

Sub. Title : **MEDICAL ELECTRONICS**Sub. Code : **EC2021**Duration : **180 MINS**Date : **9.4.2015**Branch : **ECE**Max. Marks : **100***Answer all questions***Part A - (10 x 2 = 20)**

1. Draw the relationship between the action potential and muscle contraction.
2. What are the three types of electrode systems in ECG lead configurations?
3. What is cardiac output?
4. What is the use of plethysmograph?
5. Mention the different modes of operation of the pacemaker.
6. What are the use of Bio-telemetry?
7. What is the use of image intensifiers?
8. What is the aim of radiation protection? Mention the radiation monitoring instruments.
9. What is endoscopy? List few types of Endoscopes.
10. Define Macroshock.

Part B - (5 x 16 = 80)

11. a) i) What is Half cell potential? [2 Marks]
ii) What are the three types of electrodes and mention its use. [6 marks]
iii) Discuss Microelectrodes in detail [8 marks]
OR
b) i) Explain the working of ECG recording setup? [8 marks]
ii) With suitable diagrams explain the method of measurement of conduction velocity in peripheral nerves. [8 marks]
12. a) i) Describe the measurement of PH in blood. [8 marks]
ii) Explain about Electromagnetic Blood Flow meter. [8 marks]
OR
b) i) Define Cardiac output [2 marks]
ii) Explain the measurement of Cardiac output by indicator Dilution method. [8 marks]
iii) What are the drawbacks of Indicator Dilution method and how is it overcome? [6 marks]
13. a) Discuss with suitable block diagrams the stand by and demand pacemakers [16 marks]
OR
b) i) What is a Defibrillator? [2 marks]
ii) Distinguish between internal and External Defibrillators. [6 marks]
iii) With block diagram describe the operation of Synchronized DC Defibrillator. [10 marks]
14. a) Draw the block diagram of an X-ray machine and explain the function of each block. [16 marks]
OR
b) Write short notes on i) Image intensifiers. [8 marks]
ii) Distinguish between the Radiography and Fluoroscopy [8 marks]
15. a) What is meant by Diathermy? Explain the working process of short wave diathermy & ultrasonic diathermy. [16 marks]
OR
b) i) Explain the infrared thermography. [8 marks]
ii) Explain about the Endoscopic laser coagulator [8 marks]