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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

**Bio –Medical Engineering**

**IV Semester**

**BM 8401 BIOMEDICAL INSTRUMENTATION**

**(Regulations 2012)**

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. | Draw and mark the features of a typical cell potential waveform.
2. | Classify the electrodes based on their reaction when current passes.
3. | Name any three bio signals with their characteristic values.
4. | What are the special features of EMG recording?
5. | Differentiate Single ended and differential ended mode of a bio amplifier.
6. | Write the effect of power line interference in bio signal recording.
7. | Mention the significance of Korotkoff sounds?
8. | What is Fick's technique?
9. | Write brief notes on electrophoresis.
10. | What are the principal components of an auto analyzer?

**Part – B ( 5 x 16 = 80 marks)**

11. (a) Illustrate the standard 10-20 electrode system for recording the spontaneous EEG with neat diagram. (14)
- (b) Draw and mention the position of Pre cordial leads in ECG recording. (2)
  
12. a) Explain the Electrical equivalent circuit diagram for Electrode – Tissue Interface for a pair of electrodes in Bio potential recording. (16)
- (OR)
- b) Differentiate the electrical properties of Metal Micro electrode and Glass micro pipette with respective equivalent circuits. (16)
  
13. a) What are Pre-amplifiers? Explain the working a of pre amplifier used for patient safety with neat diagram. (16)
- (OR)
- b) Explain the need and analysis of right leg driven circuit in ECG recording. (16)

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14. a) Elaborate the direct method of BP measurement with appropriate diagrams. (16)

(OR)

b) Describe the following methods for blood flow measurement in detail.

(i) Dye – Dilution technique.

Quadrature(ii)

Suppression

(16)

technique.

15. a) Explain the Po<sub>2</sub> and Pco<sub>2</sub> measurement in detail (16)

(OR)

b) Discuss the Electronic method employed in blood cell counters in detail. (16)