

MAJOR BASED ELECTIVE III - BIO-MEDICAL INSTRUMENTATION

Unit I: INTRODUCTION TO PHYSIOLOGY AND ANATOMY

Cell and its function-Anatomy and physiology of respiratory system-cardio vascular system-Endocrine system-Central nervous system.

Bio-Electric phenomenon: Basic bio potentials-Bio electricity – Resting and action potentials-Sodium Pump generation- Characteristics of electric signals from heart, brain and muscle.

Unit II: ELECTRODES

Half cell potential-Electrode paste –Electrode material –Metal micro electrodes-Depth needle electrodes-Surface electrodes-Multi point and floating needle electrodes-Distortion in the measured signals-chemical electrodes.

Unit III: DIAGNOSING INSTRUMENTS

Computer axial tomography- Thermography –Blood pressure monitors-Respiration rate monitors-pH meters.

Unit IV: RECORDERS

Introduction – Characteristics – ECG – EEG – EMG – ERG – Electro oculograph (ECG) – high accuracy recorders – offline analyzers – Recorders.

Unit V: ASSISTING DEVICES

Introduction – Pace makers – Artificial heart valves- Defibrilators – Nerve and muscle –Stimulators – Heart lung machine –kidney machine.

BOOKS FOR STUDY AND REFERENCE

1. Medicine and Clinical engineering – B. Jacobson and J.G. Webster – Prentice Hall of India
2. Biomedical Instrumentation - Arumugam, Anuratha Agencies Publishers, II Edn, 1994.
3. Principles of Electronics & Medical research – D.W. Hill –Butterworths – London –1965