M.Sc. (Part–I) Semester–I (C.B.C.S. Scheme) Examination

ELECTRONICS

(Biomedical Instrumentations)

Paper—1ELE3

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) All questions carry equal marks

(2) Solve **one** question from each alternative.

(3) Draw neat sketches wherever necessary.

1. (a) Explain the use of microprocessor in medical instrument. 4

(b) Explain the various components in intelligent medical instrumentation system. 8

(c) Explain the concept of biometrics in short. 4

OR

(p) Explain the function of various components in basic medical instrumentation system. 8

(q) Explain the performance requirements of medical instrumentation system. 8

2. (a) Explain the various types of electrodes used in EMG instrument. 8

(b) Explain the construction and operation of Silver–Silver chloride electrode. 8

OR

(p) Explain the origin of bioelectric signals. 8

(q) Explain the various electrodes use in ECG instrument. 8

3. (a) Explain the construction and operation of ECG with block diagram. 8

(b) Explain construction and operation of cardiac pacemakers. 8

OR

	(p)	Explain EMG recorder with suitable block diagram.	8
	(q)	Draw the block diagram of EEG and explain it.	8
4.	(a)	Explain the principle of NMR imaging system.	8
	(b)	Explain the basic components of NMR and state the advantages of NMR.	8

OR

	(p)	Explain the principle of MRI.	4
	(q)	Explain the biological effect of NMR imaging.	8
	(r)	Explain image reconstruction techniques.	4
5.	(a)	Explain X-ray machines with high voltage.	8
	(b)	Explain X-ray tomography.	8

OR

	(p)	State advantages and disadvantages of Radiotherapy equipment.	8
	(q)	Explain the construction and operation of medical linear accelerator with neat diagram.	8