

(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 & 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 adynatages 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.