



B.E DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2013)

Sixth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U13ECTE11 : Medical Electronics

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ is an instrument which records the electrical activity of the Brain.
 - a) EMG
 - b) EEG
 - c) ECG
 - d) EOG
2. In an ECG measurement, the closed path Right Atrium to Left Atrium and back to Right Atrium is called _____ triangle.
3. Which of the following is _____ used to measure the concentration of a known solute.
 - a) Photometer
 - b) Colorimeter
 - c) Auto Analyzer
 - d) Electrophoresis
4. Normal resting blood pressure in an adult is approximately _____.
5. _____ is a mechanical device that is used to reduce accumulation of waste products and water in blood plasma.
 - a) Ventilator
 - b) Defibrillator
 - c) Oxygenator
 - d) Dialyzer
6. A Capsule containing a miniature radio transmitter that can be swallowed by a patient is termed as _____.
7. In a Positron Emitted Tomography _____ rays are produced.
 - a) Alpha
 - b) Delta
 - c) Beta
 - d) Gamma
8. Expand the term SPECT _____.
9. _____ are used to produce images of the radiation generated by radio-pharmaceuticals within a patient's body.
 - a) NMR
 - b) PET
 - c) Gamma camera
 - d) SPECT
10. _____ is the high frequency current range of ultrasound used for diagnostic applications.

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. List the types of Bio-potential Electrodes.
12. What is the usage of PCG in medical applications?
13. Define the terms Cardiac Output & Stroke Volume.
14. Why is a buffer solution needed in blood PH measurement?
15. What is the need for Bio-telemetry?
16. List the essential features of Dialysis membranes.
17. Why X-rays penetrate through the flesh, but not through the bones?
18. List some of the Radio Isotopes used in Medical Diagnostics.
19. What are the various process involved in a Diathermy?
20. What is meant by macro shock?

PART C (5 x 14 = 70 Marks)
(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Explain with neat block diagram, the working principle of a single channel EMG system.

22. (a) Explain the working principle of a PH meter with a neat sketch

(OR)

(b) Explain the measurement technique for cardiac output using thermo dilution method.

23. (a) Discuss in detail about the DC Defibrillator with suitable diagram.

(OR)

(b) Analyze the operation of Haemodialysis machine with a neat schematic diagram.

24. (a) Explain the operation and production of X-rays with a neat diagram.

(OR)

(b) Analyze in detail about the Gamma Camera system with necessary diagrams.

25. (a) Discuss the different types of commonly available endoscopes used for diagnostic applications in detail.

(OR)

(b) Explain briefly the blocks and Principle of working of a pulse-echo apparatus.
