

Total No of Questions: [XII]

SEAT NO. :

[Total No. of Pages :II]

B.E. (Electronics)
BIOMEDICAL INSTRUMENTATION
(2008 Pattern)(Elective - I) (Semester - I)

Time: 3 Hours

Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Use of Calculator is allowed.
- 5) Assume Suitable data if necessary

SECTION I

- Q1) a) Discuss Ten important factors to be consider in design of medical instrument [X]
 b) Explain fiber optic sensor for temperature measurement. [IV]
 c) Define Bio-electric signal & give full expanded form of following. [IV]

i) ERG ii) EMG iii) EEG iv) EGG

OR

- Q2) a) Discuss chemical sensors for measurement of PH, Po₂, Glucose & O₂. [X]
 b) Explain action potential, nesting potential, depolarization, and polarization of cell with sketch and characteristics. [VIII]

- Q3) a) Explain various EEG waveforms with their frequency and its significance. [VIII]
 b) Explain the procedure to perform EMG with help of diagram. [VIII]

OR

- Q4) a) Draw and explain 10-20 electrode system for EEG recording. [VIII]
 b) What are the different components of Central Nervous system? Explain in detail. [VIII]
 Q5) a) Explain Bipolar Limb leads with their configuration and standard waveforms? [XII]
 b) The distance between two consecutive R wave is 30mm and paper speed is 60 mm/sec what is heart rate and comment on heart rate. [IV]

OR

- Q6) a) Explain with neat diagram Cardio Vascular system. [VIII]
 b) Explain Einthoven triangle with diagram. [VIII]

SECTION II

- Q7) a) Explain basic requirement of implantable Pacemaker, types of Pacemaker. Explain one in detail. [VIII]
 b) Write short note on DC defibrillator. [VIII]

OR

- Q8) a) Explain finger plethresmography with diagram and graph. [VIII]
 b) Draw and explain Echocardiography. [VIII]

Q9)	a)	Draw block diagram of Central Monitoring system.	[VIII]
	b)	Explain grounding and shielding techniques used in hospital.	[VIII]
		OR	
Q10)	a)	What is Electronic Stethoscope? What are its advantages and disadvantages?	[VIII]
	b)	Explain Doppler shift blood flow velocity meter with expression.	[VIII]
Q11)	a)	Compare MRI and CT scan.	[X]
	b)	Explain in detail the application of LASER in medical application.	[VIII]
		OR	
Q12)		Write short note (Any Three) i) X-ray machine iii) Flame photometer v) Shadow less light ii) Oximeter iv) Ortho pentamo graph	[XVIII]