

# SYLLABUS

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## DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY (Effective from Academic Year 2022-23)

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2022-23

&

2024-25



**DR. C.V. RAMAN UNIVERSITY**

AN ISO 9001:2015 CERTIFIED FOR QMS  
// Madhya Pradesh, Khandwa AN AISECT GROUP UNIVERSITY

Approved by : MP. Govt., AICTE, NCTE, MP PARAMEDICAL COUNCIL, PCI Recognized by : UGC Member of : AIU

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By the order of honorable Vice Chancellor.

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## **PREAMBLE: -**

The objective of any program at paramedical institute is to prepare professionals well equipped with attitude-skills and knowledge demanded by the growing society. The CVRUK envisions all its programs in the best interest of its student and in this endeavor, it offers a new vision to all its under graduate courses. It imbibes learning outcome-based curriculum framework (LOCF) For all its under graduate programs. The LOCF approach is envisioned to provide focused, outcome-based syllabus the teaching-learning experiences in a more student-centric manner.

The LOCF approach has been adopted to strengthen students experience as they engage themselves in the program of their choice. The under graduate programs will prepare the students both for academic pursuit as well as enhance his/her employability.

Each program widely elaborates its nature and promises the outcomes that are to be accompanied by studying the courses. The program also states the attributes that its offer to in calculate at the graduation level. The graduates' attributes encompass values related to wellbeing, emotional stability, critical thinking, social justice also skills for employability. In short, each program prepares students for sustainability and lifelong learning.

The new curriculum of paramedical offers the student gains the requisite knowledge, skills and aptitude for the field of paramedical. The efforts are made to measure cognitive as well as applied learning. Student are not only trained on the core components but also in areas which are need based, innovative, and relevant keeping in pace with the fast-growing food industry. The course is internationally competitive.

The CVRUK hopes the LOCF approach of the program paramedical will help students in making an informed decision regarding the goals that they wish to pursue in further education and life.

In the pursuit of excellence in healthcare education, our paramedical school stands as a beacon of knowledge and compassion. committed to shaping skilled professional, we provide a transformative learning environment where dedication meets innovation. welcome to a journey of discovery, where each student is nurtured to become a proficient and empathetic healthcare practitioner contributing to the wellbeing of society.

## **1. INTRODUCTION TO PARAMEDICAL: -**

“Paramedical services form the backbone of modern healthcare, encompassing a diverse range of crucial roles beyond conventional medical practice. From Lab technician, emergency medical technicians and radiographers to laboratory technologist, paramedical professionals play a vital role in diagnosis, treatment, and overall patient care. This dynamic field combines technical expertise with a deep sense of compassion, ensuring, a holistic approach to health and wellbeing.”

The program is comprised of 3 broad interrelated curriculum areas: -

1. Perspective in education.
2. Curriculum and pedagogic studies.
3. Engagement with the field.

The extensive program provides enough flexibility in respect of lecture courses, practical training, and internship. Dr. C.V. Raman university is offering paramedical courses as per the guideline of M.P. Paramedical council. The paramedical courses are of 2 years duration which compromises of annual examination scheme. This course has been designed keeping in view the unique requirement of paramedical students.

## **OBJECTIVES OF PARAMEDICAL COURSES: -**

“The objectives of a paramedical course are multifaceted, aimed, to equip students with the essential skills and knowledge to excel in healthcare. These courses focus on fostering a deep understanding of medical procedures, honing technical proficiency, cultivating empathy, and instilling a commitment to ethical practices. Ultimately, the goal is to produce. competent and compassionate paramedical professionals who contribute significantly to the healthcare ecosystem, meeting the evolving needs of society.”

# Diploma in Medical Laboratory Technology-

“The objectives of Diploma in Medical Laboratory Technology program include developing a comprehensive understanding of human anatomy, physiology, acquiring specialized skills in physiotherapeutic techniques, and fostering the ability to assess and design effective rehabilitation programs. Additionally, these programs aim to install critical thinking, research capabilities, and patient centric approach, ensuring graduates contribute proficiently to enhancing individuals’ physical wellbeing and quality of life.”

1. To systematize experience and strengthen the professional competencies.
2. to develop skills required in selecting and organizing learning experiences.
3. to understand the nature of learning process.
4. to develop skills involved in dealing with the academic and personal problems of learning.
5. to acquire knowledge and develop an understanding of various procedures and techniques of evaluation and their classroom applications.

The course content has been designed to provide aspiring teaching with the necessary knowledge, skills, and attitudes. The curriculum aims to preparer individuals to understand the principles of paramedical course.

## 2. LEARNING OUTCOME BASED CURRICULUM FRAMEWORK.

### 2.1 Nature and extent of the program in maharishi charak school of paramedical science.

“The nature and extent of paramedical program encompass a comprehensive exploration of healthcare disciplines, combining theoretical knowledge with practical skills.

### 3. Graduate Attributes in maharishi charak school of paramedical science.

Disciplinary knowledge: -graduate attributes in a paramedical course typically include skills like critical thinking, effective communication, clinical competence, ethical practice, teamwork, and adaptability to various healthcare settings. These attributes ensure graduates are well prepared for the dynamic and demanding field of paramedicine.

**Communication Skills:** - Aspiring teachers need strong communication skills to effectively interact with students, colleagues, parents, and the wider community. Communication is not just about speaking; it also involves active listening. Teachers need to pay attention to students' questions, concerns, and feedback to create an inclusive and supportive learning environment. Besides that, the teachers give various assignments that enable student to develop skills in public speaking writing and effective’s interpersonal skills. Presentations in each paper enhances their confidence, ability to express themselves; presentation skills.

**Research-related skills:** - Research related skills in paramedical fields involve the ability to critically evaluate scientific literature, design and conduct research studies, collect and analyses data, and communicate findings effectively. Proficiency in statistical analysis, ethical research practices, and staying updated on the latest advancements are also crucial for paramedical professionals engaged in research activities.

**Cooperation/Team work:** - Cooperation and teamwork are essential skills that paramedical students need to develop throughout their program. As future educators, they will work closely with colleagues, administrators, parents, and, most importantly, their students. Cooperation and teamwork play a significant role as they foster a collaborative and supportive learning environment, prepare future educators for the dynamics of the classroom, and equip them with essential skills to succeed in their teaching careers.

**Self-directed learning:** - Incorporating self-directed learning in the paramedical program empowers aspiring educators to become lifelong learners, critical thinkers, and proactive professionals who can continuously improve their paramedical practice and make a positive impact on their students learning experiences. By fostering self-directed learning, educators aim to produce graduates who are adaptable, reflective, and committed to continuous professional development. These qualities are essential for educators to meet the diverse needs of their students and contribute positively to the ever-changing landscape of education.

**Multicultural competence:** - Multicultural competence in paramedical practice involves understanding and respecting diverse cultural backgrounds among patients. Paramedical professionals should be sensitive to cultural differences, communicate effectively with individuals from various backgrounds, and adapt their approach to provide culturally competent care. This includes recognizing cultural beliefs about health and illness, addressing language barriers, and promoting inclusivity to ensure the wellbeing of all patients.

**Moral and ethical awareness/reasoning:** - Student has awareness of ethical conduct in different situations (academic and personal). They have skills in understanding and avoiding unethical behavior such as misrepresentation, plagiarism and environmental misuse and violence. They are formally taught ethics of research and human interventions.

**Leadership readiness/qualities:** - Leadership readiness in paramedical professionals involves qualities like effective communication, decision making skills, adaptability, and the ability to inspire and motivate a team. Strong problem solving, empathy, and commitment to continuous learning are also vital. Paramedical leaders must be able to handle high pressure situations, foster collaboration within their team, and exhibit a strong ethical foundation in their decision-making processes.

**Lifelong learning:** - Students acquire ability to gain knowledge and skills which are necessary in life for the holistic development for meeting their professional and personal needs in varying environment and changing contexts.

#### **4. QUALIFICATION DESCRIPTORS FOR MAHARISHI CHARAK SCHOOL OF PARAMEDICAL SCIENCE.**

The following descriptors indicate the expectations from Paramedical students

- Demonstrating a strong understanding of the subjects and staying updated with current developments in their field.
- Acquiring effective strategies and techniques to engage and support diverse learners.
- Developing skills to maintain an orderly and conducive learning environment.
- Designing well-structured lesson plans aligned with learning objectives and student needs.
- Designing and implementing fair and effective assessment methods to measure student progress.
- Adapting teaching approaches to meet the diverse learning needs of students.
- Integrating educational technology to enhance teaching and learning experiences.
- Engaging in self-reflection to improve practices and student outcomes.

#### **5. PROGRAM LEARNING OUTCOME IN MAHARISHI CHARAK SCHOOL OF PARAMEDICAL SCIENCE.**

The learning outcomes of the course are: -

1. Proficiency in essential clinical procedures.
2. Effective communication skills with patients and colleagues.
3. Critical thinking and problem-solving ability.
4. Adherence to high ethical standards in paramedical practice.
5. Cultural competence for diverse patient interactions.
6. Ability to work collaboratively in term-based healthcare settings.
7. Commitment to ongoing professional development and learning.
8. Demonstration of leadership qualities in paramedical roles.
9. Application of evidenced based practices in health.
10. Adaptability to diverse and dynamic healthcare environment.

#### **6. STRUCTURE OF PARAMEDICAL COURSE IN MAHARISHI CHARAK SCHOOL OF PARAMEDICAL SCIENCE.**

The structure of paramedical includes: -

1. Foundation course: -Introduction to basic sciences and foundational knowledge relevant to paramedical.
2. Core paramedical course: -in depth study of topics such as anatomy, physiology, hematology, pharmacology, emergency, medical procedures etc....subjects.
3. Clinical training: -hands on experience in clinical settings, including internship and practical training to apply theoretical knowledge.
4. Ethics and legal aspects: -understanding ethical standards and legal considerations in paramedical practice.
5. Communication skills: -Training in effective communication, both with patients and healthcare professionals.

## -: REGULATION: -

### REGULATION FOR VARIOUS DIPLOMA COURSES (2 YEARS) IN PARAMEDICAL SUBJECTS

#### THE OBJECTIVE OF THE COURSES

1. The training of the candidate registering for various diploma (2 years) courses are aimed to carry out all routine diagnostic / therapeutic test on modern hospital laboratory
2. The Diploma course is of two years
3. Eligibility for admission in all Para medical Diploma courses except Percussionist
  - a) The candidate must have passed 10+2 with at least 40% marks in aggregate of Physics Chemistry and Biology (PCB) and for DMLT 10+2 (PCB) or 10+2
  - b) vocational (M L T) course with at least 40% marks will also be eligible
  - c) For Diploma in Perfusion Technology (percussionist 2 years course) The candidate shall have passed B. Sc. (BIOLOGY group) with minimum 45% marks, The University will award P G Diploma in perfusion technology
4. In case of SC/ST/OBC candidates, 5% marks relaxation will be given for the admission in above said courses
5. Weight age will be given as per university rules
6. Number of seats will be 50 in each course
7. The minimum age for admission shall be 17 years on 31 December of the Academic year of admission
8. The selection of candidate will be on the basis of the entrance examination or in the absence of entrance exam, purely on merit list prepared on the basis of marks obtained in qualifying examination
9. The admissions of students into various programs should be completed by 30th November. There shall be minimum 240 teaching days in one academic year.
10. Attendance of students: The student should have 75% attendance in theory and 75% attendance in practical to be eligible to appear in university examination. However, only Dean/ Principal of the college are empowered to condone 10% of attendance on valid grounds. Monthly attendance of students has to be sent to the university every month from the respective affiliated colleges. (M.P. Paramedical Council)
11. Total Course Duration: A student has to complete the course that he/she has joined with in the double the duration of the actual time taken for the completion of the course i.e.- Two Years for all Diploma Courses.
12. Medium of instruction and examination: In case of diploma courses, the medium of instruction will be bilingual (English or Hindi) and the medium of examination will be either English or Hindi as per the convenience of the student.
13. There will be two University Examinations in one academic session.
14. For all the Diploma courses (which is of two years duration) at the end of first year, an Internal examination will be conducted at the college level itself and the result has to be sent to the University as per the scheduled notification. (These marks will be included in the Final Transcripts), and the students are eligible to appear their final year examination at CVRUK, subject to passing in first year internal examination conducted at college level. University examination will be held at the end of Two years only.
15. Passing Marks of Examination:
  - The passing marks of examination would be 50% for each subject and also in total marks obtained for both Diploma and Degree courses. The candidate has to pass in theory and practical examination separately. For theory paper the internal assessment marks, viva-voce and theory examination marks will be counted.
  - The candidate should pass separately in two heads i.e In Theory (Theory plus Viva voce plus Internal Assessment) and also in Practical (with 50% marks).
  - The candidate has to pass separately in each subject in internal assessment examination (with 50% marks) in order to be eligible to appear in university examinations.
  - Regarding Grace marks it was decided that total weightage of grace marks would be 5 (five), and that grace marks can be split between the subjects. There will not be any grace marks for the Practical examination.
  - Grace marks will not be added to total marks of the candidate. In Supplementary examination also similar pattern of grace marks will be followed.
16. Re-totaling & Re-valuation (Review) both should be allowed as per the university rules
17. Other rules regarding conduct of examination will be as per the university REGULATION/notifications

18. Permission will be given to start the courses after the permission from M P Paramedical council (Department of Medical education, Government of M. P.)
19. Syllabus and scheme of examination shall be decided by the board of studies and Academic council of the university from time to time as per guidelines from M P Paramedical council
20. In order to be an examiner a faculty member should have minimum three years of teaching experience and not below the rank of the Assit. Professor and /or. Demonstrator /Tutor
21. The examination papers (Theory) will be evaluated centrally at the university
22. The examiner who evaluates the theory copy preferably be appointed as the external for practical examinations for the said course.
23. Diploma students will be eligible for supplementary examination.

Note: FOR OTHER PROVISION WHICH ARE NOT COVER ED IN THIS CURRICULUM & SYLLABUS WILL BE APPLICABLE AS PER THE UNIVERSITY REGULATION.

**I YEAR D.M.L.T. EXAMINATION**  
**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**

**SCHEME OF EXAMINATION**

S.No.	Paper	Subject Code	Subject	Max. Marks	Min. Passing Marks
1	Paper - I	PBMLT101	Applied Human Anatomy & Physiology	100	50
2	Paper - II	PBMLT102	Biochemistry and Clinical Pathology	100	50

(There shall be Institutional /College level theory examination as per university notification, marks to be send to university for internal assessment purposes of university examination)

**II YEAR D.M.L.T. EXAMINATION**  
**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**

There shall be university examination at the end of II-year curriculum of Diploma in Medical Lab Technician (DMLT)

S.No.	Paper	Subject Code	Subject	Theory	Internal Assessment	Practical	Total
1	Paper - I	PBMLT201	Hematology and Blood Banking, Clinical & Parasitology	100	100	100	300
2	Paper - II	PBMLT202	Microbiology and Serology & Cytology	100	100	100	300

N.B.- 1. First year institutional /college level theory examination's awarded marks would be considering as Internal assessment marks and candidate have to get min. 50% marks in university theory examination in addition to Internal assessment marks i.e., 100 marks collectively for passing the examination.

2. University Practical examination of 100 max. marks is inclusive of viva and candidate should get separate 50% marks i.e., 50 marks to get pass.

## SYLLABUS AND SCHEME OF EXAMINATION

Diploma in Medical Lab Technician (DMLT)

PAPER-I: APPLIED HUMAN ANATOMY AND PHYSIOLOGY SCHEME OF EXAMINATION

Paper	Subject	Theory	Internal Assessment	Practical	Total
Paper - I	Applied Human Anatomy & Physiology	100	-	-	100

### INSTRUCTION FOR THE PAPER SETTER

The theory examination shall be of 100 marks with

**Section – A:** basic histology, **Section – B:** Physiology and **Section –C** Anatomy. The theory examination marks for basic histology shall be 30, for Anatomy shall be 35 and for Physiology 35 marks respectively.

There shall be two paper setters / evaluators, one from Anatomy / Physiology and one from histology.

Section- A, which will be set by histology examiner (30 marks) and Section-B, by Physiology (35marks) Anatomy examiner (35 marks). Recognized teachers in basic histology Anatomy and Physiology with five years of experience shall be on the panel of examiners; 50% shall be the minimum passing marks.

The pattern of theory examination for each section (A, B And C) will be as under for 50 Max. Marks.

No. and Type of Questions	Marks for each Question	Total Marks
10 Very short answer Questions Answer to be given in 50-60 words	02	20
05 Short answer Questions Answer to be given in 250-300 words	10	50
02 Essay type Questions Answer to be given in 450-500 words	15	30
Total Marks		100

**INSTRUCTIONS FOR THE CANDIDATES:** Answer all questions only in required word.

The paper consists of three different subjects.





**DIPLOMA IN MEDICAL  
LABORATORY TECHNOLOGY**

**I YEAR**

**(Effective from Academic Year 2022-23)**

**DR. C.V.RAMAN UNIVERSITY**

### **SYLLABUS CONTENTS**

#### **A) Applied Anatomy and Physiology**

- Study of the structure of a cell.
- Normal anatomical structure, Histology & Functions (Physiology) of the following systems.
- The circulatory system (Heart and Blood Vessels) The Respiratory system
- The Digestive system Liver and Pancreas Lymphatic system Urinary system
- Reproductive system – Male and Female Endocrine system
- Central nervous system (Brain and Spinal cord)

#### **Practical**

##### **Anatomy**

1. Demonstration of parts of body and land marks on the surface.
2. The skeletal system, Head & Neck. Thorax And Abdomen: -
  - Demonstration of various organs within torex & abdomen.
  - Respiratory systems, pleurae, heart, liver, gall bladder, peritoneum stomach & intestine.
  - Spleen, pancreas & parts of urinary system

##### **General Nervous System**

- Spinal level and site of lumber puncture.
- Surface anatomy of important organs & blood vessels.
- Identification of models like those of Brain, Heart, embryology, Kidney.

##### **Demonstration**

- Fixing, labeling & storage of specimens.
- Drawing diagrams & labeling.
- Demonstration of models, specimens & skeleton.

##### **Physiology**

- The microscope, its usage, cleaning & maintenance.
- Identification of blood cells under Microscope. RBC, various types of WBC, pallets, Reticulocytes.
- Preparation of anti-coagulants.
- Collection of blood samples to obtain plasma & serum samples.
- Ruling area of Neubauer chamber.
- Usage of RBC & WBC pipettes & wintergreen Pipette & Win robe tube.
- Estimation of Hb, preparation of blood smears, staining.
- Demonstration of blood pressure recording and pulse.
- Determination of bleeding, clotting & prothrombin Time.

#### **Note**

- All theory topics scheduled followed by practicals.
- Minimum 100 Hrs. of posting should be in Biochemistry

Minimum 100 Hrs. of posting should be in pathology in 1st years to get accustomed with pathology Dept.

**SYLLABUS AND SCHEME OF EXAMINATION**  
**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**  
**PAPER- II: BIOCHEMISTRY & CLINICAL PATHOLOGY**  
**PMLT102**

**SCHEME OF EXAMINATION**

Paper	Subject	Theory	Internal Assessment	Practical	Total
PAPER- II	BIOCHEMISTRY & CLINICAL PATHOLOGY	100	-	-	100

**Instruction For the Paper Setter**

The University theory examination shall be of 100 marks and question paper will be set by Astd. Professor, Biochemistry, who shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 100 marks, which would be counted in theory marks for passing university examination. For practical examination; there will be two examiners (Astd. Professor, Biochemistry) - one internal Examiner; from the institute /college and one from other college /institute of the university from the panel of university examiners.

The pattern of University theory examination will be as under for 100 Max. Marks in question paper and distribution of marks for questions will be as under.

No. and Type of Questions	Marks for each Question	Total Marks
<b>10</b> very short answer Questions Answer to be given in 50-60 words	<b>02</b>	<b>20</b>
<b>5</b> short answer Questions Answer to be given in 250-300 words	<b>10</b>	<b>50</b>
<b>2</b> essay type Questions Answer to be given in 450-500 words	<b>15</b>	<b>30</b>
<b>Total Marks</b>		<b>100</b>

**INSTRUCTIONS FOR THE CANDIDATES:** Answer all questions only in required word.

There will be only 1 single answer sheet containing 40 pages and no additional sheets would be provided to the student.

**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**  
**PAPER- II: BIOCHEMISTRY AND CLINICAL PATHOLOGY**

PMLT102

**SYLLABUS CONTENTS**

**Biochemistry**

**Biochemistry structure of the following**

1. Carbohydrates
2. Proteins.
3. Lipids
4. Enzymes.

**Clinical Biochemistry**

1. Kidney function tests (Renal profile)
2. Liver functions tests (Hepatic profile)
3. Cardiac profile
4. Lipid profile

**Estimation of:**

1. Blood sugar
2. Blood Urea
3. S. Cholesterol
4. S. Uric Acid
5. S. Creatinine
6. Diff. S. Enzymes

**CLINICALPATHOLOGY:**

1. Physical, chemical & microscopic examination of urine
2. Stool examination
3. Semen examination
- CSF exam. & other body fluids

**PRACTICAL**

1. Demonstration of Kidney function test. Gastric function test & liver function test.
2. Demonstration of Enzyme Analysis - Acid and Alkaline phosphates, GOT/SGPT. Lactic dehydrogenase, CPK.
3. Lipid profile.
4. Estimation of Blood/ serum- Glucose. G.T.T. Urea, creatinine, uric Acid, Cholesterol. Bill Rubin portion & A/G Ratio, Glycosylated.
5. Demonstration of semi-automated, fully automated Biochemical Analyzers.
6. Demonstration / Exposure to Radioimmunoassay laboratory.
7. Visti to Laboratory of National Importance.



**DIPLOMA IN MEDICAL  
LABORATORY TECHNOLOGY  
II YEAR**

**(Effective from Academic Year 2022-23)**

**DR. C.V.RAMAN UNIVERSITY**

**SYLLABUS AND SCHEME OF EXAMINATION**  
**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**  
**PAPER- III: - HEMATOLOGY & BLOOD BANKING, CLINICAL PATHOLOGY & PARASITOLOGY**  
**PMLT201**

**SCHEME OF EXAMINATION**

Paper	Subject	Theory	Internal Assessment	Practical	Total
PAPER- III	Hematology & BLOOD BANKING CLINICAL PATHOLOGY & PARASITOLOGY	100	-	-	100

**Instruction For the Paper Setter**

The University theory examination shall be of 100 marks and question paper will be set by qualified examiner M.D. Pathology, who shall be on the panel of examiners, 50% shall be the minimum passing marks. Internal assessment will be of 100 marks, which would be counted in theory marks for passing university examination. For practical examination; there will be two examiner M.D. Pathology - one internal Examiner; from the institute /college and one from other college /institute of the university from the panel of university examiners.

The pattern of University theory examination will be as under for 100 Max. Marks in question paper and distribution of marks for questions will be as under.

No. and Type of Questions	Marks for each Question	Total Marks
10 very short answer Questions Answer to be given in 50-60 words	02	20
5 short answer Questions Answer to be given in 250-300 words	10	50
2 essay type Questions Answer to be given in 450-500 words	15	30
<b>Total Marks</b>		<b>100</b>

**INSTRUCTIONS FOR THE CANDIDATES:** Answer all questions only in required word.

There will be only 1 single answer sheet containing 40 pages and no additional sheets would be provided to the student

**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**

**PAPER- III: Hematology & BLOOD BANKING CLINICAL PATHOLOGY & PARASITOLOGY**

**SYLLABUS CONTENTS**

**Hematology**

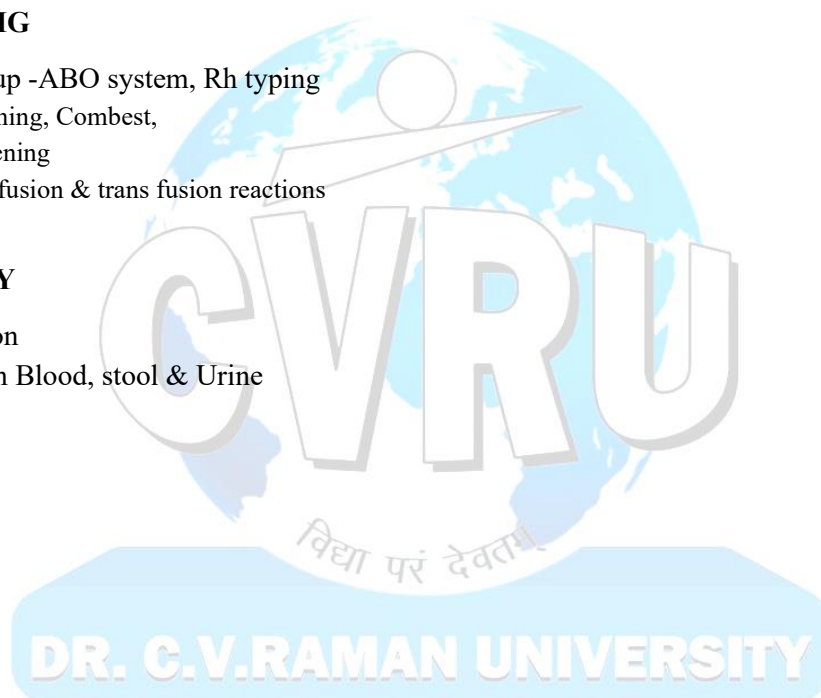
1. Composition of blood
2. Collection of blood & anticoagulants.
3. Hb estimation, TRBC Count -ANAEMIAS.
4. Preparation & staining of blood films.
5. Development of WBCS
6. TWBC & DWBC count -LEUKAMIAS.
7. Physiological variations in Hb, PCV, TLC and platelet.
8. Absolute values, ESR, PVC, Rrticulocytecount.
9. Platelet count BT &CT
10. LE cell preparation, sickling test, osmotic fragility
11. Bone marrow examination.

**BLOODBANKING**

1. Blood group -ABO system, Rh typing
2. Cross Matching, Combest,
3. Donor screening
4. Blood transfusion & trans fusion reactions

**PARASITOLOGY**

1. Introduction
2. Parasites in Blood, stool & Urine



**SYLLABUS AND SCHEME OF EXAMINATION**  
**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**  
**PAPER- IV: MICROBIOLOGY & SEROLOGY AND CYTOLOGY**  
**PMLT 202**

**SCHEME OF EXAMINATION**

<b>Paper</b>	<b>Subject</b>	<b>Theory</b>	<b>Internal Assessment</b>	<b>Practical</b>	<b>Total</b>
PAPER- III	Microbiology & Serology Cytology	100	-	-	100

**Instruction For the Paper Setter**

The University theory examination shall be of 100 marks and question paper will be set by qualified examiner M.D. Pathology, who shall be on the panel of examiners of internal or external, 50% shall be the minimum passing marks. Internal assessment will be of 100 marks, which would be counted in theory marks for passing university examination. For practical examination; there will be two examiner M.D. Pathology - one internal Examiner; from the institute /college and one from other college /institute of the university from the panel of university examiners.

The pattern of University theory examination will be as under for 100 Max. Marks in question paper and distribution of marks for questions will be as under.

<b>No. and Type of Questions</b>	<b>Marks for each Question</b>	<b>Total Marks</b>
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2 essay type Questions Answer to be given in 450-500 words	15	30
<b>Total Marks</b>		<b>100</b>

**INSTRUCTIONS FOR THE CANDIDATES:** Answer all questions only in required word.

There will be only 1 single answer sheet containing 40 pages and no additional sheets would be provided to the student.



**DIPLOMA IN MEDICAL LAB TECHNICIAN (DMLT)**

**PAPER- IV: MICROBIOLOGY & SEROLOGY AND CYTOLOGY**

**PMLT 202**

**SYLLABUS CONTENTS**

**Microbiology**

1. Classification and Morphology of Bacteria
2. Growth and nutrition of microbes.
3. Culture & isolation of bacteria
4. Principles and methods of sterilization
5. Gram positive & gram-negative cocci
6. Gram positive & Gram-negative bacilli
7. Anaerobic spore bearing bacilli
8. Laboratory organization, management, recording of results and quality control in microbiology.
9. Antigen & Antibodies and their reactions
10. Introduction to Medical Virology.
11. Nomenclature and classification of viruses.
12. General characteristics of viruses: physical, chemical and biological properties.
13. General characters and classification of protozoa.
14. Laboratory procedure collections, preservation and processing of samples for parasites stool/blood/fluids/tissue/biopsy.
15. Various staining techniques used in microbiology

**SEROLOGY**

1. Antigen & Antibodies
2. Diagnosis of syphilis – VDRL test
3. RA test
4. Diagnosis of Typhoid- test
5. ELISA test

**CYTOLOGY**

1. Techniques & equipment's required
2. Fixatives & staining procedure
3. FNAC technique

**Practical**

1. Introduction to use of different laboratory instruments and their safety precautions.
2. Collection, handling and storage of samples for viral diagnosis.
3. Washing, cleaning and sterilization of media and glassware in virology.
4. Preparation of culture media
5. Different methods of culturing
6. Principles of bio safety hoods, use of pipettes, syringes and other virus contaminated instruments in the laboratory.
7. Demonstration of preservation of viruses, viral antigens, infected biological materials and viruses
8. Demonstration of monochrome staining
9. Demonstration of simple staining technique
10. Demonstration of negative staining technique
11. Demonstration of acid-fast technique.