

B.E. DEGREE EXAMINATIONS: NOV / DEC 2010

Fifth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U07EI503: Biomedical Instrumentation

Time: Three Hours

Maximum Marks: 100

Answer All the Questions

PART A (10 x 1 = 10 Marks)

1. The bio Electrical Generator of heart is situated at
 - a) Aortic valve
 - b) SA node
 - c) AV node
 - d) The brain
2. Most human body fluids are
 - a) Basic
 - b) acidic
 - c) more basic
 - d) more acidic
3. Artifacts are
 - a) Skin crafts
 - b) time varying half cell potential
 - c) radio capsules
 - d) radio noises
4. In case of ERG what types of electrodes used to pickup signals
 - a) Disc Electrode
 - b) Retinal Electrode
 - c) suction cup Electrode
 - d) Needle Electrode
5. heart sounds are recorded by
 - a) Electro cardiography
 - b) Endoscope
 - c) Electro myography
 - d) Phono cardiography
6. systolic blood pressure in the normal adult is in the range of
 - a) 60 to 90 mm Hg -80mm Hg being average
 - b) 135 to 75 mm Hg -80mm Hg being average
 - c) 95 to 140 mm Hg -120mm Hg being average
 - d) 135 to 80 mm Hg -120mm Hg being average
7. Thermography is the display of
 - a) Thermal images of the skin surfaces
 - b) Thermal images of the internal organs like heart
 - c) Skin surfaces using photography
 - d) Skin temperatures using fiber optic sensors
8. Let go current for men
 - a) Increase with the weight
 - b) decreases with the frequency
 - c) Increases with the log frequency
 - d) is constant for all frequencies
9. The conduction velocity in a motor nerve is normally
 - a)100m/s
 - b) 50m/s
 - c) below 40m/s
 - d)1550 m/s

10. After the chest operation the patient feels difficult to breathe. Then the patient is connected to a
- a) Pace maker b) defibrillator c) ventilator d) heart lung machine

PART B (10 x 2 = 20 Marks)

11. Define depolarization and Repolarization?
12. Define systole and Diastole?
13. Give the approximate frequency bands or rhythms of EEG?
14. Define Electrode potential
15. What is Plethysmograph?
16. What are the applications of Spiro meter?
17. What is the use of Image intensifier in X-ray machine?
18. What is Endoscopy?
19. What is the use of Heart lung machine?
20. What is Diathermy?

PART C (5 x 14 = 70 Marks)

21. a) (i) Briefly describe about cardio vascular system? (7)
(ii) Write short notes about central nervous system and peripheral nervous system? (7)
(OR)
b) Explain any three types of active transducers used to measure the bio signal?
22. a) With a neat block diagram explain the recording set up and working of an ECG Machine? (7)
(OR)
b) Draw and explain the metallic and nonmetallic micro electrode with its Electrical Equivalent circuits?
23. a) Explain in detail various methods to measure cardiac output? (7)
(OR)
b) (i) Describe the method to determine the Total lung capacity? (7)
(ii) Draw the circuit diagram of a digital PH meter and explain its working details? (7)
24. a) Explain the working of x-ray machine with a neat block diagram. (7)
(OR)
b) (i) Describe in detail about Magnetic Resonance Imaging systems? (7)
(ii) Describe the possibilities of occurrence of Electrical accidents for a patient in a hospital? (7)
25. a) Explain any four modes of operation in pacemaker? (7)
(OR)
b) Write short notes on:
(i) Defibrillator (7)
(ii) Dialysers (7)
