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Total number of printed pages – 2

B. Tech  
PEEC 5416

**Seventh Semester Examination – 2013**

**BIOMEDICAL INSTRUMENTATION**

**BRANCH : CSE, MM, IT, MME, BIOTECH**

**QUESTION CODE : C-149**

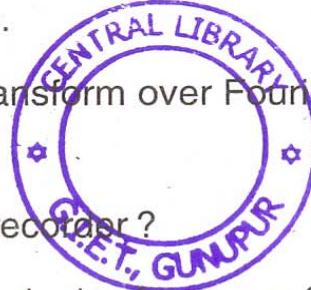
**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

*The figures in the right-hand margin indicate marks.*

1. Answer the following questions : 2×10
- Write down any four points to minimize electric shock hazards.
  - Give any four advantages of PC based medical instruments.
  - Define active transducer and give some examples of it.
  - What is a smart sensor ? Give example.
  - What is the advantage of Wavelet Transform over Fourier Transform in biomedical signal analysis ?
  - What is the working principle of Inkjet recorder ?
  - What is the method to measure the heart rate of a person ?
  - Write down some applications where ultrasonic blood flow meter is used.
  - What is 10-20 electrode system ?
  - Write down the causes of motion artifact.
2. (a) Explain EEG recording unit with a neat block diagram. 5
- (b) Explain any two methods of respiration rate measurement. 5



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3. (a) Explain NMR based blood flow meter. 5  
(b) What are microelectrodes ? Explain the different types of microelectrodes. 5
4. Explain the various ECG lead system with neat diagram. 10
5. (a) Explain the dynamic characteristics of transducers with examples. 5  
(b) Explain the oscillometric method of blood pressure measurement system. 5
6. (a). Explain thermistors and its biomedical applications. 5  
(b) Explain the general considerations for signal conditioners. 5
7. (a) Explain the types of leakage current. 5  
(b) Explain phonocardiograph. 5
8. Write short notes on any **two** of the following : 5 × 2
- (a) Direct writing recorders
  - (b) Biosensors
  - (c) Strain gauge pressure transducer
  - (d) Electrodes of ECG.

