DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY - DMLT

SYLLABUS

SCHEME OF EXAMINATION

Subject code	Title of the Course	Hours	Passing Minimum
Semester I			
Subject 1	Anatomy and Physiology	3 Hours	40/100
Subject 2	Blood Transfusion and Blood Banking	3 Hours	40/100
Subject 3	Clinical Haematology	3 Hours	40/100
Subject 4	Communicative English	3 Hours	40/100
Subject 5	Practical I-Lab in Analytical Biochemistry and Haematological Techniques	3 Hours	40/100
Semester II			
Subject 1	Clinical Microbiology	3 Hours	40/100
Subject 2	Clinical Biochemistry	3 Hours	40/100
Subject 3	Life Skill	3 Hours	40/100
Subject 4	Industrial Visit and Internship	3 Hours	40/100
Subject 5	Practical II-Lab in Analytical Biochemistry II	3 Hours	40/100
Semester III			
Subject 1	Principles of Laboratory Management & Medical Ethics	3 Hours	40/100
Subject 2	Histopathology	3 Hours	40/100
Subject 3	Clinical Pathology	3 Hours	40/100
Subject 4	Standard Operating Procedures and Safety Practices	3 Hours	40/100
Subject 5	Practical III-Lab in Microbial Techniques	3 Hours	40/100
Semester IV			
Subject 1	Modern Instrumentation in Diagnostic Lab	3 Hours	40/100
Subject 2	Bio-Medical Waste Management	3 Hours	40/100
Subject 3	Clinical Endocrinology & Toxicology	3 Hours	40/100
Subject 4	Practical IV-Lab in Endocrinology, Cancer Diagnosis & Molecular Diagnosis	3 Hours	40/100
Subject 5	Project Work	3 Hours	40/100

Eligibility for admission : Pass in 10th std examination conducted by the Govt. of Tamil Nadu Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination.

Examination : Passing Minimum for each Course is 40%. Classification will be done on the basis of percentage marks of the total marks obtained in all the Courses and as given below:

- 40 % but less than 50 % - Third class
- 50 % but less than 60 % - Second class
- 60 % and above - First class

Theory Paper

Internal Marks-25
External Marks-75

SYLLABUS

Semester I

Subject I	:	Anatomy and Physiology
Subject II	:	Blood Transfusion and Blood Banking
Subject III	:	Clinical Haematology
Subject IV	:	Communicative English
Subject V	:	Practical I-Lab in Analytical Biochemistry and Haematological Techniques

Semester II

Subject I	:	Clinical Microbiology
Subject II	:	Clinical Biochemistry
Subject III	:	Life Skill
Subject IV	:	Industrial Visit and Internship
Subject V	:	Practical II-Lab in Analytical Biochemistry II

Semester III

Subject I	:	Principles of Laboratory Management & Medical Ethics
Subject II	:	Histopathology
Subject III	:	Clinical Pathology
Subject IV	:	Standard Operating Procedures and Safety Practices
Subject V	:	Practical III-Lab in Microbial Techniques

Semester IV

Subject I	:	Modern Instrumentation in Diagnostic Lab
Subject II	:	Bio-Medical Waste Management
Subject III	:	Clinical Endocrinology & Toxicology
Subject IV	:	Practical IV-Lab in Endocrinology, Cancer Diagnosis & Molecular Diagnosis
Course XX	:	Project Work

SEMESTER I
SUBJECT I
ANATOMY AND PHYSIOLOGY

UNIT I 18 Hrs

GENERAL ANATOMY

Typical animal cell (Structure & Function) –primary tissues (Classification & function) Skeletal System-Digestive System- Functions of stomach-composition of gastric juice-Pancreatic Juice-Bile and Digestion of food by different Enzymes-Absorption and Defecation.

UNIT II 18 Hrs

RESPIRATORY AND DIGESTIVE SYSTEMS

Nose-Trachea-Bronchi Lungs and Pleura-Digestive System-Alimentary canal (different parts)-Liver-Gall Bladder-Pancreases.

UNIT III 18 Hrs

UROGENITAL SYSTEM

Different parts of urinary system-Different parts of Male & Female genital -System (Internal & External Genitalia) Special Senses& General Sensibilities- Eye & Vision-Ears-Hearing & Equilibrium-Excretory System-Functions of Kidney-Nephron and Function of Skin.

UNIT IV 18 Hrs

NERVOUS & REPRODUCTIVE SYSTEMS

Brain & Spinal Cord - Autonomic Nervous System-Head & Neck-Thorax- Abd. & Pelvis- Surface Anatomy-Reproductive System-Name of primary and accessory organs in male and female-Name of secondary sexual characters in male and female-Function of ovary-formation of ova, menstrual cycle- Functions of Testes- Fertilization Vasectomy and tubectomy.

UNIT V 18 Hrs

CIRCULATORY SYSTEM

Heart-Blood Vessels-Lymphatic –Spleen & Thymus. Blood- Groups-Composition and general function of blood- Description of blood cells - normal counts & function-Anticoagulants-Cerebrospinal Fluid-Formation-Composition & function of lymph-Endocrine-glands- Names of the endocrine gland and the hormone secreted by them-Major actions of such Hormones.

SUBJECT II

BLOOD TRANSFUSION AND BLOOD BANKING

Objective:

- To understand the basics of blood transfusion and blood banking

Learning Outcome:

- Will understand the blood grouping tests
- Will understand the blood donor selection criteria
- Will know the blood collection and processing techniques
- Will able to do compatibility tests, antibody screening and identification
- Will understand the blood components separation storage and transportation procedures.
- Will know the various agencies in blood donor and blood banking.

UNIT I 18 Hrs

Biochemistry and Physiology o f Blood

Definition, Functions, Composition: Erythrocyte leucocyte and thrombocyte, Blood Haemoglobin, Methods and procedure for Haemoglobin test, ESR, PCV, Buffy coat, Total RBC Count, total WBC count, Differential WBC count, Total Eosinophil count, Total Platelet count.

UNIT II 18 Hrs

Quantitative and Qualitative Disorders of blood cells

Detailed study about Blood Coagulation factors, Bleeding Time, Clotting time, Prothrombin time. Anaemia:Definition, Types Of anaemia. Leukaemia Definition, Classification, Detailed Study with Lab finding for Myeloid Leukaemia (Acute & Chronic). Lymphatic Leukaemia (Acute & Chronic) Special topic: Abnormal forms of RBC, Haemophilia

UNIT III 18 Hrs

Blood Grouping and Blood Transfusio n

Blood Grouping: Principle, Reagents, Methods and Procedure of Red Blood Cell and Serum Grouping with interpretation, Rh Typing, Importance Antigen, Antibody, Agglutination, Antigen - Antibody in different Blood Group, Sub Group of „A and „AB , Bombay „O Blood Group, Preparation of RBC suspension. Blood transfusion: Types and indications of various blood transfusion, Universal donor / recipient.

UNIT IV 18 Hrs

Bloo d Collection and Compatibility Test

Criteria for selection, screening procedures, risks and management of donor complications, Blood collection procedures: vein puncture and finger prick, Anticoagulants used in Blood Bank, Pilot blood containers, Storage of donor blood, Basic procedures and Techniques for compatibility testing

UNIT V 18 Hrs

Blood transfusion hazards and their management

Nature, Types, and Investigation: Reaction investigation procedure with interpretation. Management of transfusion reactions Antiglobulin (Coomb s) Test, Haemolytic Disease of Newborn (HDN), Transmittable diseases Hepatitiss, HIV Syphilis, Malaria - Detection and outline of their management.

SUBJECT I I I

CLINICAL HAEMATOLOGY

UNIT I 18 Hrs

Collection of Blood Samples ABO Blood Grouping Procedure: Slide or Tile Method-Tube Method-Microplate Method-Micro-Typing System (Diamed/Bioview)-Automated or Semi-Automatic Instrumentation-Obtaining peripheral Blood Smear Staining of Blood Smear Obtaining Cell Counts – RBC-WBC-Platelets both manual and automated Absolute Eosinophils Count.

UNIT II 18 Hrs

Estimation of Haemoglobin Packed Cell Volume-Erythrocyte Indices Reticulocyte Count Differential Count Bleeding Time Clotting Time

UNIT III 18 Hrs

Glucose Determination: Oxidase Method Of Glucose Determination - The Colormetric Method--Ortho- Toluidine - The Glucose Tolerance Test (GTT) - Estimation of Serum Creatinine Biuret Method Bromocresol Green Method Modified Reitman & Frankel Method King & King Method.

UNIT IV 18 Hrs

Jaundice - Biochemical tests - Unconjugated Hyperbilirubinaemia (Retention Jaundice -Haemolytic (Pre-hepatic Jaundice) - Non haemolytic - Conjugated Hyperbilirubinaemia (Regurgitation Jaundice) Lipid profile - Total lipids – Phospholipids Sackett's Method Estimation of Serum HDL cholesterol Method of Fiske and Subbarow Caraway's Method of Estimation - Hyperuricaemia – Hypouricaemia

UNIT V 18 Hrs

Bile Salts: Hay sTest- For Bile Pigments - Fouchet sTestCollection- Appearance-Analysis of Cerebrospinal fluid- Synovial Fluid- Pleural Fluid- Pericardial Fluid-Peritoneal Fluid- Seminal Fluids- Needle aspiration Cytology- Discharge from any site.

SUBJECT V
LAB IN ANALYTICAL BIOCHEMISTRY &
HEMATOLOGICAL TECHNIQUES

Motion - Ova, Cyst, Tropozoite by wet smear preparation using normal saline and lugol s iodine solution, Motion occult blood, microfilaria and Malarial Parasites - Identification in Stained blood smear, Special topic: ECG

SPECIAL TOPIC :

Haematuria, Pregnancy Test.

Blood group and Rh(D) Factor test by open slide method and test tube method, compatibility test (both major and minor) by saline technique for all available donors and patients.

Blood Glucose(GOD/POD) Blood/urine urea(Di acetyl Manoxime method), serum/urine creatinine (Alkaline Picrate Method), serum total cholesterol (Enzymatic Method), serum Total proteins (Bicrt Method), serum Albumin (Bromo cresol Greendye Method), serum Acid/Alkaline Phosphatase, serum Bilirubin, Glucose toterance test.

Urine Specific gravity, Urine Albumin (Heat Coagulation Method), Urine Glucose (Benidict s Method), Urine Acetone (Nitroprusside Method), Urine Bile Salt (Hays Method), Urine Bile Pigments (Fouchest s Method), Microscopic Examination, Parasites, Pregnancy test (Latex Method), Urine reaction, Occult blood in Urine, Urobilinogen test

SUBJECT IV

COMMUNICATIVE ENGLISH

1. Basic Grammar :
   a. Review of grammar
   b. Remedial study of grammar
   c. Simple sentence
   d. Word passive voice etc.
2. Bubbling Vocabulary :
   a. Synonyms
   b. Antonyms
   c. One – work Institution
3. Reading and Understanding English
   a. Comprehension passage
   b. Précis – writing
   c. Developing a story from hints.
4. Writing English
   a. Writing Business letters.
   b. Paragraph writing
   c. Essay writing
   d. Dialogue writing
5. Speaking English
   a. Expressions used under different circumstances
   b. Phonetics

SEMESTER II
COURSE VI
CLINICAL MICROBIOLOGY

UNIT I 18 Hrs

Microscopy

Parts and principles of simple microscope- compound microscope-phase contrast microscope.

UNIT II 18 Hrs

Systemic Bacteriology

Definition-Classification-Staphylococcus-Streptococcus-Micrococci-Pneumococcus-Neisseria-Corynebacteria-Bacillus-Clostridium-Enterobacteriaceae-Klebsiella-Escherichia coli-Proteus-Salmonella-Shigella-Pseudomonas-Spirochetes.

UNIT III 18 Hrs

Mycology

Classification of Fungus- Laboratory Diagnosis - Collection and transport of Specimen- Direct Microscopy-Classification of pathogenic Fungi:- Superficial Mycoses- Subcutaneous Mycoses-Systemic Mycoses-Opportunistic Mycoses.

UNIT IV 18 Hrs

Virology

General properties of virus-Laboratory diagnosis of viral infections: Hepatitis virus-Human Immunodeficiency Virus-Polio Virus-Rabies Virus.

UNIT V 18 Hrs

Parasitology

General Parasitology-Classification of parasites: Protozoa-Technical terms – parasite-Medical Parasitology-Host-Vector-Pathogen-Commensal-Ova-Cyst-Trophozoite-Cestode-Trematode-Nematode parasites- life cycle Pathogenicity- Lab Diagnosis and Morphology with Diagram of Entamoeba histolytica- Entamoeba coli-Giardia lamblia-Trichromonas vaginalis-Leishmania species- Malarial Parasites (Plasmodium Species)-Tapeworms-Round Worm-Hookworms-Microfilarial worms.

COURSE VII
CLINICAL BIOCHEMISTRY

UNIT I 18 Hrs

INSTRUMENT

Detailed study about Photoelectric colorimeter- pH meter- Centrifuge-Analytical balance-Flame photometer- Analytical Balance-Use and Maintenance-cleaning of new and used glassware-Pipettes and test tubes.

UNIT II 18 Hrs

ANALYTICAL PR EPARATION OF SOLUTION REAGENTS

Definitions, types-Solute-Solvent-pH-Buffer-preparation of Phosphate Buffer Saline (PBS); Use and storage of buffer solution-Concentration of Solutions: Molarity-Normality-ppm-Dilution methods of Solution-Storage of Chemicals and Reagents- Safe Use Flammable Chemicals-Corrosive Chemicals- Toxic- Harmful and Irritating Chemicals- Oxidizing Chemicals-Explosive Chemicals-Carcinogens-Indicator-Oxidation-Reduction.

UNIT III 18 Hrs

BIO-CHEMICAL TEST PROFILE

Liver Function tests-Renal Function Tests-Heart Function Tests-Pancreatic Function Tests-Diabetes-Jaundice-Lipids-Proteins.

UNIT IV 18 Hrs

ROUTINE BIO -CHEMICAL TESTS

Blood Glucose-Blood / Urine Urea-Serum Bilirubin-Serum / Urine Creatinine-Glucose Tolerance Test-Serum total Cholesterol and high Density Lipoproteins-Serum total Proteins / Albumin / Globulin-SGOT-SGPT-Serum Alkaline / Acid Phosphatase- Serum Uric acid-Blood Urea Nitrogem Serum Calcium-Serum Amylase. Proteinuria Glucose-Ketone Bodies, Bile Pigments, Urobilinogen, Urobilin-Porphyrins- Haematuria-Iron-Calcium-Iodine-Flourine in Urine.

UNIT V 18 Hrs

ELECTROLYTE TEST

Electrolytes with test procedure for photoelectric colorimetric method-(Na, K, Cl)- Quality control.

SUBJECT VIII
LIFE SKILL

I Life Coping or adjustment

(a) External and internal influence in one s life
(b) Process of coping or adjustment
(c) Coping with physical change and sexuality
(d) Coping with stress, shyness, fear, anger far live and criticism.

II Attitude

(a) Attitude
(b) Self acceptance, self – esteem and self actualization
(c) Positive thinking

III Problem Solving

(a) Goal Setting
(b) Decision Making
(c) Time Management and stress Management.

IV Computers

(a) Introduction to Computers
(b) M.S.Office
(c) Power Point

V Internet

(a) Introduction to internet
(b) E – mail
(c) Browsing

SUBJECT IX

INDUSTRIAL VISIT

Students shall be taken for an visit to the an NABL Accreditation Diagnostic Laboratory and observe to various labs /Department wherein they can also undergo practical training. Know the quality policy and procedures practiced in the labs ad method of sample collection, methods of labeling , methods of analysis and reporting procedures. Student s has to submit an report to the teacher on the observation of visit.. The faculty shall submit the assessment records of each student .Marks will be awarded out of 100.

SUBJECT X

PRACTICAL II -LAB IN ANALYTICAL BIOCHEMISTRY II

SPECIAL TOPIC :

Haematuria, Pregnancy Test.

Blood group and Rh(D) Factor test by open slide method and test tube method, compatibility test (both major and minor) by saline technique for all available donors and patients.

Blood Glucose(GOD/POD) Blood/urine urea(Di acetyl Manoxime method), serum/urine creatinine (Alkaline Picrate Method), serum total cholesterol (Enzymatic Method), serum Total proteins (Bicrt Method), serum Albumin (Bromo cresol Greendye Method), serum Acid/Alkaline Phosphatase, serum Bilirubin, Glucose toterance test.

Urine Specific gravity, Urine Albumin (Heat Coagulation Method), Urine Glucose (Benidict s Method), Urine Acetone (Nitroprusside Method), Urine Bile Salt (Hays Method), Urine Bile Pigments (Fouchest s Method), Microscopic Examination, Parasites, Pregnancy test (Latex Method), Urine reaction, Occult blood in Urine, Urobilinogen test

SEMESTER III

SUBJECT XI

PRINCIPLES OF LABORATORY MANAGEMENT & MEDICAL ETHICS

Objectives

- The students will be made aware of the basic ethics, good lab practices including awareness/ safety in a clinical lab.
- Students would be competent enough to understand sample accountability, quality management system, biomedical waste management, calibration and validation of clinical laboratory instruments, Laboratory Information system (LIS), Hospital Information system (HIS) and financial management.

UNIT I 18 Hrs

Ethical Principles and standards for a clinical laboratory professional duty to the patient-duty to colleagues and other professionals-Good Laboratory Practice (GLP)-Introduction to Basics of GLP and Accreditation-Aims of GLP and Accreditation-Advantages of Accreditation-Brief knowledge about National and International Agencies for clinical laboratory accreditation.

UNIT II 18 Hrs

Awareness/Safety in a clinical laboratory-General safety precautions-HIV: pre- and post-exposure guidelines-Hepatitis B & C: pre- and post-exposure guidelines-Drug Resistant Tuberculosis Patient management for clinical samples collection-transportation and preservation-Sample accountability-Purpose of accountability-Methods of accountability.

UNIT III 18 Hrs

Sample analysis: Introduction-factors affecting sample analysis-reporting results, basic format of a test report-reported reference range-clinical alerts-abnormal results-results from referral laboratories-release of examination results-alteration in reports.

UNIT IV 18 Hrs

Quality Management system: Introduction-Quality assurance-Quality control system, Internal and External quality control-quality control chart Biomedical Introduction and importance of calibration and Validation of Clinical Laboratory instrument Ethics in Medical laboratory Practice-Ethics in relation to Pre-Examination procedures-Examination procedures-reporting of results-preserving medical records Procurement of equipment and Inventory Control.

UNIT V 18 Hrs

Audit in a Medical Laboratory-Introduction and Importance-NABL & CAP-Responsibility-Planning-Horizontal-Vertical and Test audit-Frequency of audit-Documentation.

SUBJECT XII

HISTOPATHOLOGY

UNIT I 18 Hrs

FIXATION

Principles of Histology and its application-Principles of tissue fixation-Preparation of different fixatives: formaldehyde-Paraformaldihyde-methanol-acetone-decalcification-Detection of end point.

UNIT II 18 Hrs

PROCESSING OF TISSU ES

Neutralization and processing of tissues (dehydration and rehydration)- Nuscum Techniques–manual tissue processing-automated tissue processing-paraffin embedding and different techniques for embedding-Preparation of paraffin blocks.

UNIT III 18 Hrs

SECTIONING

Microtome and its parts-Handling and care of microtome-sharpening and selection of razors and section cutting-Preparation of 1 micron thin section-frozen section/cryostat.

UNIT IV 18 Hrs

STAINING

Theory of staining -Common & special stains – Preparation of common stains. H & E-congored-methyle violet- Leishman stain- Giesma- Papiaicolau-VG-PAS-PASM-Papanicolaous staining technique/MCC staining-staining techniques.

UNIT V 18 Hrs

MOUNTING & OBSERVATION

Different mounting solutions and protocols-Mounting of museum specimens-Microscoping observation-record keeping-indexing of slides-Histological observation of different tissues: skin-lungs-liver-urinogenetal and gastrointestinal tissues.

SUBJECT XIII
CLINICAL PATHOLOGY

UNIT I 18 Hrs

SPECIMEN COLLECTION

Reception of patients-Phlebotomy and aftercare of patients-collection of different clinical materials-Blood-PUS-stool-sputum-semen-CSF-storage and Transportation of different clinical materials to different laboratories.

UNIT II 18 Hrs

EXAMINATION OF URINE & STOOL

Parts of urinary system-importance of urine exam-Normal and abnormal contents of urine sample-Types of urine sample-urine collection and Preservatives.

Stool examination- indication-collection-container of Stool sample-transport-preservation of stool samples-physical examination and its significance-chemical examination and its significance-microscopic examination and its significance.

UNIT III 18 Hrs

EXAMINATION OF SPUTUM

Sputum collection-container of Sputum sample-transport-storage of Sputum-examination-physical-chemical and microbial examinations and its significance.

UNIT IV 18 Hrs

SEMEN ANALYSIS

Semen collection, container of semen sample-transport-storage of semen-examination- physical-chemical and microbial examinations and its significance.

UNIT V 18 Hrs

EXAMINATION OF Cerebrospinal Fluid (CSF)

Collection of CSF-container of body fluids-transport of sample preservation of CSF-Examination of CSF and other body Fluids- fluid analysis-examination- physical-chemical and microbial examinations and its significance.

SUBJECT XIV

STANDARD OPERATING PROCEDURES AND SAFETY PRACTICES

UNIT I 18 Hrs

SAFE HANDLING OF CHEMICALS AND EQUIPMENT

Operation and maintenance of laboratory equipments-Handling & cleaning of glassware (test tubes-slides petridishes pipettes-beakers, Rashes-funnels, syinges etc)-Collection & transport of clinical specimens-Receipts-Labeling-recording and dispatching clinical specimens-Keeping records after final computerization-Conversant with S.I. unit system for reporting-Conversant with Fundamental Chemistry.

UNIT II 18 Hrs

SANITATION AN D HYGIENE

Demonstrate knowledge of Good Laboratory Practices (GLPs)-Good Manufacturing Practices (GMPs) and Fire Safety-Statistical quality control-Using emergency equipment and Safety planning.

UNIT III 18 Hrs

FIRST AID AND BASIC LIFE SUPPORT

Objectives of first aid-wounds and bleeding-dressing and bandages-pressure and splints-supports etc-shock-insensibility-asphyxia-convulsion-resuscitation-uses of suction apparatus-drug reactions-prophylactic measures-administration of oxygen, electric shock-burns-scalds –hemorrhage-pressure points-compression band. Fractures splints bandaging, dressing foreign bodies-poisons-Introduction to BLS-indication for BLS and the process of BLS-recovery position

UNIT IV 18 Hrs

CHEMICAL SPILLS

Toxic/hazardous chemical spills- Cleanup procedures for chemical spills-hazardous chemical contact with the skin- safety procedures- maintenance of Emergency eye wash/safety showers - usage of Chemical Splash Goggles- Mouth pipetting or siphoning is forbidden- hazardous waste disposal.

UNIT V 18 Hrs

DISPOAL OF LABORATORY WASTE

Introduction to laboratory Waste-Types of laboratory Waste-Collection of laboratory Waste-identification of all types of Treatment and Safe Disposal of laboratory Waste-non infectious waste-infected sharp waste-infected non sharp waste disposal-incineration process.

SUBJECT XV

LAB IN MICROBIAL TECHNIQUES

List of Exercises

- Preparation and sterilization of Nutrient Media,
- Inoculation Techniques, Pure culture, Sub culture,
- To perform Gram staining
- To perform Acid fast staining (Zeihl Neelsen staining)
- To perform Indian ink staining
- To perform Hanging drop method
- Demonstration of capsule
- Staining of bacterial spores
- Demonstration of Autoclave and sterilization of media
- Demonstration of Laminar air flow and media preparation
- Preparation of culture plates
- Demonstration of Centrifuge.
- Demonstration of hot air Oven and sterilization of glassware s
- Demonstration of Incubator and preservation of cultures
- Preparation of media
- Antibiotic sensitivity test.
- Microscopic examination of urine
- Examination of urine
- Examination of sputum
- To perform HIV Tridot test.

SEMESTER IV

SUBJECT XVI

MODERN INSTRUMENTATION IN DIAGNOSTIC LAB

Course Objectives

- To gain knowledge on the modern instruments and techniques used in diagnostic lab.
- Will Understand the principles and application of spectrophotometric and Calorometric equipments.
- Will Know the types of auto analyzers.
- Will Understand the Principles and applications of electrophoresis and Chromatography.
- Will Know the radio assay and Immuno assay
- Will understand the modern molecular techniques in disease diagnosis.

UNIT I 18 Hrs

Spectro Photomentry

Principles and application of Spectro Photomenter-Colorimeters-flame Photometers-fluro cytometry.

UNIT II 18 Hrs

Auto analyzers

Principles and application of auto analyzer- Semi auto analyzer – Batch analyzer- Random assays- Auto analyzer.

UNIT III 18 Hrs

Electrophoresis and Chromatography

Chromatography and its applications in diagnosis- (Paper Chromatography-Thin layer Chromatography-HPLC-Gas liquid Chromatography-Ion exchange Chromatography)- Electrophoresis Basic Principles and types- Electrophoresis of Proteins and nucleic acids- Hemoglobin-Immunoglobulin s Iso enzymes Application of electrophoresis in Clinical Diagnosis.

UNIT IV 18 Hrs

Immuno assay and Radio assay

Immuno assay – ELISA, RIA, FIA, FACS – Radio Isotopes, Radio activity-Instruments for Radio activity measurement application of radio Isotopes in Clinical biochemistry, blood volume-red cell volume-plasma volume-red cell lifespan-platelet lifespan.

Unit V 18 Hrs

Molecular Diagnostics

Instrumentation to Chromosomes-HS Structure and disorder-Karyotyping-Chromosomal Studies in Hematological disorders (PBLC and Marrow)FISH - Nucleic acid amplification testing- PCR Principle – types-applications -Thermal cycler-RT PCR-reverse transcriptase PCR-(RT-PCR)-Nested PCR.

SUBJECT XVII

BIO-MEDICAL WASTE MANAGEMENT

Objectives:

To understand the methods and legal of Hospital waste management

Learning Outcome:

1. Will understand the biomedical waste Management
2. To know the procedures of record Keeping of Waste disposal
3. Will understand the health issues in handling biomedical waste
4. To understand the legal aspects of Hospital waste disposal and management

UNIT I 18 Hrs

Present Scenario

Bio-medical waste – Concepts and Perceptions-Waste Generation-Segregation-Disposal

UNIT II 18 Hrs

Planning and Objectives of BMW Management-Survey-Policies and Perspectives of BMW Management.

UNIT III 18 Hrs

Record Keeping-Management of Bio-medical Waste-Technologies for Treatment for BMW-Criteria for selecting appropriate Medical Waste Technologies.

UNIT IV 18 Hrs

Training-Occupational Safety and Health Issues.

UNIT V 18 Hrs

Legal Aspects and Environment Concern-Implementation of Action Plan-Approaches to Common Regional facility.