

B.Tech
(SEM VIII) THEORY EXAMINATION 2017-18
BIOMEDICAL INSTRUMENTATION

Time: 3 Hours**Total Marks: 100****Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

- a) State the Specifications of bio-medical instrumentation system.
- b) Define the Biomedical Transducer.
- c) What do you mean by intensive care monitoring?
- d) Explain Vector Cardiographs.
- e) Explain the working of Humidifier.
- f) Explain the significance of Neuronal communication.
- g) Explain the working principle of a Tonometer.
- h) Describe Electro-oculogram.
- i) Describe what are Implantable units?
- j) Explain Emergency patient monitoring.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

- a) Explain the components of a Man-Instrumentation system. Describe the problems encountered in measuring a living system.
- b) Differentiate between the working and functioning of a defibrillator and pace-maker. Give the classification of various pace-makers. State applications of defibrillator.
- c) Describe the physiology of the Nervous system & the Respiratory system. Explain the working and functioning of a Spirometer.
- d) Explain the working of Ultrasonic diagnosis techniques. Describe X-ray & Radio-isotope diagnosis.
- e) Describe the working principle and function of a CAT-Scan machine.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What are Physiological potentials? Explain the meaning of the Physiological potentials: ECG, EEG, EMG, ERG and EOG.
- (b) Describe what are Bio-potential Electrodes? Explain the difference between Electrodes and Transducers. Also explain the functioning of a Needle Electrodes and Microelectrodes.

4. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What is Electrocardiography? Describe the components of an Electrocardiograph. Explain the ECG System for Stresses testing.

- (b) Explain the elements Patient Care & intensive care Monitoring. Discuss the process of Calibration & Reparability of patient monitoring equipment.

5. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Describe & compare the functioning of the various Respiratory Therapy equipments like Inhalators, Ventilators & Respirators and Nebulizers & Aspirators.
- (b) Explain the phenomenon of neural communication. Explain any method for Heart sound measurement.

6. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What is the principle of Magnetic Resonance Imaging (MRI) system? Explain the basic components of a MRI system with the help of a suitable diagram.
- (b) Explain the difference between Eco-cardiography and Eco-encephalography. Describe their application in medical field.

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) What are Prosthetic Devices and Therapies? Explain the various Prosthetic Devices. Also State some applications of Lasers in medicine.
- (b) What do you understand by Biotelemetry? Explain the various components of a Bio-telemetry system. Discuss the applications of Bio-telemetry system