

Roll No. 

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(EIE) (2011 Onwards) (Sem.-7,8)****BIO-MEDICAL INSTRUMENTATION**

Subject Code : EI-404

Paper ID : [A0377]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A****1. Answer briefly :**

- a) Define plethysmography.
- b) The function of an atrium is to pump blood from \_\_\_\_\_ to \_\_\_\_\_.
- c) What is bioelectric potential?
- d) Define cardiac output.
- e) Define systole and diastole.
- f) Point out the advantages of MRI scan.
- g) List the applications of biotelemetry.
- h) Give the amplitude and duration of the different waves in ECG.
- i) Write the basic principle of respiration sensor.
- j) At resting potential of a cell, why the inside of a cell is negatively charged?

**SECTION-B**

- Q2. Explain the characteristics of resting potential with reference to Nernst equation.
- Q3. Sketch the block diagram of automated electro sphygmomanometer for blood pressure measurement and explain its operation .
- Q4. Sketch a neat circuit diagram of a medical preamplifier and deduce an expression for its net gain.
- Q5. Design the simple block diagram of EMG recording setup.
- Q6. Discuss the properties of ultrasound and how ultrasound can be used for diagnosis.

**SECTION-C**

- Q7. Draw an ECG of a normal person, labeling the critical features. Draw EINTHOVEN TRIANGLE and how it is used in ECG measurement. Also explain the working of an ECG machine.
- Q8. a) Write the construction and working principle of computer tomography.  
b) What is a pacemaker? Classify the types of pacemaker based on modes of operation of the pacemakers.
- Q9. Write short notes on following :
- a) Vector cardiography.
- b) Nuclear Medicine.