



# **PARAMEDICAL COUNCIL OF INDIA**

## **DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY (DMLT) (DMLT) SYLLABUS**

# PARAMEDICAL COUNCIL OF INDIA

Ch. No.157/1, Near Laxmi Nagar, Metro Station Gate No 1, Vikas Marg, Delhi-92

## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

### COURSE DURATION:-

- It is 2 years + 6 months internship full time\_Diploma Course
  - ELIGIBILITY:-
    - Candidate must have passed 12th with Physics, Chemistry, Biology or Physics, Chemistry, Math's with 35% marks in Intermediate exams. (From UP board or any other recognized board).
    - Candidate must have completed age of 17 years of age as on 31st December of admission year. There is no maximum age limit for the admission.

### FIRST YEAR

- 1) ANATOMY & PHYSIOLOGY
- 2) MICROBIOLOGY
- 3) BIOCHEMISTRY
- 4) PATHOLOGY

### SECOND YEAR

- 1) BIOCHEMISTRY
- 2) MICROBIOLOGY
- 3) PATHOLOGY
- 4) SOCIAL AND PREVENTIVE MEDICINE

### **FIRST PAPER: SYLLABUS COVERS**

#### 1. ANATOMY & PHYSIOLOGY

1. Introduction.
2. The cell.
3. The tissues.
4. Organs and system.
5. Skeletal system.
6. Joints of the skeleton.
7. Blood.
8. Lymphatic system.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

9. Cardiovascular system.
10. Respiratory system.
11. Definition of sociology and social problem.
12. How illness affect society.
13. Role of society in preventing epidermis diseases Psychology.
14. Psychology definition.
15. Psychology of sick person.
16. Needs for psychology support to sick person.
17. Care of mentally retired and insane persons.
18. Definition.
19. First aider –definition duties and responsibilities.
20. Artificial respiration, electric shock, burns, control of bleeding, unconsciousness.
21. Fracture and injuries dislocation high, fever, something gets struck in the throat.
22. Drowning, insect bite, dog bite, snake bite, food poisoning, and chemical poisoning.

### **2. MICROBIOLOGY**

1. Morphology and Classification of Bacteria.
2. Common Staining Technique.
3. Nutrition and Growth of Bacteria.
4. Sterilisation and Disinfection.
5. Bio Medical Waste Management.
6. Laboratory Safety and Standards Precautions.
7. Pathogenesis of Bacterial Infection.
8. Bacterial Culture Media.
9. Methods of Isolation of bacteria.
10. Bacterial Identification Tests.
11. Antibiotic Susceptibility Testing.
12. Quality Control in Microbiology.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

13. Special points to be remembered.
14. Streptococcus.
15. Streptococcus.
16. Pneumococcal.
17. Enterococcus.
18. Nisseriae.
19. Corynebacterium.
20. Mycobacterium.
21. Escherichia Coli and Klebsiella Escherichia Coli.
22. Citrobacter, Edwardsiella, Enterobacter and Serratia.
23. Salmonella.
24. Shigella.
25. Proteus and Providencia.
26. Yersinia.
27. Vibrio and Related Organism.
28. Pseudomonas.
29. Haemophilus.
30. Bordetella.

### **3. BIOCHEMISTRY**

1. General Biochemistry.
2. Carbohydrates.
3. Carbohydrate Metabolism.
4. Proteins.
5. Nucleotides.
6. Clinical Chemistry.
7. Enzymes.
8. Lipids.

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9. Biological Oxidation, Electron Transfer Chain and Oxidative Phosphorylation.
10. Vitamins.
11. Minerals.
12. Hormones.

### **4. PATHOLOGY**

#### • **HEMATOLOGY**

1. Composition of Blood and Normal Erythropoietin.
2. Technique of Blood Collection.
3. Estimation of Hemoglobin.
4. Hematocrit.
5. Selection and Registration of Donors.
6. ABO Blood Grouping.
7. Erythrocyte Sedimentation Rate (ESR).
8. Staining of PBF and Interpretation of Normal and Abnormal Red Cell Morphology.
9. Maturation and Development of Leucocytes.
10. Formation of Platelets of Leucocytes.
11. Formation of Platelets and Thrombocytopenia.
12. Rhesus Blood Group.
13. Pretransfusion or Compatibility Testing.

#### • **HISTOPATHOLOGY**

1. Introduction to Histopathology.
2. Light Microscopy.
3. Special Light Microscopy.
4. Receiving of Surgical Specimens.
5. Fixation of tissues.
6. Decalcification.
7. Tissue Processing.
8. Embedding.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

9. Microtome.
10. Hematoxylin and Eosin Staining.
11. Staining Methods to Demonstrate Special/Specific tissues.
12. Met achromatic Staining.
13. Lipid Stain.
14. Staining Techniques for Demonstration and Identification of Microorganisms.
15. Cryostat and Frozen Section

### SECOND PAPER: SYLLABUS COVERS

#### **1. BIOCHEMISTRY**

1. Clinical Biochemistry.
2. Body Water, Osmolarity And ionic Composition of Body Fluids.
3. Nutrition.
4. Kidney Function Test.
5. Liver Function Tests.
6. Spectrophotometry, Light Emission and Scattering Analytical Technique.
7. Basic Principles of Radioactive Measurements.
8. Electrochemistry.
9. Electrophoresis.
10. Chromatography and Mass Spectrometer.
11. Clinical Enzymology.
12. Immunochemical Techniques.
13. Automation in Clinical Laboratory.
14. Electrolytes and Blood Gases.
15. Centrifugation.
16. Primary and Secondary Standards.
17. Primary and Secondary Standards.
18. Radioactive Isotopes.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

### **2. MICROBIOLOGY**

1. Spirochaetes.
2. Rickettsiaceae.
3. Chlamydia.
4. Mycoplasma and L-Forms.
5. Spore Forming Anaerobes.
6. Non-Sporing Anaerobes.
7. Medical Parasitology.
8. Entamoeba Histolytica and Other Rhizophodia.
9. Plasmodiu.
10. Nematodes.
11. Entrobium Vermicularis.
12. Leishmaniasis.
13. Nematodes Classification.
14. Hook Work and Strongyloides.
15. Trichuris Trichura.
16. Trematodes.
17. Cestodes.
18. Echinococcus Granulosus.
19. Tissue Nematodes.
20. Stool Examination.
21. Morphology and General Properties of Fungi.
22. Laboratory Diagnosis of Fungi.
23. Morphology and General Properties of Viruses.
24. Laboratory Diagnosis of Viral Infections.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

25. Immunity.
26. Antigens.
27. Immunoglobulins.
28. Complement.
29. Immunology Structure and Function of Immune System.
30. Agglutination.
31. Complement Fixation Test.
32. Immunofluorescence.
33. Eia and RIA.
34. Autoimmunity and Autoimmune Diseases.
35. Organ Transplantation.

### **3. PATHOLOGY**

#### **• HAEMATOLOGY**

1. Transfusion Reactions.
2. Introduction to Anemia.
3. Microcytic Hypochromic Anemia.
4. Macrocytic Anemias
5. Hemolytic Anemia.
6. Hemolytic Anemia Due To Abnormal Hemoglobin Synthesis.
7. Hemolytic Anemia Due To Abnormal Red Cell Enzymes.
8. Screening For Blood Transfusion Transmitted Diseases.
9. Anti Globulin Test.
10. Leukemia.



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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

### • HISTOPATHOLOGY

1. Procedures for DNA, RNA and Mitochondria Demonstration.
2. Special Processing.
3. Immune histoChemistr.
4. Electron Microscopy.
5. Museum Techniques.
6. Exfoliative Cytology.
7. Cytology: Specimen Collection & Storage.
8. Cytology: Specimen Processing & Staining.
9. Cytology: Disposal of Human Waste.
10. Cytology: Staining Methods.
11. Cytology Screening.
12. Quality Control in Cytology.
13. Cytomorphology.
14. Hormonal Assessment.
15. Fine Needle Aspiration Cytology.
16. Morphology pg Organs

### 4. SOCIAL & PREVENTIVE MEDICINE

1. Health Education and Community Pharmacy.
2. Important Terms and Definitions.
3. Concept of Health.
4. Nutrition and Health.
5. Demography and Family Planning.

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY

6. First Aid.
7. Environment and Health.
8. Fundamental Principles of Microbiology.
9. Communicable diseases.
10. Non-Communicable diseases.
11. Epidemiology.

### BOOK

1. **LAB TECH ANATOMY AND PHYSIOLOGY - BY DR. N. MURGESH**
2. **LAB TECH COMMUNITY HEALTH - BY DR. N. MURGESH**
3. **LAB TECH GENERAL BIOCHEMISTRY - BY DR. DINESH KUMAR SHUKLA,  
DR. N. MURGESH**
4. **LAB TECH CLINICAL BIOCHEMISTRY - BY DR. DINESH KUMAR SHUKLA,  
DR. N. MURGESH**
5. **LAB TECH CLINICAL PATHOLOGY - BY DR. N. MURGESH**
6. **LAB TECH HISTOPATHOLOGY & CYTOPATHOLOGY -  
BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH**
7. **LAB TECH HAEMATOLOGY - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH**
8. **LAB TECH BLOOD BANKING - BY DR. N. MURGESH**
9. **LAB TECH MICROBIOLOGY I - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH**
10. **LAB TECH MICROBIOLOGY II - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH**