard requirements of infrastructural facilities to start Para Medical Course : DMLT [Tech] Course****Accommodation:**

The Institution must provide adequate ventilation, lighting and maintain good hygienic condition. The Institute should have adequate number of toilets separately for teaching staff and for male and female students.

1. Administrative Area:

Sl. No.	Particulars	Size of the room	Remarks
1	Head of Department Room	150 Sq. ft.	
2	Room for Teaching Staff/ Faculty Members	200 Sq. ft.	
3	Room for Technicians	200 Sq. ft.	
4	Office Room	150 Sq. ft.	
5	Store Room	150 Sq. ft.	
6.	Museum		

2. Academic Area:

Sl. No.	Particulars	Size of the room	Remarks
1	Class Room	300 Sq. ft.	
2	Library	500 Sq. ft.	
3	Students' Common Room	300 Sq. ft.	

3. The Training Area should provide with the following:

Sl. No.	Particulars	Size of the room	Remarks
1	Clinical Pathology/Hematology		
2	Clinical Biochemistry		
3	Clinical Microbiology		
4	Histopathology & Cytopathology		
5	Media Preparation Room		
6.	Sterilisation Room		
7.	Animal Room		
8.	Reception/Blood Collection Room		

4. Staff -

Non-Teaching Staff:

Sl.No.	Designation	Qualification	No. Required
1	Office Superintendent	Graduate in any discipline with experience	One
2	Office Assistant	Qualification same as that of 1 with experience in Computer Operation	One
3	Store Keeper	Qualification same as that of 1 with experience is Store Keeping	One
4	Library Assistant	Graduate in Science	One
5	Laboratory Attendant	Nurse (Female)	Two
6	Office Attendant	10 th Standard	Two
7	Cleaner/Safaiwala		Two

5. Teaching Staff:

The following Teaching Staff are required:

Sl.No.	Designation	Qualification	No. Required
1	Laboratory Incharge	MBBS/MD	One
2	Clinical Pathology, Hematology: Pathologist Tutor-Technologist	MBBS/MD MBBS/MD MBBS/MD DMLT	Two
3	Clinical Microbiology including Serology & Immunology Microbiologist Tutor-Technologist	MBBS/MD MBBS/MD MBBS/MD MBBS/MD DMLT	One
4	Clinical Bio-Chemistry Biochemist/Pathologist Tutor-Technologist	MBBS/MD MBBS/MD DMLT	One
5	Histopathology & Cytopathology	MBBS/MD	One
6	Pathologist Tutor-Technologist	MBBS/MD DMLT	One
7	Blood Banking	MBBS/MD	
8	Pathologist/ Medical Officer/ Tutor-Technologist	MBBS/MD DMLT	One
9	Lecturer in Anatomy	MBBS/MLT with three years experience	One
10	Lecturer in Physiology	MBBS/MLT with three years experience	One

6. List of Equipment:

Clinical Pathology, Hematology		
Sl. No.	Name of Equipment	Minimum Requirement
1	Microscope (Monocular)	1 for every 2 students
2	Microscope (Binocular)	1 for every 2 students
3	Centrifuge	One
4	Waterbath (37')	One
5	Haemocytometer, Haemoglobinometer, Counting Chamber, Haematocrit tube, Westergren Pipette	Adequate
6	Photoelectric colorimeter	One
7	Blood Cell Counter (Semi/automated)	One
8	Refrigerator	One
9	Stop Watch	One
10	Glass equipment	Adequate
11	Charts showing microscopic findings of stool & urine examinations	Adequate
Clinical Bio-Chemistry		
12	Colorimeter	One
13	Spectrophotometer	Preferable
14	Flame Photometer	One
15	Semi-automated/Automated Analyser	One
16	Water Bath	One
17	Centrifuge	One
18	Chemical Balance	One
19	Incubator	One
20	Refrigerator	One
21	Glass Articles	Adequate
Microbiology		
22	Autoclave	One
23	Hot Air Oven	One
24	Serum Inspisatro	One
25	Incubator	One
26	Refrigerator	One
27	Centrifuge	One
28	Weigh Balance	One
29	pH Meter	One
30	Glass Equipment	Adequate
31	Platinum Loops	
Serology, Immonology, Hormone Assay		
32	Centrifuge Machine	One
33	Incubeter	One
34	Water Bath 37'/56'C	One
35	Refrigerator	One
36	VDRL Shaker	One

Sl. No.	Name of Equipment	Minimum Requirement
37	Glass articles	Adequate
38	Electrophoresis System	Preferable
39	Elisa Reader	Preferable
40	Hormone Assay System	Preferable
41	Hormone Assay System	Preferable
Histopathology & Cytopathology		
42	Tissue processor	One
43	Microtome	One
44	Parrafin Bath	One
45	Floatation Bath	One
46	Centrifuge	One
47	Staining System	One
Blood Bank as per specification of the Drug Controller, Government of West Bengal		

Blood Bank Attendance of DMLT [Tech] students:

All Affiliated Institutions, conducting DMLT [Tech] Course, are required to submit Attendance of their students in Blood Bank Training. As per the rule, three months Blood Bank Training for all students of DMLT [Tech] Course is compulsory.

RULES, REGULATIONS AND SYLLABUS

PART – IV

Duration of the DMLT [Tech] Course:-

- (a) The first one year of the course shall be devoted to the training in the subjects of the Preliminary Courses.
- (b) On completion of the Preliminary Course, the Preliminary Examination will be held.
- (c) On passing the Preliminary Examination, the students shall follow for one year the curriculum of the Final Course. On completion of the course, the Final Examination will be held.
- (d) After successfully passing the Final Examination, the students shall undergo Compulsory Practical Training of not less than 600 hours in not less than 6 months in a recognized hospital.
1. The Preliminary and Final Course shall include the respective subjects as given in the Tables as well as the minimum number of hours devoted to each subject, lectures, practical and demonstration, subject to addition and alteration at the discretion of the Governing Body of the State Medical Faculty.

The detailed syllabus of each subject is given in **Appendix I**.

Preliminary Course

Subject to be taught

Paper I : (Pathology)

1. Clinical Pathology
2. Hematology

Paper II : (Microbiology)

1. General Bacteriology
2. Systemic Bacteriology
3. Immunology
4. Clinical Bacteriology

Paper IIIA & IIIB (Biochemistry)

Final Course

Subject to be taught

Paper I : (Pathology)

1. Histopathology & Cytopathology
2. Blood Banking

Paper II : (Microbiology)

1. Immunology & Serology
2. Parasitology
3. Mycology
4. Animal Care
5. Clinical Microbiology
6. Virology

Paper IIIA & IIIB (Biochemistry)

Examination for the Diploma Course:

- No person other than a student borne on the roll of an approved training institution and studying therein at the time shall be eligible for appearing at the examination held by the Governing Body of the Faculty.
- Every student after admission into the course of study in an approved Institution shall apply in the prescribed form **Appendix II** through the Principal/Director of the Institution with a fee of Rs.500/- to have his/her name registered in the Students' Register maintained by the Governing Body. A registration certificate bearing serial number allotted to the student will be sent to him/her through the Head of the Institution.
- (a) There will be two examinations – (a) Preliminary and (b) Final. The examinations shall be held twice a year at such time and place as may be determined by the Governing Body.
 (b) Candidates should get 50% in each category separately to Pass i.e Internal Assessment (Theory), Internal Assessment (Practical), Theory and Practical Examinations,
 (c) 50% Marks in each category is the Pass Mark.
 (d) In Biochemistry Part –IIIA and IIIB must be passed separately both for Theory and Practical and for Internal Assessment pass marks is to be obtained jointly.
- Candidates will be sent up only if they secure 50% marks in their Internal Assessment, Pathology, Microbiology and Biochemistry.
- Preliminary Examination** : Only such students, who produce certificate from the Head of the approved Institutions in proof of their having regularly undergone the Preliminary Course of study by attending not less than 75% of classes, both in theoretical and practical in each subject, shall be eligible for appearing at the Preliminary Examination.

The Examination will be conducted according to the following table:

Subject	Preliminary Examination				TOTAL
	Theory	Pract.	Internal Assessment		
			Theo	Pract	
Paper I – Pathology	35	70	10	10	125
Paper II – Microbiology	35	70	10	10	125
Paper IIIA – Biochemistry	20	20	15	5	40
Paper IIIB – Biochemistry	50	40			110

- All written examinations shall be of two hours' duration and the number of papers in each subject shall be as mentioned above.
- Every candidate for the Preliminary Examination shall apply to the Secretary, State Medical Faculty of West Bengal through the Head of the Institution where he/she is undergoing his/her study, in the prescribed form together with the necessary certificates **Appendix III**.

8. No application will be entertained unless it reaches the Secretary atleast 21 days before the date notified for commencement of the examination. An application received later but not later than 14 days before the commencement of examination, may on sufficient grounds being shown and accepted, be entertained provided that a late fee of Rs.20/- is paid for the delay.
9. **Final Examination:** Only such students, who produce certificate from the Head of the Institution concerned in proof of their having regularly undergone after successfully passing the Preliminary Examination by attending not less than 75% of classes – lectures, practical and clinical of each subject separately shall be eligible for appearing at the examination as given in the following table:

Subject	Final Examination				TOTAL
	Theory	Pract.	Internal Assessment		
			Theo	Parat	
Paper I – Pathology	35	70	10	10	125
Paper II – Microbiology	35	70	10	10	125
Paper IIIA – Biochemistry	20	20	15	5	40
Paper IIIB – Biochemistry	50	40			110

10. Every candidate for the Final Examination shall apply to the Secretary, State Medical Faculty of West Bengal through the Head of the Institution where he/she had been undergoing his/her course of studies, together with the necessary certificates from the Head of the Institution **Appendix IV**.
11. The fee payable with the application shall be such as may be prescribed by the Governing Body from time to time. The fee is not refundable on any account.
12. No such application will be entertained unless it reaches the Secretary atleast 21 days before the date notified for commencement of the examination. An application received later but not later than 14 days before the commencement of examination, may on sufficient grounds being shown and accepted, be entertained provided that a late fee of Rs.20/- is paid for the delay.
13. A candidate declared to have passed the above examinations – both Preliminary and Final – if he/she secures 50% of the total marks in each subject – Theoretical + Practical – 50%. A candidate securing 75% marks or above in any subject or subjects, shall be declared to have obtained "Distinction" in that subject or subjects, provided he/she passes in all the subjects of the examination at the same time and at his/her first appearance at the examination.
14. A candidate, who appears at the Preliminary or Final Examination for the course but fails to pass in all the subjects or in one or more subjects, may be admitted to one or more subsequent examinations in subject or subjects in which he/she failed provided, however, that he/she passes in all the subjects in three subsequent examinations within a period of two years computed from the date of the examination in which he/she appeared for the first time. If he/she does not pass the entire examination within a period of two years, as mentioned above, he/she shall have to take the whole examination in all the subjects at the time when he/she appears next.

15. A failed candidate shall have to undergo a further course of training and produce a certificate from the Head of the Institution stating that he/she has, since the date of the last examination and within the period of six months proceeding his/her re-examination, attended to the satisfaction of the Head of the Institution further course of study in the subject or subjects in which he/she failed **Appendix V**.
16. The general rules and regulations regarding conduct of examinations of the State Medical Faculty of West Bengal shall apply with necessary modifications for the conduct of Diploma in Laboratory Technology. Detailed rules and regulations may be framed by the Governing Body from time to time.
17. The rates of remuneration to Paper Setters, Examiners, Assistants, Inspectors and Invigilators, etc. appointed to conduct the examinations and the rates of Travelling Allowance, Daily Allowances to Examiners and Inspectors, etc., shall be such as laid down by the Governing Body.

AWARD OF DIPLOMA IN LABORATORY TECHNOLOGY : DMLT [TECH]

1. A candidate who passes successfully the Final Examination will be granted a Diploma in Medical Laboratory Technology : DMLT [Tech].
2. Every such application shall be accompanied by a certificate from the Head of the recognized Hospital, in the form given in **Appendix VI**, with all the particular mentioned therein and the Head of the Institution shall forward the same to the Secretary, in the form given in **Appendix VII**, stating whether he/she considers him/her eligible to receive the Diploma in Medical Laboratory Technology : DMLT [Tech].
3. The Governing Body may then, if satisfied that all requirements of these regulations have been fulfilled, issue the Diploma, which shall be in the form given in **Appendix VIII**.

Provided that the Board of Studies may, if satisfied, accordingly direct the issue of such Diploma in anticipation of the approval of the Governing Body.

Appendix I

STATE MEDICAL FACULTY OF WEST BENGAL

**COURSE SYLLABUS: DMLT [TECH] COURSE
REVISED ON 2013**

PRELIMINARY EXAMINATION (BROAD HEADS):

- PAPER I : PATHOLOGY -
- i) Clinical Pathology
 - ii) Haematology
- PAPER II: MICROBIOLOGY-
- i) General Bacteriology
 - ii) Systemic Bacteriology
 - iii) Immunology & Serology
 - iv) Clinical Bacteriology
- PAPER III: BIOCHEMISTRY-

FINAL EXAMINATION (BROAD HEADS):

- PAPER I : PATHOLOGY -
- i) Histopathology
 - ii) Cytopathology
 - iii) Blood Banking
- PAPER II: MICROBIOLOGY-
- i) Immunology & Serology
 - ii) Parasitology
 - iii) Mycology
 - iv) Animal Care
 - v) Clinical Microbiology
 - vi) Virology
- PAPER III: BIOCHEMISTRY-

DETAILED SYLLABUS - Preliminary Course : 1ST YEAR

PAPER I : PATHOLOGY		
Subject	Sl.No.	Particulars
Clinical Pathology	01	Reception of patients, noting carefully the test advised, phlebotomy and aftercare of patients.
	02	The Microscope – different types, parts of microscope, cleaning & care.
	03	Examination of Urine – Formation of urine Physical examination – Colour, transparency, pH and Sp gravity. Chemical examination – Protein, Sugar, Ketone bodies, Bile pigment/salt, Chyle, Blood. Microscopical examination – Cells (RBC, WBC, Epith), casts, crystals, Detection of microalbumin & 24 hours urine protein estimation.
	04	Examinations of body fluids – CSF, Pleural, peritoneal & pericardial fluid, Bronchoalveolar lavage fluid, hydatid cyst fluid, Joint fluid.
	05	Examination of Semen – physical characters, count, motility, viability and morphology
	06	Transportation of different clinical materials to distant laboratories.
	07	Basic concepts of Jaundice.
Heamatology	01	Composition of blood and its function.
	02	Origin, development & morphology of blood cells.
	03	Common anticoagulants used-composition, amount, mechanism of action and methods of preparation of different types of vials.
	04	Methods of estimation of Haemoglobin.
	05	Methods of total counts of WBC, RBC & Platelets & fluids used.
	06	Methods of determination of PCV.
	07	Calculation of different red cell indices (Haemogram)
	08	Basic principles of semi or automated blood cell counters & HPLC.
	09	Drawing of peripheral blood smear, staining & stain preparation.
	10	Bone marrow aspiration methods and staining & preparation of Tray for Bone marrow aspiration and biopsy.
	11	Differential leucocyte count (peripheral smear study)
	12	Reticulocyte staining, count and preparation of stain.
	13	Erythrocyte sedimentation rate (Procedure & reading only).
	14	Basic tests for coagulopathy – BT, CT, P time, APTT.
	15	Some special test – LE cell test, RBC Osmotic fragility & Foetal Hb%.

Heamatology	16	Basics of quality control methods and Laboratory accreditation.
	17	Biosafety measures and disposal of laboratory waste.
	18	Cylochemical Stain for diagnosis/differential diagnosis of leukemia.
	19	Basic concepts of anaemia, Leukemia and hemorrhagic disorder

PAPER II : MICROBIOLOGY		
Subject	Sl.No.	Particulars
General Bacteriology	01	Physiology and growth requirements.
	02	Sterilisation – principles & different methods adopted.
	03	Preparation of culture media
	04	Bacterial staining – Gram/Ziehl Neelsen/others
	05	Methods of colony count & morphological identification of bacteria by colony characters, staining & motility tests.
	06	Biochemical tests and interpretation.
	07	Final identification of bacteria with High-titre sera
	08	Antibiotic sensitivity tests.
Systemic Bacteriology	01	The microbial world and the structure of microbes.
	02	Collection of specimens for microbiological examination.
	03	Methods of inoculation of culture media from different samples.
	04	Basic concept of individual Bacteria.
	05	Laboratory diagnosis of pyogenic infection.
	06	Laboratory diagnosis of Leprosy.
	07	Laboratory diagnosis of Tuberculosis.
	08	Laboratory diagnosis of URTI.
	09	Laboratory diagnosis of LRTI
	10	Laboratory diagnosis of Enteric fever.
	11	Laboratory diagnosis of Bacillary dysentery.
	12	Laboratory diagnosis of Diarrhoeal diseases.
	13	Laboratory diagnosis of Urinary tract infection
	14	Laboratory diagnosis of Meningitis.
Immunology & Serology	01	Antigens & Antibodies – definition, types, preparation & preservation.
	02	Types of Antigen and Antibody reactions.
Clinical Bacteriology	01	Laboratory diagnosis of UTI, Sore throat, diarrhoea, acute pyogenic meningitis, Food poisoning and others

PAPER IIIA & IIIB : BIOCHEMISTRY

Subject	Sl.No.	Particulars
	01	Laboratory hazards, Laboratory safety procedures, Laboratory waste disposal.
	02	Collection, Separation, preservation and transport of the biological specimens, anticoagulants.
	03	Clinical laboratory instrumentation (Balance, Oven, Water bath)
	04	Concept of solute, solvent & colloidal solution, Normal solution, Molar solution, molal solution, osmol, osmolar solution, standard solution (Primary & Secondary) ionic strength of solution.
	05	Acid, Base, Buffer (Definition, example, pK, pH, Handerson-Hasselbach's equation)
	06	Principles of Photometry, (Lambert-Beer's Law, Flamephotometry, Reflectance Fluorometry.)
	07	Ion selective electrodes. (Nernst equation, pH electrode, Sodium, Potassium electrode, PCO ₂ electrode)
	08	Chemistry of Carbohydrates.
	09	Chemistry of Lipids.
	10	Chemistry of Amino Acids and Proteins.
	11	Chemistry of Nucleic acids & nucleotides.
	12	Radioactivity (Types) of radioactive decay with examples, Radioactive half life, Units of radioactivity application of radioisotope in clinical chemistry)
	13	Electrophoresis. (Principle, types, application in clinical biochemistry, Serum & Hemoglobin electrophoresis)
	14	Detection of Drugs & Toxic substances. (Principles of Chromatography, paper & thin layer Chromatography, their application in detection of drugs & toxic substances)

DETAILED SYLLABUS - Final Course : 2nd YEAR

PAPER I : PATHOLOGY		
Subject	Sl.No.	Particulars
Histopathology & Cytopathology	01	Basic concepts of different mammalian tissues and their histological structure.
	02	Different human organs and their gross and histological structure and functions.
	03	Receiving of biopsy specimens at laboratory (Clinical notes/fixatives).
	04	Fixation of tissue-different fixatives and their mode of action.
	05	Methods of decalcification.
	06	Processing of tissues-protocol for manual & automated tissue processors, paraffin embedding & preparation of blocks, preparation of reagents, different techniques & application and frozen section/cryostat.
	07	Use of Microtomes, selection and maintenance of knives, technique of section cutting & mounting on slides.
	08	Staining of tissue sections, preparation of different stains, staining methods for Haematoxylin & Eosin, Reticulin, PAS, Van-Gieson, Massion's trichrome, Lipid & Mucin stains & Perl's stain.
	09	Preservation of specimens and mounting of museum specimens.
	10	Preparation of cytosmear and H&E, Papanicolaou & MGG staining of different body fluids.
	11	Fine Needle Aspiration cytology & exfoliative cytology & Buccal Smear examination.
	12	Cytochemistry & immunohistochemistry.
	13	Cytospin and cell block preparation.
Blood Banking	01	Blood Group (ABO & Rh) – methods of grouping & reverse grouping.
	02	Basic blood banking procedures – collection of blood, anticoagulants used, cross matching, different screening tests including Coomb's Test for incomplete antibodies, preparation of different blood components for use and how to serve a requisition. Preparation of red cell suspension.
	03	Blood transfusion & hazards.
	04	Detect the time when to discard blood in Blood Bank
	05	Computerized record keeping of Blood Bank

PAPER II : MICROBIOLOGY		
Subject	Sl.No.	Particulars
Immunology & Serology	01	Diagnostic serological methods – Agglutination & Flocculation, Latex agglutination tests – to be performed by the students, Elisa testing & RIA – principles and demonstration and interpretation of results of – Widal Test, VDRL Test, Aldehyde Test, ASO Titre, Rheumatoid factor, C-reactive protein, HBsAg, Anti HCV, Anti HIV.
Parasitology	01	Basic knowledge on Protozoa and helminths.
Mycology	01	General & Systemic Mycology
	02	Demonstration of Fungus in Laboratory.
Animal Care	01	Common laboratory animals – Food, Handling, Housing, Breeding.
	02	Care of normal and experimental animals.
	03	Sacrifice, postmortem and disposal.
Clinical Microbiology	01	Laboratory diagnosis of Malaria, Protozoal dysentery, Kalazar, Hook worm infection, Ascariasis, Filariasis, Taeniasis, hepatitis, Viral diarrhea, HIV/AIDS, Candidiasis, Cryptococcal meningitis.
	02	Biosafety measures.
	03	Examination of stool
	04	Quality Control
Virology	01	General & Systemic Virology

PAPER IIIA & IIIB : BIOCHEMISTRY

Subject	Sl.No.	Particulars
	01	Definition of Antigen & Antibody, Antigen-Antibody reaction, Detection of Antigen-Antibody Reactions (ELISA, RIA)
	02	Clinical Enzymology. (Definition of enzyme, classification with examples, types of enzyme-substrate reactions, assay of enzymes. End point & Kinetic, clinical importance of enzymes, isoenzymes.)
	03	Disorders of Carbohydrate metabolism & their detection. (Method of measurement of glucose in plasma & urine, ADA classification of Diabetes Mellitus, Glucose Tolerance Test, Detection of gestational diabetes, Glycosylated hemoglobin, self monitoring of blood glucose).
	04	Nutritional disorders & their detection.
	05	Liver Function Tests. (Over view of anatomy & physiology of Liver, bilirubin metabolism, jaundice & its biochemical diagnosis).
	06	Renal Function Tests. (Overview of anatomy & physiology of Kidney, Clearance Tests, other biochemical tests for detection of the renal function i.e. Serum creatinine, urea, sodium, potassium, urinary micro albumin and 24 hours protein estimation in urine, urinary osmolarity).
	07	Disorders of Cardiovascular system & their laboratory detection. (Disorders of Cholesterol metabolism measurement of plasma lipoproteins, Cardiac enzymes.)
	08	Thyroid Function Tests.
	09	Pancreatic & Gastrointestinal Function Tests. (Faecal fat, Hyperamylasemia, D-Xylose absorption Test)
	10	Disorders of joints & their detection.
	11	Basic concept of laboratory automation. (Configuration of clinical laboratory analyzers).
	12	Basic concept of laboratory statistics. (Reference value, mean, median, mode, standard deviation, coefficient of variation.)
	13	Basic concept of quality control in clinical biochemistry laboratory. (Control material, Leavy Jennings Plot.)

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX II

Form of application for registration of the name of a student admitted to an approved Training institution for Diploma in Medical Laboratory Technology : DMLT [Tech]

[Vide Regulation 13]

1. Name of the student in full :
2. Address –
(a) Permanent :
- (b) Present :
3. Father's Name :
{In case of married women, her
Husband's name}
4. Age [as on the date of admission] :
5. Race – Caste or religion :
6. Name of the approved training Institution :
7. Date of admission :
8. Preliminary educational qualification :

Signature of the applicant

I hereby certify that the above particulars are true to my knowledge.

Dated, the20
Place :

Signature of the Head of the Institute

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX III

Application for admission to the Preliminary Examination for Diploma in Medical Laboratory Technology :
DMLT [Tech]

[Vide Regulation 6 of Part III]

To
The Secretary, State Medical Faculty of West Bengal.

Sir,

I beg to apply for admission to the ensuing Preliminary Examination for Diploma in Medical Laboratory Technology : DMLT [Tech] to be held by the Governing Body of the State Medical Faculty of West Bengal from

The required certificate from the Head of the Institution is given herewith and I have paid the prescribed fee of Rs. in his office.

- | | | | |
|----|------------------------------|---|--|
| 1. | Name in full (Block letters) | : | |
| 2. | Father's Name | : | |
| 3. | Present Age | : | |
| 4. | Student Registration No. | : | |
| 5. | Permanent Address | : | |
| 6. | Present | : | |

Dated, the20.....

Signature of the applicant in full

Certificate of the Head of the Institution

I certify as below –

[1] That the above named was admitted in this Institution for the course of Diploma in Medical Laboratory Technology :DMLT [Tech]on

[2] That previous to his/her admission, he/she has attended regularly the course of studies as laid down in the Regulations. His/her attendance in the several subjects being as below:

<u>Subject Attendance</u>	<u>Hrs. of Theoretical Lecturers</u>	<u>No of Attendance</u>
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Paper I : (Pathology)

1. Clinical Pathology
2. Heamatology

Paper II : (Microbiology)

1. General Bacteriology
2. Systemic Bacteriology
3. Immunology
4. Clinical Bacteriology

Paper IIIA & IIIB (Biochemistry)

That he/she has paid in my office the prescribed fee of Rs.400/- which is being separately remitted to the Faculty.

That his/her conduct in the Institution was satisfactory.

Signature of the Head of the Institute

Dated, the20

Place :

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX IV

Application for admission to the Final Examination for Diploma in Medical Laboratory Technology :
DMLT [Tech]

[Vide Regulation 9 of Part III]

To
The Secretary, State Medical Faculty of West Bengal.

Sir,

I beg to apply for admission to the ensuing Final Examination for Diploma in Medical Laboratory Technology : DMLT [Tech] to be held by the Governing Body of the State Medical Faculty of West Bengal from

The required certificate from the Head of the Institution is given herewith and I have paid the prescribed fee of Rs. in his office.

I passed the Preliminary Examination in and my present age is

- | | | |
|----|------------------------------|---|
| 1. | Name in full (Block letters) | : |
| 2. | Father's Name | : |
| 3. | Present Age | : |
| 4. | Student Registration No. | : |
| 5. | Permanent Address | : |
| 6. | Present | : |

Dated, the20

Signature of the applicant in full

* State name of the training institution.

Certificate of the Head of the Institution

I certify as below –

[1] That the above named passed the Preliminary Examination for Diploma in Medical Laboratory Technology : DMLT [Tech] in

[2] That he/she has attended regularly in this Institution. The 2nd Year's course of studies laid down in the Regulations and fulfilled the other requirements.. His/her attendance in the several subjects being as below:

<u>Subject Attendance</u>	<u>Hrs. of Theoretical Lecturers</u>	<u>No of Attendance</u>
---------------------------	--------------------------------------	-------------------------

Paper I : (Pathology)

1. Histopathology & Cytopathology
2. Blood Banking

Paper II : (Microbiology)

1. Immunology & Serology
2. Parasitology
3. Mycology
4. Animal Care
5. Clinical Microbiology
6. Virology

Paper IIIA & IIIB (Biochemistry)

[3] That he/she has paid in my office the prescribed fee of Rs.400/- which is being separately remitted to the Faculty.

[4] That his/her conduct in the Institution was satisfactory.

Signature of the Head of the Institute

Dated, the20

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX V

(Certificate by the Head of the Institution regarding further course of training in the subject or subjects in case of a failed candidate)

[Vide Regulation 14 of Part III]

This is to certify that Sri/Sm. who appeared at the Preliminary/Final Examination for the Diploma in Medical Laboratory Technology : DMLT [Tech] in20 and failed in has undergone a further course of training in the following subject/subjects since the date of the last examination to my entire satisfaction.

Sl. No.	Subject(s)	Number of Theoretical Lecturers/ Demonstrations attended
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Signature of the Head of the Institute

Dated, the20

Place :

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX VI

(Certificates to be produced by students of Diploma in Medical Laboratory Technology : DMLT [Tech]
after completion of Practical Training)

[Vide Regulation 2 of Part IV]

No. :

Date :

I....., hereby certify that..... [Name of the student]
after passing the Final Examination for Diploma in Medical Laboratory Technology : DMLT [Tech]
underwent practical training forhours during the period from
.....to under my supervision and guidance.

Signature

Name

Designation

Address

(Countersigned by the Head of the Hospital)

STATE MEDICAL FACULTY OF WEST BENGAL

APPENDIX VII

[Vide Regulation 2 of Part II]

To
The Secretary
State Medical Faculty of West Bengal
Dated, the20

Sir,

I am to say that the under-mentioned students have passed the Final Examination for the Diploma in Medical Laboratory Technology : DMLT [Tech] held by the Faculty in20 and have thereafter undergone the practical training as required under the Regulations of which the necessary certificates are enclosed. I certify that I consider the students to be eligible to receive the Diploma in Medical Laboratory Technology : DMLT [Tech] .

Yours faithfully,

Head of the Institution

REPORT OF THE INSPECTORS

Part V

Summary of findings by the Inspectors in respect of _____
 For _____ Course. Name of the Institution

1. Accommodation (including toilet, ventilation, light) :
2. Fire Safety Measures available or not? :
3. Water, Electricity, Gas & Waste Disposal :
4. If the Institute is in rented building, then 3 years Agreement is shown or not? :
5. Furniture :
6. Office Records :
7. Laboratory equipment :
8. Qualification of Teachers :
9. Teacher-student ratio :
10. Workload of teachers :
11. Library books and Journals :
12. No. of working days in the session :
13. Daily working hours :
14. Laboratory facilities provided to the students :
15. Standard of teaching :
16. Standard of students :
17. Performance of students in
 - i) Theoretical :
 - ii) Practical :
 - iii) Oral :
18. Facilities provided for conducting the examination (Examination hall rented may be allowed) :

19. Date of Last Inspection :
 20. In case of DMLT [Tech] Course Blood Bank facilities have been shown in Government Hospital/Private Hospital and attendance of DMLT students in Blood Bank has been seen. :
 21. Compliance of past deficiencies (if any) :
 22. NOC from State Govt. for conduction of new course has been seen. :
 23. Updated License for clinical Establishment Act. has been seen. :
 24. Updated Registration Certificates of the Doctor Tutors from WBMC. :
 25. Recommendation of Inspectors: The Institution may be granted affiliation/following conditions are to be fulfilled before consideration of extending/according affiliation.
- 1.
 - 2.

Name and Signature of the Inspectors with date