SEMESTER 1

COURSE 1: HUMAN ANATOMY AND PHYSIOLOGY I

Theory:

On successful completion of this course, the students will be able to:

- Explain the anatomic terms used to refer to the body in terms of directions and geometric planes.
- Illustrate the major cavities of the body and the organs they contain.
- Analyze the major functions of the four types of human tissue.
- Recall the major systems of the body, the organs they contain and the functions of those systems.

Practical:

On successful completion of this course, the students shall be able to:

- Identify the cell structure and tissues of the human body.
- Observe the blood components
- Identify and explain the structure and functions of each body system.
- Demonstrate the different bones

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COURSE 2: ROUTINE LABORATORY TECHNIQUES I

Theory:

On successful completion of this course, the students will be able to:

- Differentiate the colour and viscosity of specimens and reagents.
- Identify the lab equipment, marking test tubes.
- Visualize and distinguish objects through a microscope.
- Observe the blood collection sample.
- Analyze the diseased urine sample.

Practical

On successful completion of this course, the students shall be able to:

- Demonstrate the collecting, processing, and analyzing biological specimens and other substances
- Perform analytical tests of body fluids cells and other substances
- Perform preventative and corrective maintenance of equipment and instruments or refer to appropriate sources for repairs
- Apply principles of safety
- Demonstrate professional conduct and interpersonal communication skills with patients, laboratory personnel, other health care professionals, and with the public

COURSE 3: BIOMOLECULES

Theory

On successful completion of this course, the students will be able to:

- Understand the concept of Biochemistry regarding Bio molecules.
- Classify the Carbohydrates, proteins, lipids, Nucleic acids.
- Estimate the qualitative tests of proteins.
- Conduct biochemical processes.
- Explain the biological functions of bio molecules

Practical

On successful completion of this course, the students shall be able to:

- Describe the classification of Bio molecules.
- Describe the properties of Bio molecules.
- Describe the reaction of Bio molecules.
- Understand the structure of various types of bio molecules.
- Explain the functions of all the bio molecules. Analyze the biochemical reaction of bio molecules.

COURSE 4: MICROSCOPY AND CELL BIOLOGY

Theory

On successful completion of this course, the students will be able to:

- Understand how these cellular components are used to generate and utilize energy in cells.
- Illustrate the cellular components underlying mitotic cell division.

- Apply their knowledge of cell biology to selected examples of changes in cell function.
- Demonstrate the adjustment of Microscope.

Practical

On successful completion of this course, the students shall be able to:

- Observe to handle, calibrate and use the instruments.
- Visualize the organisms under the microscope.
- Demonstrate the operate microscope
- Analyze the tumor cells.

COURSE 5: FUNDAMENTALS OF MICROBIOLOGY

Theory

On successful completion of this course, the students will be able to:

- Understand relationship between human host and pathogens and the ability of pathogens to cause disease.
- Classify the microorganisms and their components.
- Discuss the famous scientists of microbiology
- Distinguish the useful and harmful microorganisms.

Practical

On successful completion of this course, the students shall be able to:

- Demonstrate the properties of microorganisms
- Observe the contamination.
- Analyze the working and applications of commonly used instruments in microbiology.
- Identify the isolation, maintenance and handling of industrially important microbial cultures in laboratory

SEMESTER II

PAPER 1: HUMAN ANATOMY AND PHYSIOLOGY II

Theory

On successful completion of this course, the students will be able to:

- Classify the nervous system.
- Explain the hormones.
- Describe the Reproductive system.
- Evaluate the phases of menstrual cycle.
- Discuss excretory system.

Practical

On successful completion of this course, the students shall be able to:

- Identify the cranial nerves.
- Observing physiological effects of aging on human body.
- Analyze the Diseases and disorders in human health.
- Identify the nervous disorders.
- Analyze the Renal function test.

PAPER 2: ROUTINE LABORATORY TECHNOLOGY II

Theory

On successful completion of this course, the students will be able to:

- Discuss the Urine sample collection.
- Describe the Hematological test.
- Explain the sputum analysis.
- Recall the stool examination.

Practical

On successful completion of this course, the students shall be able to:

- Demonstrate the techniques of sample collection.
- Observe the physical examination of urine.
- Identify the hemoglobin concentration.
- Visualize the TB bacteria (Bacilli).

PAPER 3: SPECIAL LABORATORY TECNHNIQUES

Theory

On successful completion of this course, the students will be able to:

- Discuss normal flora of human body.
- Distinguish Gram positive and negative bacteria.
- Explain Widal test.
- Analyze the difference between plasma and serum.

Practical

On successful completion of this course, the students shall be able to:

- Observing ABO blood group.
- Visualize Gram positive negative bacteria under microscope.
- Identify the malaria disease symptoms.
- Demonstrate agglutination reaction.

PAPER 5: ENZYMOLOGY AND BIOENERGETICS

Theory

On successful completion of this course, the students will be able to:

- Discuss the classification of Enzymes.
- Explain the purification techniques.
- Describe the concept of energy.
- Understand the concept of inhibition.

Practical

On successful completion of this course, the students shall be able to:

- Determine the Km value.
- Demonstrate PH.
- Analyze the effect of temperature on enzyme activity.

PAPER 6: MICROBIAL PHYSIOLOGY AND METABOLISM

Theory

On successful completion of this course, the students will be able to:

- Explain the nutritional requirement of cell.
- Discuss the catabolism of lipids.
- Recall the TCA cycle.
- Describe the Glycolysis.

Practical

On successful completion of this course, the students shall be able to:

- Demonstrate sterilization.
- Observe the safety water supplies.
- Visualize microbial cultures.
- Draw the bacterial growth curve.

II YEAR SEMESTER III

PAPER 1: HEMATOLOGY & BLOOD BANKING

Theory

On successful completion of this course, the students will be able to:

- Describe the blood collection process.
- Use, storage requirements of blood component.
- Explain Heinz body preparation.
- Discuss the bleeding disorders.

Practical

On successful completion of this course, the students shall be able to:

- Demonstrate ABO blood grouping.
- Determination of bleeding time.
- Determination of blood clotting time.
- Analyze the Homeostasis.

PAPERII: DIAGNOSTIC MICROBIOLOGY &SEROLOGY

Theory

On successful completion of this course, the students will be able to:

- Explain differentiate between Gram +ve and Gram –ve Bacteria.
- Discuss mycotic &emerging infections.
- Describe the role of microbiology laboratory.
- Explain bacterial parasites.

Practical

On successful completion of this course, the students shall be able to:

- Identification of human parasites.
- Observe the Hanging drop technique.
- Demonstrate the Gram's staining.
- Observe the Acid fast staining.

PAPERIII: CLINICAL BIOCHEMISTRY-I

Theory

On successful completion of this course, the students will be able to:

- Explain the preservation of body fluids.
- Describe the Diabetic coma.
- Discuss the role of hormones
- Illustrate the endocrine functions.

Practical

On successful completion of this course, the students shall be able to:

- Identify the serum creatinine levels.
- Observe the total cholesterol levels.
- Demonstrate the atherosclerosis.
- Analyze the cardiac marker (cpk).

PAPER IV: BIOCHEMICAL METABOLISM

Theory

On successful completion of this course, the students will be able to:

- Explain the Gluconeogenesis.
- Describe the utilization of ketone bodies.
- Discuss the heme synthesis.
- Recall the urea cycle.

Practical

On successful completion of this course, the students shall be able to:

- Identify the blood glucose levels.
- Observe the total lipids in serum.
- Demonstrate the saturated &unsaturated fatty acids.
- Observe the triacyl glycerols.

PAPER V: CLINICAL MICROBIOLOGY

Theory

On successful completion of this course, the students will be able to:

- Explain the Host parasite interactions.
- Describe the normal flora of human body.
- Discuss the Global travel health considerations.
- Illustrate antiviral drugs.

Practical

On successful completion of this course, the students shall be able to:

- Isolation of pure cultures.
- Observe the maintenance of hot air oven.
- Demonstrate the sterilization techniques.
- Observe the triacyl glycerols.

SEMESTER IV

PAPER 1: CLINICAL BIOCHEMISTRY-II

Theory

On successful completion of this course, the students will be able to:

- Describe the metabolic disorders.
- Explain the government regulation in blood banking.
- Explain the disorders of endocrine glands.
- Discuss the auto analyzers.

Practical

On successful completion of this course, the students shall be able to:

- Observe the vein puncture method.
- Estimation of serum calcium & phosphorous.
- Routine examination of CSF.
- Determination of concentration of urine.

PAPER II: HISTOLOGY & CYTOLOGY-I

Theory

On successful completion of this course, the students will be able to:

- Describe the Lab equipment for histology.
- Explain the tissue processing.
- Discuss the staining procedures in histotechnology
- Analyze the values in auto analyzers.

Practical

On successful completion of this course, the students shall be able to:

- Observe the micro tomes.
- Estimation of cell viability test.
- Identify the hematoxylene test.

PAPER III: PARASITOLOGY

Theory

On successful completion of this course, the students will be able to:

- Differentiate the parasitic diseases.
- Explain the tools for parasites.
- Discuss the blood parasites.
- Describe the lab diagnosis of parasites.

Practical

On successful completion of this course, the students shall be able to:

- Observe the physical examination of stool.
- Identify the malarial parasite
- Preparation of blood smears (thin & thick).
- Identify the sleeping sickness.

PAPER IV: BIOCHEMICAL TECHNIQUES

Theory

On successful completion of this course, the students will be able to:

- Explain the Beer –lamberts law.
- Explain the spectroscopy.
- Discuss the ultra centrifugation.
- Differentiate the chromatography techniques.

Practical

On successful completion of this course, the students shall be able to:

- Observe the spectrophotometer.
- Identify the types of chromatography.
- Analyze the R_f value of paper chromatography.
- Applications of radio isotopes.

PAPER V: IMMUNOLOGY

Theory

On successful completion of this course, the students will be able to:

- Explain the types of immunity.
- Describe the humoral immunity.
- Discuss the t- cells.
- Illustrate the vaccines.

Practical

On successful completion of this course, the students shall be able to:

- Observe the antigen antibody reactions.
- Identify the functions of immunoglobulins.
- Analyze the MHC system.
- Applications of western blotting

III YEAR: SEMESTER V

PAPER I : MEDICAL GENETICS , VIROLOGY & TOXICOLOGY

Theory

On successful completion of this course, the students will be able to:

- Explain the common diseases of genetics .
- Describe the care & handling of animals.
- Discuss the blotting techniques.
- Illustrate the HIV & Hepatitis.

Practical

On successful completion of this course, the students shall be able to:

- Observe the HIV antibodies.
- Identify the Hemoglobin.
- Analyze the viral diseases.
- Applications of blotting techniques.

PAPER II : HISTOLOGY & CYTOLOGY

Theory

On successful completion of this course, the students will be able to:

- Explain the specimen preparation.
- Differentiate the benign &malignant cells.
- Discuss the PCR.
- Describe the flow cytometry.

Practical

On successful completion of this course, the students shall be able to:

- Observe the staining of tissue.
- Identify the fixation method of tissue.
- Observe the section cutting of tissue.
- Analyze the acid & base stains.

PAPER III : BLOOD CELL DISORDERS

Theory

On successful completion of this course, the students will be able to:

- Explain the RBC abnormalities.
- Differentiate the WBC cells.
- Discuss the thalassemia.
- Describe the types of leukemia.

Practical

On successful completion of this course, the students shall be able to:

- Observe the staining of blood smear.
- Identify the osmotic fragility test.
- Observe the hemolytic disorders.
- Preparation of Heinz bodies.

PAPER IV : DISEASE CONTROL & PREVENTION

Theory

On successful completion of this course, the students will be able to:

- Explain the pathogenic bacteria.
- Differentiate the viral diseases.
- Discuss the influenza.
- Describe the control & prevention of parasitic infections.

Practical

On successful completion of this course, the students shall be able to:

- Observe the Grams staining.
- Identify the Zeil nelson staining
- Demonstration of pathogens.
- Demonstrate the laboratory grown fungi.