

Sub. Title : **MEDICAL ELECTRONICS**Sub. Code : **EC2021**Duration : **180 MINS**Date : **30/1/2015**Branch : **ECE**Max. Marks : **100***Answer all questions***Part A - (10 x 2 = 20)**

1. What is half cell potential?
2. What are the different types of bio-potential electrodes?
3. Draw the Action potential waveform.
4. Mention the various lead system used in ECG recording.
5. List the name and frequency bands of EEG signals.
6. Define PCG.
7. What is meant by Electrophoresis?
8. What are the various types of blood flow meters?
9. What is cardiac output and mention the methods of measurement of cardiac output?
10. Define Tidal volume & Residual volume.

Part B - (5 x 16 = 80)

11. (a) Explain the Origin of Bio-potential [16]

[OR]

- (b) i. Explain the different types of bio-potential electrodes in detail [8]

ii. Write short notes on biological amplifiers [8]

12. (a) Explain the origin of ECG and explain the recording set up of ECG [16]

[OR]

- (b) i. Draw and explain the working principle of an EMG recorder [8]

ii. Write short notes on PCG [8]

13. (a) Explain the 10-20 electrode placement system for the measurement of EEG [16]

[OR]

- (b) What are photometers? Explain the different types of photometers with suitable diagrams. [16]

14. (a) Define Cardiac output. explain the different methods of cardiac output measurement [16]

[OR]

- (b) Explain the principle of following

i. pH measurement [8] ii. Autoanalyser [8]

15. (a) Draw the block diagram of ultrasonic blood flow meter. Explain the method of measuring the velocity of blood flow using (i) transit time principle (ii) Doppler Effect [16]

[OR]

- (b) Explain the following in detail.

i. Coulter blood cell counters [8]

ii. Total lung capacity measurement in respiratory measurements [8]