

Code No: 157EQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech IV Year I Semester Examinations, February/March - 2022****FUNDAMENTALS OF BIOMEDICAL APPLICATIONS****(Common to CSE, IT)****Time: 3 Hours****Max. Marks: 75****Answer any Five Questions
All Questions Carry Equal Marks**

- 1.a) List the static characteristics of medical instruments and define them.
- b) Define and derive the Nernst equation for membrane Resting potential. [8+7]
- 2.a) Explain the generation of action potentials and refractory periods.
- b) Describe the function of components of Medical Instrumentation system. [10+5]
- 3.a) Explain the electrical conduction system of heart with a neat sketch.
- b) What is meant by Electrocardiography? List the electrodes used for it and describe electrode placement for ECG. [7+8]
- 4.a) Draw the ECG waveform and show the P, Q, R, S waves and explain their generation.
- b) Explain the features of Ink-jet system and PMMC writing system. [7+8]
- 5.a) Define Systolic and Diastolic pressures, enumerate the normal Blood pressure of healthy human being.
- b) What are the Blood flow measuring methods? Explain the ultrasonic Blood flow measurement method. [6+9]
- 6.a) How can you measure BP using Sphygmomanometer? Explain.
- b) What is meant by Phonocardiography? Explain the significance of it. [8+7]
- 7.a) What is the need of Defibrillator? List the different types of defibrillator and explain the block diagram of DC defibrillator with a neat diagram?
- b) What is Electrotherapy and describe its applications? [10+5]
- 8.a) What is EEG? Discuss the working of typical EEG recording Setup with neat sketch?
- b) Explain the need of following [7+8]
 - (i) Pneumotachography
 - (ii) Ventilators

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