

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.E. FORTH YEAR

ELECTRONICS & COMMUNICATION

(In Force June 2006)

SEMESTER – VII

EC 706[C]: BIO-MEDICAL & INSTRUMENTATION (ELECTIVE PAPER-II)

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./ Viva Marks	Term Work Marks	Total Marks
3	2	3	100	25	25	150

SYLLABUS

1. INTRODUCTION:

Electrical properties of biological tissues, Generation of secular bio-potentials, Sources of bioelectric potentials, Elementary Aspects of volume, Conductor theory as it applies to the source and Measurement of ECG, EMG and EEG, Signal characteristic of ECG, EMG and EEG, Special aspect of interfacing electronic equipment with living body particularly the problems of variability, signal modification by instrumentation, Body interface and safety consideration.

2. BIO-MEDICAL TRANSDUCERS:

Principle of action, Method of usage, Techniques for testing blood pressure, Blood flow, Blood PH, Respiration, Eye forometer, Ultrasonic method in bio-medical measurement.

3. RECORDING OF BIO-MEDICAL EVENTS:

Kinds of electrodes, Amplifiers and display units used for recording bio- electrical potentials, Principles, Specifications, Modes of working, and Testing procedures of ECG, ENG and EEG, Effect of noise, Isolation Grounding and shielding technique.

4. MEDICAL IMAGING AND COMPUTER APPLICATION:

Production and use of X-ray, Laser, Computer assisted tomography (CAT), Ultrasonic method - Pulse and Doppler, Elements of intensive care monitoring, Patient monitoring system, Bio-medical computer application.

5. ELECTRONIC MEDICAL INSTRUMENTS:

Electronic pace maker, Defibrillation, Micro-power transmitter for tele-metering bio signals, Special characteristics of CRO in medical application, Short wave, Microwave, Diathermy, Basic study of complete pulse generator systems for simulation of physio-logical waveforms.

REFERENCE BOOKS:

1. Hand Book of BIO-Medical Instruments by R.S.Khandpur TMH.