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B. Tech. EXAMINATION, 2020

(Fourth Semester)

(B Scheme)

(Re-appear Only)

BIOMEDICAL EQUIPMENTS–I

BME204B

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What are micro-shoks and macro-shocks ? What are the effects on human body when subjected to electrical shock ? **7½**

(b) What are the general precautions to be observed to avoid the electrical shock hazards ? Name the agencies for setting the electrical safety code for medical equipments. **7½**

2. (a) Briefly explain the generalized block diagram of a typical beside monitor. What are the parameters monitored by Bedside Monitor ? **7½**

(b) What is the function of a central monitoring station ? Briefly discuss. **7½**

Unit II

3. What is Oximeter ? Briefly discuss the basic principle of operation of the following types of oximeters with their relative merits and demerits.

(a) Skin Resistance Oximeter

(b) Pulse Oximeter **7½×2=15**

4. (a) What is a spirometer ? Briefly describe its construction and working with the help of its functional diagram. **7½**

(b) Briefly discuss the construction and working of an electromagnetic type of blood flow meter ? What are its advantages ? **7½**

Unit III

5. Describe the construction and basic principle of operation of the following analytical instruments. Also give their applications in medical science.

(a) Spectrophotometer

(b) Colorimeter. **7½×2=15**

6. (a) Draw the block diagram of an automatic Bekesy audiometer and discuss the measurement procedure. **7½**

(b) Discuss, how the Audiometers are calibrated. **7½**

Unit IV

7. (a) What is Coulter Counter ? Briefly discuss its basic principle of operation with suitable diagram. **7½**

(b) What is Gas Analyzer ? What are its uses in medical science ? **7½**

8. Write short notes on any *two* of the following :

(a) Automatic reorganization and differential counting of blood cells.

(b) Normal blood gas parameters

(c) Electrodes for the measurement of blood pH and pCO_2. **7½×2=15**