

B.E., DEGREE EXAMINATIONS: NOV/DEC 2012

Fifth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

ECE122: Medical Electronics

Time: Three Hours

Maximum Marks: 100

Answer All the Questions:-

PART A (10 x 1 = 10 Marks)

1. The resting potential of the inside of the neuron is about _____.
a. 100mV b. -100mV c. -70mV d. 70mv
2. EMG deals with the study of
a. brain activity b. myocardial activity
c. muscular activity d. central nervous system
3. The normal pH of blood is
a. 7 b. 7.4 c. 6.6 d. 7.8
4. The obstruction of blood flow is known as
a. Cyanosis b. Edema c. Hyperemia d. stasis
5. In DC defibrillator, a pulse with a duration of 5 ms is generated by
a. Astable multivibrator b. monostable multivibrator
c. IC 555 d. Capacitor discharge
6. The radio capsules are
a. Some kind of treatment to reduce brain activity
b. Drugs to reduce ventricular fibrillation
c. Biotelemetry transmitter
d. Used for animals to cure tumors
7. The efficiency of X-ray machines is about
a. 80% b. 50% c. 20% d. about 1%
8. The use of superconducting magnets in MRI is to obtain
a. high strength magnetic field b. high RF field
c. high strength gradient fields d. Signals from surface tissues

9. Thermography is the display of
- a. thermal images of the skin surfaces
 - b. thermal images of the internal organs
 - c. Skin images using photography
 - d. skin temperatures using fiber optic sensor
10. Argon ion laser is mainly used in coagulation because
- a. It gives necessary power for coagulation
 - b. It gives necessary monochromacity in wavelength which is highly absorbed by red blood cells and hemoglobin
 - c. It is harmless
 - d. Its energy is can be easily delivered to the spot where coagulation takes place

PART B (10x2=20 Marks)

- 11. What is the need for the electrode paste?
- 12. Define EOG. Also name the diseases identified using EOG.
- 13. What is electrophoresis?
- 14. Differentiate between vital capacity and residual volume.
- 15. State the function of nebulizer.
- 16. Draw the block diagram of a bio-telemetry system.
- 17. Why aluminum filter is used in X-Ray tube?
- 18. Write the advantages of MRI over other imaging techniques.
- 19. What is diathermy?
- 20. Distinguish between microshock and macroshock.

PART C (5x14=70 Marks)

21. a) Explain the various types of bio-potential electrodes with diagrams.

(OR)

- b) Draw the ECG recording set up and brief about each part.

- 22.a) Write short notes about photometers and colorimeters.

(OR)

- b) Discuss the various methods of cardiac output measurement.

23.a) Describe the different modes of operation of Cardiac pacemakers.

(OR)

b) Give in detail about ventilators.

24.a) With neat diagram explain computer axial tomography.

(OR)

b) What is Magnetic resonance principle? Draw the block diagram of MRI system and explain the image reconstruction using it.

25.a) Brief about the various thermo graphic techniques.

(OR)

b) Discuss about electrical shocks and devices to protect electrical hazards.
