

SEMESTER – I &II
ALLIED PRACTICALS – I: BIOTECHNOLOGY

Instructional Hrs: 90 Hours

Sub. Code: 16BCUAP01

Max. Marks: CIA -20; ESE -30

Credits: 4

EXPERIMENTS I

- 1) Sterilization
 - a) Physical Sterilization
 - b) Chemical Sterilization
- 2) Media preparation & methods of streaking.
- 3) Isolation of bacteria from curd.
- 4) Staining methods
 - i) Simple staining
 - ii) Gram's staining
 - iii) Negative staining
- 5) Sterilization of culture rooms, glass wares, equipments.
- 6) Antibiotic sensitivity test.

EXPERIMENTS II

- 1) Preparation of MS medium.
- 2) Collection of Explant, surface sterilization, Inoculation of explants.
- 3) Isolation of genomic DNA from plant tissue.
- 4) Isolation of genomic DNA from animal cell.
- 5) Preparation of artificial seed.

DEMONSTRATION EXPERIMENTS:

- 1) Hanging drop technique.
- 2) Biometric measurements of plants grown in the presence of biofertilizers :
 - i) Root length
 - ii) Shoot length
 - iii) Fresh weight
 - iv) Dry weight

Internal evaluation:- 20 marks:-

- 1) CIA : 8 marks
- 2) Model : 8 marks
- 3) Record : 4 marks

External evaluation :- 30 marks

- 1) Experiment I : 15marks
- 2)Experiment II : 10marks
- 3)Record : 05 marks

SEMESTER – III & IV
CORE BIOCHEMISTRY PRACTICAL – III

Instructional Hrs: 90 Hrs.

Sub. Code: 17BCUCP03

Max. Marks: CIA -40; ESE -60

Credits: 4

I. ENZYME KINETICS

1. Preparation of Buffer solution – Phosphate and citrate buffer.
2. Determination of pH of buffer solution using pH meter.

A. TITRIMETRY

1. Effect of pH on the activity of Catalase.
2. Effect of substrate concentration on the activity of Catalase.
3. Effect of temperature on the activity of Catalase.
4. Effect of enzyme concentration on the activity of Catalase.

B. COLORIMETRY/ SPECTROPHOTOMETRY

1. Effect of pH on the activity of Acid phosphatase.
2. Effect of substrate concentration on the activity of Acid phosphatase.
3. Effect of temperature on the activity of Acid phosphatase.
4. Effect of enzyme concentration on the activity of Acid phosphatase.
5. Effect of pH on the activity of Salivary amylase.
6. Effect of substrate concentration on the activity of Salivary amylase.
7. Effect of temperature on the activity of Salivary amylase.
8. Effect of enzyme concentration on the activity of Salivary amylase.

II. GROUP EXPERIMENTS

1. Circular chromatography – (Amino acids)
2. TLC - (Lipids)
3. Phytochemical analysis of plant extract.

III. KIT METHOD (GROUP EXPERIMENTS)

1. SGOT 2. SGPT 3. ALP

DISTRIBUTION OF MARKS

Internal evaluation: 40 marks

- a) CIA : 20 marks
b) Model : 15 marks
c) Record : 05 marks

External evaluation: 60 marks

- a) Analysis I : 25 marks
b) Analysis II : 25 marks
c) Record : 7 marks
d) Viva-voce : 3 marks

CORE PAPER VI
HUMAN PHYSIOLOGY WITH MEDICAL TERMINOLOGY

Instructional Hrs: 75 Hrs.

Sub.Code :16BCUC506

Max. Marks: CIA -25; ESE -75

Credits: 4

SUBJECT DESCRIPTION: This course presents an introduction and provides a comprehensive, balanced introduction to this exciting evolving and multi-disciplinary field.

OBJECTIVES: On successful completion of the course the students should have Understood clearly on various alimentary parts of human body

- Learnt more specific on the endocrinal activities
- Learnt the mechanisms and actions of vital organs.

UNIT I

15 Hrs

Digestive system - secretion of digestive juices, digestion and absorption of carbohydrates, proteins and fats.

Respiratory system - transport of gases, exchange of gases between lungs and blood, between blood and tissue.

Terminology : (Definitions only)

Digestive disorders - Achlorhydria, hematochesis, achalasia, diverticular, intussusception, ulcerative colitis, volvulus, anal fistula, colonic polyposis, Abdominoperineal resection, Anastomosis, Aneurysm, Banding and Colostomy.

Respiratory disorders – Croup, pertussis, cystic fibrosis, atelectasis, emphysema, pneumoconiosis, pulmonary abscess and embolism, mesothelioma, pleural effusion, bronchoscopy, thoracotomy, tracheostomy and mediastinoscopy.

UNIT II

15 Hrs

Blood - composition and functions, structure and functions of RBC, leucocytes and platelets, hematopoiesis, Blood coagulation, blood groups and blood transfusion.

Body fluids - ECF and ICF, ionic composition of body fluids.

Heart – Structure of Heart. Cardiac cycle.

Terminology : (Definitions only)

Blood- Aplastic Anemia, Erythrocytapheresis, Hematocrit, Thrombosis, Hemostasis, Hypoxemia, Neoplastic Disease, Thrombocytopenia and Von Willebrand Disease.

Heart – arrhythmias, flutter, fibrillation, varicose vein, hemorrhoids, tetralogy of fallot, coronary artery disease, endocarditis, endarterectomy, extracorporeal circulation, thrombolytic therapy and coronary bypass surgery (CABG).

UNIT III

15 Hrs

Nervous system - structure of neuron, resting membrane and action potential, propagation of nerve impulse. Synaptic transmission [electrical and chemical theory], neuromuscular junction, neurotransmitters.

Eye - structure of eye, photo pigments, physiology of vision and neural pathways for vision.

Terminology : (Definitions only)

Nervous system – Alzheimer's disease, amyotrophic lateral sclerosis (ALS), Bell's palsy, cerebral thrombosis, cryothalamotomy, electroencephalogram (EEG), encephalitis, Guillain-Barré syndrome, lumbar puncture, myelogram, pallidotomy, positron emission tomography (PET) scan and subarachnoid hemorrhage.

Eye – ophthalmology, chalazion, glaucoma, hordeolum, macular degeneration, retinal detachment, retinitis pigmentosa, strabismus (3 types), astigmatism, hyperopia, myopia, presbyopia, tonometry, goldmann perimeter and slit lamp ocular examination.

UNIT IV

15 Hrs

Skeletal muscle - myosin, actin and regulatory proteins, sarcomere unit, *mechanism of muscle contraction*.

Kidney - structure of nephron, mechanism of urine formation, micturition, Renal regulation of acid - base balance.

Terminology : (Definitions only)

Skeletal muscle – Muscular Dystrophy, Cerebral Palsy, Dermatomyositis, Myasthenia Gravis, Mitochondrial Myopathies, Rhabdomyolysis, Myotonia,

Kidney – Nephritis, Nephrosis, Vesicoureteral Reflux, Cystitis, Urethritis, Urethral Stricture, Cystometry,

UNIT V

15 Hrs

Male reproductive system - structure and functions of testis, sperm and prostate gland, spermatogenesis, causes of male infertility.

Female reproductive system - structure of ovaries, ovarian cycle, menstrual cycle, hormones of pregnancy and lactation, *causes of female infertility*.

Terminology : (Definitions only)

Male reproductive system – Bartholin's glands, Coitus interruptus, Exenteration, Gonadal dysgenesis, Hypoestrogenism, Varicocele, Vasectomy

Female reproductive system - Abruptio placentae, Adnexa, Amenorrhea, Psychogenic, Amniocentesis, Antepartum, uteroplacental, Chorioamnionitis, Hysterectomy and Colpocytogram.

Note :*Italics* denote Self Study Topics

TEXT BOOKS

1. **Chatterjee, C.**, *Human Physiology*, Medical Allied Agency Calcutta., 11th edition, (1992).
2. **Muthayya.N.M**, *Human Physiology*, Jaypee publications, New Delhi, 3rdedi., 2002.
3. **Sathyanarayana, U.** *Text book of Biochemistry*, Books and Allied Ltd, Kolkatta, 2ndedi.,1999.

REFERENCE BOOKS

1. **Carola.R. et al**, *Human Anotomy and Physiology*, International edi.
2. **Guyton**, *Text book of Medical Physiology*, W. B. Saunder's Company, 8th edition, (1991).
3. **Murray, R. K., Granner Mayes and Rod Well, Appleton and Lange**, *Harper's Biochemistry*, 24th edition(1996).
4. **Barbara A. Gyls Mary Elen Wedding** *Medical Terminology Systems*, Davis plus International. 6th edition. 2008.