

M.phil/ Ph.D. (Electronics)

Paper III

Biomedical Engineering

Chapter 1:

Cell as a Bioelectric Generator, The Heart and Circulatory System, Electrocardiography (ECG), Brain and Nervous System, Electroencephalography (EEG), The Skeletal, Muscle and Skin System, Electromyography (EMG) and Evoked Potentials (EP), Blood Pressure and Flow, Blood Oxygen Saturation, Heart Rate and Heart Sounds, Respiration and Temperature, Ear and Responses.

Chapter 2:

Electrodes, Basic Instrumentation, Electrocardiograph, Electroencephalograph, Electromyograph, Phonocardiograph,

Chapter 3:

Transducers, Blood Pressure, Blood Flow and Pulse Oximeters, Heart Rate, Respiration Rate and Temperature Meters, Fetal Monitor, Audiometer and Hearing Aid, X-Ray Physics, Fluoroscopy and Radiography-Ray Tubes, X-Ray Equipment.

Chapter 4:

Ultrasonic Scanner, Computed Tomography (CT-SCAN), Magnetic Resonance Imaging (MRI), Endoscope and Electron Microscope, Thermograph and Nuclear Imaging, Electric Shock, Electric Shock Hazards in Hospital Environment, Examples of Shock Hazards Safety Education and Precaution

References:

- “Medical Electronics by A.G.Patil”.
- “Maintenance of Hospital Equipment, part II: Recording Equipment” by A.G.Patil, ALCTE, CEP, 1996
- “Patient Safety”, Application Note No. AN/18, by M/s Hewlett Packard, U.S.A.
- “Biomedical Instrumentation and Measurement” by Leslie Cromwell, Fred j. Weibell, Erich A. PHI-India, 1998
- “Biomedical Measurement” by Glenn R. Blackwell, PE, Biomedical Instrumentation & Technology.