

BACHELOR OF SCIENCE(GENERAL)
6thSEMESTER
DISCIPLINE SPECIFIC ELECTIVE(DSE)

OPTION – I

CLB620DA: CLINICAL BIOCHEMISTRY _ CLINICAL PATHOLOGY

CREDITS: THEORY – 4, PRACTICAL – 2
MAXIMUM MARKS: 60, MINIMUM MARKS: 24

THEORY (4 CREDITS: 60 HOURS)

Objectives and Expected Learning Outcomes:

To provide basic understanding of diseases, their pathogenesis and basic techniques involved in preparation and investigation of disease tissue. This will provide an introductory nature and build the concepts of how human system work in altered and diseased stage under the influence of various internal and external stimuli to the students

UNIT-1 (15 Hours)

Introduction & History of pathology, Basic definitions and familiarization with the common terms used in pathology, Causes and mechanisms of cell injury, reversible and irreversible injury, Introduction of hyperplasia, hypoplasia, hypertrophy, atrophy, metaplasia, necrosis and apoptosis

UNIT -2 (15 Hours)

Inflammation – Definition and General features of acute and chronic inflammation: Vascular changes, cellular events, Cells and mediators of inflammation, Phagocytosis and its mechanism; Tissue renewal and Repair, healing and fibrosis, cirrhosis, introduction of oedema, haemorrhage

UNIT -3 (15 Hours)

Introduction of histopathology, cytology & histotechniques, laboratory organization, care & maintenance of equipments used in histotechnology lab, Safety measures in histotechnology lab Reception, Recording, Labelling and transportation of tissue specimens

UNIT -4 (15 Hours)

Basic concepts of fixation and various types of fixative used in histopathology and cytopathology; Tissue and its types, Location and function, Grossing of tissues, whole mount, sections, smears, tissue processing and its steps, manual and automated method

PRACTICAL (2 CREDITS: 60 Hours) MAXIMUM MARKS: 30, MINIMUM MARKS: 12

1. Demonstration of glass wares and equipment used in histopathology lab
2. To prepare alcohol of different concentration.
3. To prepare formalin from stock solution.
4. To perform tissue processing by manual method.
5. To fix the smear on glass slide.
6. Demonstration of functional aspects of Mounting and preservation of slide.

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OPTION – II

CLB620DB: CLINICAL BIOCHEMISTRY _ BIO-ANALYTICAL TECHNIQUES

CREDITS: THEORY – 4, PRACTICAL – 2
MAXIMUM MARKS: 60, MINIMUM MARKS: 24

THEORY (4 CREDITS: 60 HOURS)

Objectives and Expected Learning Outcomes:

To acquaint students with basic and advanced techniques employed in quantitative and qualitative analysis of biomolecules. The students will learn the underlying principles of isolation, purification, quantification and characterization of biomolecules.

UNIT-1 (15 Hours)

Centrifugation: Basic principle and its types, Differential centrifugation; Density and sedimentation Coefficients of Cellular components; Radioisotopes Techniques– Types of radioactive decay, detection and measurement of radioactivity, Radioisotopes used in Biology

UNIT -2 (15 Hours)

Spectroscopy- Basic principles of radiation energy and atomic structure, Beer Lamberts law; Basic principle and applications of Colorimetry, UV-Vis spectrophotometry and Fluorescence spectroscopy. Principles, techniques and applications of light and phase contrast microscopy

UNIT-3 (15 Hours)

Electrophoresis: Definition and basic principle of electrophoresis; agarose gel electrophoresis- Principle, Instrumentation and its applications; Polyacrylamide Gel electrophoresis- Basic Principle, Instrumentation and its applications as native and SDS-PAGE

UNIT-4 (15 Hours)

Chromatography: An Overview, Basic principle of Chromatography; Paper and Thin Layer Chromatography- Basic principles, Instrumentation and Application; Column Chromatography- Basic principle and General techniques of chromatography with special reference to size exclusion chromatography and its applications.

PRACTICAL (2 CREDITS: 60 Hours) MAXIMUM MARKS: 30, MINIMUM MARKS: 12

1. Demonstration of Centrifugation
2. Spectrophotometer analysis of DNA
3. Spectrophotometric analysis of proteins
4. Demonstration of handling and working of simple and compound microscope
5. Demonstration of principle, working and maintenance of spectrophotometer
6. Demonstration of principle, working and maintenance of colorimeter
7. Demonstration of principle and working of Agarose Gel Electrophoresis
8. Demonstration of principle and working of Paper chromatography