Register Number……

B.E. DEGREE EXAMINATIONS: NOVEMBER 2009

Fifth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U07EI503: Biomedical Instrumentation

Time: Three Hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 × 1 = 10 Marks)

1. The action potential of the human cell is about mV.

   A. 20 B. 40 C. −60 D. −80

2. _____ types of transducers are generally used in phonocardiogram.

   A. Resistive B. Capacitive C. Inductive D. Ultrasonic

3. To sense the EMG potentials _____ electrodes are used.

   A. micro B. Depth and needle C. chemical D. surface

4. In EEG, electrodes are placed in standard positions on the skull in an arrangement called _____ system.

   A. 10–20 B. 20–40 C. 32–32 D. 50–50

5. The normal range for pH of blood for sustaining human life is _____

   A. 6.35–6.45 B. 6.45–6.65 C. 7.35–7.45 D. 7.45–7.65

6. The residual volume capacity of a normal lung is _____ ml.

   A. 300 B. 600 C. 1200 D. 1600

7. When a fast moving beam of electrons hits a target of high atomic weight _____ are produced.

   A. X- rays B. beta rays C. alpha rays D. gamma rays

8. _____ is the important diagnostic aid in breast cancer.

   A. endoscopy B. ultrasonography C. tomography D. thermography

9. By passing sparks from needle or ball electrode of small diameter to the tissue, the developed heat dries out the superficial tissue without affecting deep-seated tissues. This is called _____

   A. fulguration B. blending C. coagulation D. electrotomy

10. Which is not a type of oxygenators _____

    A. flim B. Bubble C. solid-liquid D. membrane

PART B (10 x 2 = 20 Marks)

11. Sketch the important parts of the heart?
12. What are the different types of strain gauge?

13. What are the different types of electrodes used in biomedical field?
14. What are the output units of ECG recorders?
15. What is the various type of cardiac output measurement?
16. Explain the working principle of indicator dilution method.
17. Define Radiography and Fluoroscopy.
18. State any two types of commonly available endoscopes?
19. What is the purpose of Audiometer?
20. Write the principle of hemo dialysis.

PART C (5 x 14 = 70 Marks)

21 (a) i. Describe the generation and features of action potential. (7)

ii. Explain the function of human respiratory system (7)

(OR)

(b) Show how an ultrasonic transducer is applied in clinical diagnostic circuit.

22 (a) i. Draw a buffer amplifier circuit and explain its working (7)

ii. Explain the working of chopper amplifier (7)

(OR)

(b) With neat block diagram show how EEG is recorded.

23 (a) What is known as korotokoff sound? How will you measure them in with an indirect method of measurement.

(OR)

(b) i. Explain any one method of measuring blood pressure (7)
ii. Write a note on Plethysmography (7)

24 (a).i. Explain the working of X-ray machine (7)

ii. Write a note on endoscopy (7)

(OR)

(b) Show how computer tomography has revolutionized the field of diagnosis explaining its salient features.

25 (a) Write brief notes on the working principles of

(i) Nerve stimulators and (7)

(ii) Pure tone audiometers. (7)

(OR)

(b) Explain briefly any one type of pacemaker circuit and defibrillator circuit

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