



DMLT

1st Semester

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DMLT101	ANATOMY & PHYSIOLOGY	40	60	100
DMLT102	MICROBIOLOGY & PARASITOLOGY	40	60	100
DMLT103	HAEMATOLOGY & BLOOD BANKING	40	60	100
LAB/PRACTICAL				
DMLT104	ANATOMY & PHYSIOLOGY PRACTICAL	60	40	100
DMLT105	MICROBIOLOGY & PARASITOLOGY PRACTICAL	60	40	100
DMLT106	HAEMATOLOGY & BLOOD BANKING PRACTICAL	60	40	100
Total		300	300	600

2nd Semester

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DMLT201	BASIC TECHNOLOGY & ETHICS	40	60	100
DMLT202	HISTO-TECHNOLOGY	40	60	100
DMLT203	BIOCHEMISTRY	40	60	100
LAB/PRACTICAL				
DMLT204	BASIC TECHNOLOGY & ETHICS PRACTICAL	60	40	100
DMLT205	HISTO-TECHNOLOGY PRACTICAL	60	40	100
DMLT206	BIOCHEMISTRY PRACTICAL	60	40	100
Total		300	300	600

3rd Semester

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DMLT301	BIOCHEMISTRY & CLINICAL PATHOLOGY	40	60	100
DMLT302	HISTOPATHOLOGY & CYTOLOGY	40	60	100
DMLT303	MICRO, VIRO, MYCO & ADV. SEROLOGY	40	60	100
LAB/PRACTICAL				
DMLT304	BIOCHEMISTRY & CLINICAL PATHOLOGY PRACTICAL	60	40	100
DMLT305	HISTOPATHOLOGY & CYTOLOGY PRACTICAL	60	40	100
DMLT306	MICRO, VIRO, MYCO & ADV. SEROLOGY PRACTICAL	60	40	100
Total		300	300	600

4th Semester

PAPERS CODE	PAPERS NAME	INTERNAL	EXTERNAL	TOTAL
DMLT401	COAGULATION & TRANFUSION MEDICINE	40	60	100
DMLT402	IMMUNOLOGY, HAEMATOLOGY & TRANFUSION MEDICINE	40	60	100
LAB/PRACTICAL				
DMLT403	COAGULATION & TRANFUSION MEDICINE PRACTICAL	60	40	100
DMLT404	IMMUNOLOGY, HAEMATOLOGY & TRANFUSION MEDICINE PRACTICAL	60	40	100
Total		200	200	400

PAPER -1 ANATOMY & PHYSIOLOGY (101)

Anatomy (Theory):-

1. Introduction:-

- (a). Common Anatomical terms & Anatomical Positions. Different parts of the human body
- (b) Tissue with Function & Classification (c) Cell & Animal Cell (2.) Skeletal system: (a) Bones, joint, & Movement (b) Muscles (3) Genito- Urinary System:(a) Male & Female Reproductive Organic System (b) Urinary bladder, Kidney and Ureter (C). Uterus & Urethra
- (4) Respiratory System(a) Lungs & Thoracic Cavity(b) Pleura (c) Surface marking of lungs
- (5) Gastro-Intestinal System:-(a) Mouth (b)Pharynx & Salivary gland and Tonsils (c)Oesophagus &stomach(d) Spleen & Pancreas (e) Gall Bladder & Liver (f) Surface making of Abdomen (g) Structure of Digestive Tract
- (6) Movement of the body(a) Upper Limb –Bones, Important Vessels (b) Lower Limb –Bones

Important Vessels

(7) Nerves System(a) C.S.F & Spinal Card (b) Nerves & Brain(c) SympatheticAnd Sympathetic (d) Cranial and Spinal Nerves

(8) Cardio –Vascular System(a) Arterial System (b) Lymphatic and Venous System (c) Heart (d) Surface Making, Important Blood Vessels & Muscles(e) Pericardium

Physiology (Theory)

1. Digestive System(a) Mastication deglutition(b)Function and Composition Saliva (c) Function of Stomach (d) Function and Composition of gastric juice (e) Function of Pancreatic Juice (f) Function of Bile

(2) Respiratory System(a) Define-Respiratory Rate(b) Vital Capacity, Cyanosis (c)External & Internal Respiration (d) Transport of O₂ and CO₂ in the Blood (e) Function of Respiration its structure

(3) Blood(a) Function of Blood (b) Composition of Blood (c) Anti-Coagulants(c)Description of Blood Cells(e) Blood Group of A B C O and Rh Factor(f) Function of Lymph (g)anaemia and its Type

(4) Cardio- Vascular System(a) Define of Cardio output(b) Define the blood pressure, Electrocardiogram (e) Circulation (Systematic and Pulmonary) (f) Function of Heart (g) Function of Blood vessels (h) Cardio Cycle

(5) Excretory System(a) Kidney (Function)(b) Formation of Urine (Normal and abnormal)(c) Composition of Urine

(6) ENDOCRINE GLAND(a) Define- Name and hormones Secreted by than (b) Action of Hormones in our body

(7) Reproductive System(a)Male female Genital System(b) Function of Ovary(c) Formation of Ova and Their action of ovarian Hormones(d) Function of Testis- Their action of Testosterone(e)Mensuration Cycle and Fertilization (f)Progesterone and Oestrogen Hormones

(8) Skin(a) Define the Skin (b) Function of Skin

(9) Formation, Function &Composition of C.S.F

(10) Special Senses-Smell, Taste, Touch, Hearing

Paper – 2; MICROBIOLOGY & PARASITLOGY:-(102)

MICROBIOLOGY (Theory)

Microbiology is the branch of science that deals with study of Virus, Bacteria and Fungi which cannot be seen through naked eye.

Morphology of Bacteria

1. Structure & Growth of Bacteria

2. Classification of Bacteria

3. Nutrition of Bacteria

4. Staining of Bacteria

(a) Gram stain, Negative Stain, Ziehl – Neelsen, Albert, Spore Stain.

(b) Composition and preparation of staining Reagents and their composition.

5. Gram Negative Cocci

(a) MeningoCocci&GonoCocci

6. Gram positive – Cocci

(a)staphyloCocci(b)StreptoCocci(c)PneumoCocci

7. Gram Bacilli

(a) Salmonella (b) E-coli

(c) Pseudomonas (d)Shigella

(e) Klebsiella (f)Haemophilus

8. Gram Positive Bacilli

(a) Anaerobic Bacilli – Clostridia

(b) Aerobic – Mycobacterium Tuberculosis and Mycobacterium leprae. And Corynebacterium diphtheria.

9. Bacterial Metabolism :

(a) Requirement of Bacteria (b) Aerobic (c) Anaerobic (d) Growth

10. Morphology of Fungi :

(a) Cultivation of Pathogenic Fungi (b) Candida (c) Dermatophytes (d) Asperigillus

11. Water :

(a) Collection of water, Packing and dispatching of water sample.

12. Bacteriological Examination of :

(a) Examination of Pus, Abscess and wounds

(b) Milk (c) Air (d) water

13. Cultivation of Micro- Organism :

(a) Culture Media (i) Composition (ii) Classification

14. Isolation and Inoculation according Techniques

Biochemical Test

☑ Test of Metabolism of Protein , amino acid , production of enzymes

☑ VP test , MR test , Catalase test , Coagulase Test

☑ Gram stain, Negative Stain, Ziehl – Neelsen, Albert Stain.

Parasitology – (Theory)

“It is branch of medical science dealing with study of various human parasites.”

1. Morphology, Life Cycle, Symptoms Clinical Diagnosis & Laboratory Diagnosis

(a) Hook Worm (b) Round worm (c) Tape worm (d) Ent. Amoeba-Histolytica (e) Entamoeba

Coli (f) Plasmodia (g) Leishmania- donovani (h) Giardia- Lambila

Serology: (a) pregnancy Test (b) Widal Test (c) V.D.R.L Test (d) Elisa for HIV- I & II (e) RA & ASO Test

Paper 3: HAEMATOLOGY & BLOOD BANKING (103)

HAEMATOLOGY:-

1. Introduction of Haematology

2. Collection of Blood

3. Red Cell Count (i) Method (ii) Calculation (iii) Haemocytometer

4. White cell count (T.L.C) (i) Method and Calculation

5. Differential Leucocyte Count (D.L.C) (i) Normal Value and Morphology of White Cells (ii) Counting Method (iii) Staining Procedures

6. Packed Cell Volume (i) Normal Values & Macro & Micro Method

7. Estimation of Haemoglobin

Method-S.G, Chemical, Colorimetric & Gasometric etc. and Clinical Importance

8. Anticoagulation, MCV, MCH & MCHC & its Importance

9. Morphology of Normal abnormal Red cells

10. Method, Appearance & Normal Values Reticulocyte Count

11. Coagulation Tests (i) Bleeding time, Prothrombin Time WBC Coagulation time (ii) Clot Retraction Test, Platelet Count

12. Total Platelet Count (T.P.C) with Direct & Indirect Method

13. Urine Analysis (a) Physical, Chemical, Microscopic & Normal

14. Stool Examination (i) Microscopically Examination of Stool (ii) Chemical Examination Stool (iii) Difference between Amoebic and bacillary Stool

15. Semen Analysis (i) Microscopical Examination of semen (ii) Normal & Abnormal Morphology of Spermatozoa. (iii) Motility & Total Sperm Count (iv) Macroscopical Examination of Semen (Amount of Semen, Colour, Reaction, Viscosity)

16. Anaemia and Leukemia (a) Common Anatomical terms & Anatomical Position Blood Banking

1. Blood Collection (i) Collection of Blood (ii) Storage of Blood (iii) Anticoagulation use for collection of Blood (iv) Screening of doner
2. ABO & Rh Blood Group System – (i) ABO Grouping by Slide Method & Tube Method (ii) Antigen and type of Antibodies (iii) Rh system with slide method (iv) Type of Antibodies (v) One/Two stage Albumin Technique for Rh Factor
3. Cross Machine (i) Open slide Method (ii) Albumin tube Technique
4. Coomb,s Test (i) Direct (ii) Indirect
5. Drawing of Blood for Donor
6. Blood Transfusion and its Reactions
7. Administration of Blood Bank

Paper-1; Theory:- BASIC TECHNOLOGY & ETHICS (201)

1. Microscope-Principal, Operation, care and use
 2. Sterilization: General Principal of Sterilization, Classification, Physical, Mechanical Chemical Method, Sterilization Media, Syringes, Glassware and Apparatus Rote of laboratory in the health Duties and responsibility of lab technician (a) General Duties (b) Specific Duties
 3. First Aid and Safety Measures: (a)Aims and type and Diagnosis of First Aid (b) safety Measures- Biological, Electrical ,Mechanical Chemical
 4. Cod of Professional Conducts
 5. Immunity: Types, Factor Effecting Immunity
 6. Collection preservation and Storage of different body fluids
 7. Communication: Public Relation, Patient relation and Physician, nursing staff relation, report and record
 8. Quality Control
 9. Instrument (Internal): Hot air Oven, Auto-Clave
 10. WHO and PHC
- Ethics: Importance, Principle, Consideration

PAPER-02; Histo-technology(202)

- Theory 1. Introduction
- 2 Examination Method of Cell & Tissue
 3. Tissue Processing (i) Collection of Specimen (ii) Fixation (iii) Labelling and Clearing (iv) Dehydration
 4. Fixation of Tissue (i) Simple Fixative and Cytological Fixative (ii) Micro Anatomical Fixative
 5. Staining (a) Staining of Tissues section (b) Theory of staining (c) Mounting of section (d) Staining Technique
 6. Section Cutting (i) Microtome and their Knives (ii) Mounting Section (iii) Techniques of section cutting
 7. Reception of Specimen, Preparation & Fixation and Restoration of colour according Museum Technique
 8. Autopsy Techniques (i) Processing of Tissues (ii) Preservation of Orange

PAPER-03; BIO-CHEMISTRY (203)

1. Introduction of Biochemistry
2. Definition, Classification and Importance Metabolism in brief following (a) Protein (b) Serum Album (c) Lipids
3. Analysis and Collection of Gastric Juice
4. Estimation of- (a) Total Protein (b) Serum Albumin (c) Globulin & A.G Ratio (d) Serum

Creatinine (e) Blood Sugar (God-Pog-Ortho-toludine & Folinwu Method)

5. Hormones –

(a) Definition of hormones (b) Function of Importance Hormones (c) T3, T4, T5 H

6. Enzymes and Co- Enzymes

7. Serum Amylase

8. Serum Electrolytes:- (a) Normal Blood Value Na⁺ (b) Normal Blood Value Cl⁻ (c) Normal Blood Value K⁺ (d) Normal Blood Value Mg⁺ (e) Importance of Na⁺, Cl⁻, K⁺

9. Glucose Tolerance test (G.T.T.)

10. Liver Function test (i) Types & Classification (ii) S. GOT. S.G.P.T (iii) Bilirubin

Estimation (Direct & Indirect) (iv) Estimation of Acid phosphatase & Alkaline phosphatase (v) Jaundice Classification

11. D.N.A & R.N.A Their Importance

12. Urine Analysis (a) Normal & Abnormal & Constituents of Urine (b) Physical &

Chemical test of urine (c) Proteins in Urine (d) Occult blood in Urine (e) Urinary Sediments

DMLT - SECOND YEAR

Paper-01 ; BIOCHEMISTRY & CLINICAL PATHOLOGY.(301)

Course Description Student should have knowledge of carbohydrate

1. Protein and lipids vitamin. Mineral and hormones as well as the relevant diagnostic tests.

Theory:-

Carbohydrates digestive and absorption metabolism of glucose glycolysis gluconeogenesis . glycogen Formation and breakdown storage diseases maintenance of blood sugar level hormonal influence, mellitus, inter conversion of mono saccharides(12hrs)

2. Digestion of proteins, urea synthesis, transamination, metabolism of the following amino acid Aromatic amino acid, sulphur containing amino-acid oxidation of fatty acid lipoproteins(9hrs)

3. digestion and absorption of lipids. Synthesis of fatty acid acid oxidation of fatty acid lipoproteins.

4. Hormones Role of biological important hormones. Insulin glucose, epinephrine, thyroid growth hormones steroid hormones.

5. Chemistry and biological role of Vitamins (7 hrs)

6. Mineral metabolism iron, copper, calcium, magnesium, phosphorus sodium, potassium, chloride, iodine (9 hrs)

7. ETC and oxidative phosphorylation (3 hrs)

URINE

1. Composition of urine

Collection and preservation of urine

Changes in composition of urine relation to various disease principal of dry chemistry

PRACTICAL

Complete urine analysis

a. Physical

b. Chemical Protein

Reducing substances

Ketone bodies

Blood pigments

Bile

c. Sediments

Use of dip sticks in urine analysis

2. Cavity fluids and miscellaneous specimens extra vascular fluids, normal composition transudates and exudates

3. Cerebrospinal fluids and alteration in diseases
4. Semen analysis
5. Non- parasitological examination of stool including occult blood
6. Quality control-urine and extra vascular fluids

PRACTICALS:

1. Examination of CSF and reporting
2. Examination of cavity fluids and reporting
3. Semen analysis
4. Stool-Occult blood
5. Stool routine
6. Urine for Urobilinogen
7. Urine Bile salt, Bile pigment

Paper (02); 2-HISTOPATHOLOGY & CYTOLOGY (302)

COURSE DESCRIPTION At the end of the course the student will be able to fix process. Embed tissue and make section for microscope student. He/She will also competent to make routine cytological preparation.

THEORY

Introduction to histo pathological techniques

Reception of specimens

Fixation formalin fixation

Tissue processing and embedding

Section cutting

Mounting and staining

Theory of H & E staining

PAS & PAP staining principle and uses

Stains for AFB [TB and leprosy]

Theory of frozen section preparation

CYTOLOGY

THEORY

Principle of exfoliate cytology

Fixation of smears

PAP staining and identification of cells in a normal vaginal smear

Preparations of smear of fine needle aspiration cytology

PRACTICALS

Embedding and preparation of blocks

Section cutting and use and care of microtome

H & E staining

PAS staining

AFB staining [TB and leprosy]

Frozen section and care of cytosist

PAP staining MGG staining for fnac

Paper 03; 3-MICROBIOLOGY, VIROLOGY MYCOLOGY & ADVANCE SEROLOGY (303)

OBJECTIVE

To give the student sound Knowledge of pathogenic microbes, laboratory diagnosis, basic understanding of virology mycology and advanced serologic techniques.

SYSTEMIC BACTERIOLOGY

Morphology, isolation and identification of the pathogens coar, bacilli, vibrio, spirochetes, actinomycetes Laboratory diagnosis.

Principles of antimicrobial therapy and biotic susceptibility tests. Common pathogenic fungi of skin subcutaneous tissue Deep organ-laboratory diagnosis basic virology common viral diseases- transmission – common and dispatch inoculation egg inoculation techniques.

Preservation of micro organisms

Organization of a microbiology laboratory

PRACTICALS

1. Maintenance of stock cultures
2. Identification of pathogenic organisms
3. Methods of collection of clinical material for culture urine. Blood Sputum, C.S.F. throat swab, faeces, and body fluids.
4. Separation of sera, preservation and transport for serological tests.
5. Antibiotic susceptibility tests
6. Basic techniques of collection oaspecimens for direct examination of pathogenic fungi KOH. Lactopheol blue method.
7. Cultivation of fungi
8. Basic technique of collection and transport of specimens for virology studies.
9. Diagnosis of viral infections isolation and serological tests.
10. Advanced serological technique cliza, immunoelectrophoresis.

Paper:-01; 4 -COAGULATION & TRANSFUSSION MEDICINE (401)

COURSE DESCRIPTION At the end of the course the student will be familiar with investigation of coagulation disorder and will also understand the principles of immunohematology He/She will be competent to handle routine blood bank.

Organization and procedures

COAGULATION DISORDER

Principles of blood coagulation and haemostasis

Disorder of coagulation and hemostasis.

Laboratory diagnosis of bleeding disorders.

Quality control in coagulation laboratory.

PRACTICALS

Whole blood coagulation time

Clot retraction and clotlysis

Bleeding time

Tourniquet tests

One stage prothrombin time

Partial thromboplastin time with correction

Factor assay

Platelet disorders

Disorders of platelets and laboratory diagnosis

PRACTICALS

Investigation of platelets disorders including sample methods to assess platelets adhesion, aggregation and factor release.

1. BIOCHEMISTRY & CLINICAL PATHOLOGY

Course Description Student should leave Knowledge of carbohydrate. Protein and lipids vitamins. Mineral and hormones as well as the relevant diagnostic tests.

THEORY

1. Carbohydrate digestion and absorption metabolism of glucose glycolysis gluconeogenesis. Glycogen formation and breakdown glucogen storage diseases, maintenance of blood sugar leaves hormonal influence, mellitus, inter conversion of mono saccharides (12hrs)
2. Digestion of proteins. Urea synthesis, transamination, metabolism of the following amino acid Aromatic amino acid, sulphur containing amino-acid in born error of metabolism (10hrs)
3. Digestion and absorption of lipids. Synthesis of fatty acid oxidation of fatty acid lipoproteins(9hrs)
4. Hormones- Role of biological Important hormones. Insulin glucose, epinephrine, thyroid growth hormones steroid hormones.
5. Chemistry and biological role of vitamins (7hrs)
6. Mineral metabolism iron, copper, calcium, magnesium, phosphorus sodium, potassium, chloride, iodine (9hrs)
7. ETC and oxidative phosphorylation (3hrs)

PRACTICALS

1. Estimation of blood urea ceratinine uric acid calcium, phosphorus and chloride. (9hrs)
2. Sodium and potassium estimation by flame photometer (8hrs)
3. Blood glucose estimation by flame photometer (8hrs)
4. Theory of serum electrophoresis (6hrs)
5. Demonstration of paper chromatography (8hrs)

Paper 02; 5-IMMUNOLOGY HAEMATOLOGY & TRANSFUSSION MEDICINE (402)

THEORY

Principles of blood groups and antigen antibody reaction
 Genetics in blood banking
 ABOH blood group system
 Rhesus blood group system
 Other red cells antigens and antibodies
 Transfusion of antibodies
 Coonsbs tests
 Identification of antibodies
 Transfusion reactions and investigation of transfusion reaction
 Haemolytic disease of new born
 Blood donor selection and screening of blood donor
 Diseases transmited by blood transfusion and their laboratory diagnosis
 Blood components and use
 Blood bank organization donor motivation and auditing blood bank

PRACTICALS

Blood collection and preservation using different anticoagulants and Preservation solution.
 Components prepratiuon
 ABO grouping
 Rh typing0
 Antibody detection and titration
 Coombs tests
 Compatibility testing cross matches
 Investigation if transfusion reactions
 Investigation of hemolytic disease of new born

SunRise University