

Total No. of Questions :12]

SEAT No. :

P3378

[4959]-117

[Total No. of Pages :3

B.E. (Electronics)

**c:BIOMEDICAL INSTRUMENTATION
(2008 Course) (Semester - I) (Elective - I) (404204)**

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of calculator is allowed.*
- 6) *Assume suitable data if necessary.*

SECTION-I

- Q1) a)** Explain different type of electrodes for measurement of Bio signal with their properties and material used for the same. **[10]**
- b) Explain with suitable diagram action potential, resting potential, depolarization and repolarization of a cell. **[8]**

OR

- Q2) a)** Discuss Ten most important factors to be considered in the design of medical instrument. **[10]**
- b) Describe temperature sensor used in medical application. **[8]**
- Q3) a)** Draw and explain 10-20 electrode system for EEG recording. **[8]**
- b) Explain in detail working of brain and function of spinal cord. **[8]**

OR

- Q4) a)** Name different type of EMG. Explain the procedure to perform EMG with help of diagram. **[8]**
- b) Explain various types of EEG electrodes. **[8]**

P.T.O.

- Q5) a)** Explain the cardio vascular system with neat sketch. [8]
- b) Write short note on stress test system. [8]

OR

- Q6) a)** Explain the Einthoven triangle concept with necessary diagram. [8]
- b) What is the effect of artifacts on ECG reading? Explain block diagram of typical ECG machine. [8]

SECTION-II

- Q7) a)** Give salient feature of electromagnetic blood flow meter. [8]
- b) What is systolic and diastolic pressure? Explain non invasive blood pressure measurement system. [8]

OR

- Q8) a)** Classify pacemaker on the basis of pacing mode. Explain any one in detail. [8]
- b) Explain the working of DC defibrillator with circuit diagram and waveform. [8]

- Q9) a)** Explain in detail dialysis system. [8]
- b) What are the different elements included in the Blood Cell Test? Explain the Automatic optical method for measurement of RBC's & WBC's. [8]

OR

- Q10) a)** Write advantages and disadvantages of Electronic Stethoscope. [8]
- b) Explain with block diagram central monitoring system. [8]

Q11)a) What is CT scan? Compare MRI and CT Scan. **[10]**

b) Explain in detail the application of LASER in medical application. **[8]**

OR

Q12)Write short note (any Three): **[18]**

- a) X-ray machine.
- b) Oximeter.
- c) Flame photometer.
- d) Amalgamator.

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