

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2898

Roll No.

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**B. Tech.**

(SEM. VIII) THEORY EXAMINATION 2011-12

**BIO-INSTRUMENTATION**

Time : 3 Hours

Total Marks : 100

**Note :—** (1) Attempt *all* questions.

(2) Each question carries equal marks.

1. Answer any **two** parts of the following :— **(10×2=20)**

(a) What are the problems encountered in measuring living systems ?

(b) Explain the following :—

(i) BIO-ELECTRIC POTENTIALS

(ii) BIO-MATERIALS.

(c) Write short notes on any **two** of the following :—

(i) ACTIVE &amp; PASSIVE TRANSDUCERS

(ii) PROPAGATION AND DISTRIBUTION OF BIO-ELECTRIC POTENTIALS SUCH AS EEG, ECG and EMG.

(iii) TRANSDUCERS FOR BIO-MEDICAL APPLICATIONS.

2. Answer any **two** parts of the following :— (10×2=20)

(a) What do you understand by “Bio-chemical Transducers” ? Also discuss its advantages and disadvantages. Explain its types.

(b) Explain the Heart and Cardiovascular system and circulation with help of neat block diagrams. Also mention its importances.

(c) Write short notes on the following :—

(i) Blood pressure and measurement.

(ii) Characteristics of blood flow and heart sounds.

3. Answer any **two** parts of the following :— (10×2=20)

(a) Explain the following :—

(i) ECG lead configurations.

(ii) ECG recording and their types.

(iii) Electro-cardiography systems.

(b) What do you mean by “NERVOUS SYSTEM” ? Also discuss the organization of the brain system. Also discuss the measurements from the nervous system.

(c) Write short notes on any **two** of the following :—

(i) EPSP & IPSP.

(ii) NEURONAL COMMUNICATION.

(iii) TEMPERATURE MEASUREMENTS

(iv) Brief idea about Ultrasonic measurements.

4. Answer any **two** parts of the following :— (10×2=20)

(a) What do you mean by “PATIENT CARE MONITORING” ? Also discuss the advantages and disadvantages of this system.

(b) Explain the following :—

(i) PACE-MAKERS—TYPES

(ii) MODES AND GENERATORS

(iii) DEFIBRILLATORS—TYPES.

(c) What are the elements of intensive care ? Also mention its drawbacks.

5. Answer any **two** parts of the following :— (10×2=20)

(a) Write short notes on any **two** of the following :—

(i) AUTOMATION OF CHEMICAL TESTS

(ii) INSTRUMENTATION FOR DIAGNOSTIC X-RAYS

(iii) BIO-MEDICAL COMPUTER APPLICATIONS.

(b) Discuss the interfacing computer with medical instrumentation and other equipments. Also mention the shock hazards from electrical equipments.

(c) What are the methods of “Accident Prevention” ? Explain one method in detail.