5E5026

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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]

(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]
