

Registration No. :

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Total number of printed pages – 2

B. Tech  
PEEC 5403B

## Seventh Semester Examination – 2011

### BIOMEDICAL INSTRUMENTATION

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 in brief : 2×10
  - (a) Describe what is depolariation and repolarization.
  - (b) Which organ initiates the contraction process of the heart ?
  - (c) Briefly name the frequency range classification of a standard EEG signal.
  - (d) Define what motion artefact is and skin contact impedance.
  - (e) Define the terms hysteresis and threshold in case of a physiological transducer.
  - (f) Define what is a posistor and what is PTC.
  - (g) What is the function of Lead Selector in case of an ECG machine ?
  - (h) Mention the sources of artefacts in case of an ECG signal.
  - (i) Define what is 10/20 system in case of EEG.
  - (j) Define Gross Shock and Microcurrent Shock.
  
2. (a) Draw and explain the block diagram of an EEG machine. 6  
(b) Explain about various types of heart sounds in brief. 4

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3. (a) Describe in brief about the components of a basic biomedical instrumentation system. 6
- (b) Explain in brief about the classification of microelectrodes. 4
4. (a) What is Apnoea condition ? Describe with neat diagram the working of an Apnoea monitor. 5
- (b) Describe in brief about the various display formats of an EEG signal. 5
5. (a) Explain with neat diagram the working of MAF blood flow meter. 6
- (b) Define systolic and diastolic pressures. Explain what is the correction factor used in case of blood pressure measurement and why. 4
6. (a) Explain in brief about any two methods of respiration rate measurement. 5
- (b) Explain in brief about various transducers for body temperature measurement. 5
7. (a) What is leakage current ? Explain the classification of leakage current. 5
- (b) Explain in brief the various objectives of Patient Monitoring Systems. 5
8. Write short notes on : 5×2
- (a) Analysis of ECG Signal
- (b) Apexcardiograph and Balistocardiograph
- (c) Types of standards for medical devices
- (d) LEAD types of ECG