Paper Code: EIC-032

Roll No.

B.Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION, 2015-16
BIOMEDICAL SIGNAL PROCESSING

[Time: 3 hrs.]   **[Max. Marks: 100]**

Note- Attempt All questions. All questions carry equal marks.

Q1. Attempt any FOUR parts of the following: -   **[5x4=20]**
   (a) Discuss the various objectives of a medical instrumentation system.
   (b) What are the various problems encountered in measuring a living system?
   (c) Explain the classification of bioelectric signals.
   (d) Discuss biomedical instrumentation for clinical and research purpose.
   (e) Explain and draw diagrams for ECG, EEG, and EMG.
   (f) Explain resting and action potentials.

Q2. Attempt any FOUR parts of the following: -   **[5x4=20]**
   (a) What do you understand by bioelectric potentials and how it is useful?
   (b) Give the block diagram of EEG. How diagnosis is made with EEG?
   (c) Discuss two commonly used ECG recorders briefly.
   (d) Explain use of digital computer in biomedical application and give some examples.
   (e) Explain the meaning of losses and long data compression.
   (f) Describe the advantages and disadvantages of modified Huffman coding.

Q3. Attempt any TWO parts of the following: -   **[10x2=20]**
   (a) Describe briefly Turning Point (TP) algorithm.
   (b) Explain Adaptive and Run Length coding.
   (c) AZTEC encoded signal as (2, 50, -4, 30, -4, 50, -4, 30, -4, 50, 2, 50) how many data points were originally sampled?

Q4. Attempt any TWO parts of the following: -   **[10x2=20]**
   (a) Explain dynamics of sleep/wake transition.
   (b) Write a short note on Epilepsy-Transition, Detection and Estimation.
   (c) Describe EEG analysis by maximum entropy method.

Q5. Attempt any TWO parts of the following: -   **[10x2=20]**
   (a) Explain EP Estimation by Adaptive Filtering.
   (b) Describe wavelet detection by structural features.
   (c) Write a short note on detection of overlapping wavelets.