

Code: EC7T4D

IV B.Tech - I Semester – Regular Examinations – October - 2017

**BIO - MEDICAL INSTRUMENTATION
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22

1.

- a) List out the different types of electrodes used in Bio-medical instrumentation system.
- b) What are resting and action potentials?
- c) Define Einthoven Triangle.
- d) What is the frequency range of ECG, EEG and EMG waves?
- e) Define latency.
- f) Define Micro and Macro shocks.
- g) What is the principle of Endoscopy?
- h) What are the methods involved in direct blood pressure measurement?
- i) What is pH Value of Arterial blood and venous blood?
- j) What is the use of Biphasic D.C. defibrillators?
- k) What is a pacemaker? What are the different modes of operation of Cardiac pacemakers?

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain any four types of surface electrodes in detail. 8 M

b) Describe the generation and features of action potential and Resting Potential. 8 M
3. a) Explain with neat sketch anatomy and conducting system of heart. Also discuss cardio vascular circulating system with block diagram. 8 M

b) Explain in detail about the working of EMG recording System. 8 M
4. a) Explain the Principle of operation of an Ultrasonic blood flow meter. 8 M

b) Explain any one method of measuring blood pressure. 8 M
5. a) Explain in detail about the basic principle of Thermography. With neat diagram explain the different parts of the Thermal Imaging system. 8 M

b) Explain with block diagram the MRI and Applications of MRI system. 8 M

6. a) Why do we require Heart-lung machine? Draw a block diagram of it and explain its working. 8 M

b) Draw the block diagram of synchronized D.C. defibrillator and explain its working. 8 M