

5E5026

Roll No.

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B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015
Electronics & Communication Engineering
5EC6.1A Biomedical Instrumentation

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

Q.1 Give the brief anatomy & physiology of following human body subsystems. Also discuss the engineering analogous and variable of prime importance for:

- (a) Respiratory system [8]
(b) Neural system [8]

OR

- Q.1 (a) Give the classification of electrodes used for bio-medical applications. [8]
(b) Explain the selection criteria for transducers and electrodes used in biomedical field. [8]

UNIT-II

- Q.2 (a) Draw a well labeled diagram of Action Potential Waveform. Explain the process of Repolarization & Depolarization of cells. [8]

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- (b) Write short notes on:-
(i) EMG Biopotential [4]
(ii) ERG Biopotential [4]

OR

- Q.2 (a) What is a phonocardiograph? Explain various techniques for measuring heart sounds. [8]
(b) Explain all the indirect methods of blood pressure measurement. [8]

UNIT-III

- Q.3 (a) Describe the operation of blood cell counter based on dark field method. [8]
(b) Describe the colorimetric method of determining chemical concentration. [8]

OR

- Q.3 (a) Describe the principle of visualizing body organs by radioisotope methods. [10]
(b) What is GSR? How it is measured? [6]

UNIT-IV

- Q.4 (a) Discuss the element of Intensive Care Monitoring in hospitals. [10]
(b) What are defibrillators? How they are classified? [6]

OR

- Q.4 (a) Describe the various methods of accident prevention in hospitals. [10]
(b) Give the application of Lasers in biomedical instrumentation. [6]

UNIT-V

- Q.5 (a) What are the various abnormalities observed in ECG patterns? How they are classified? [8]
(b) What is Ischemia? Explain the electrocardiographic patterns obtained in ischemia. [8]

OR

- Q.5 (a) Give the application of Remote data recoding and management in biomedical instrumentation. [8]
(b) Explain the clinical Application of EEG. [8]