Register Number: ……..

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

Seventh Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE 121**:** Bio Medical Instrumentation

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The meeting point of neurons is called as _____.
   a) Afferent nerve b) Efferent nerve
   c) Occipital nerve d) Synapse
2. The bio-electric generator of heart is situated at _____.
   a) Aortic valve b) SA node
   c) AV node d) The brain
3. In ECG, the calibration signal amplitude is _____.
   a) 1mV b) 1V
   c) 1µV d) 0.5mV
4. The amplifier with no drift is referred as _____.
   a) Differential amplifier b) DC amplifier
   c) Single ended amplifier d) Chopper amplifier
5. _____ type of transducer is used in Phonocardiogram.
   a) Resistive b) Capacitive
   c) Inductive d) Ultrasonic
6. The Normal Cardiac output is _____.
   a) 2-4 L/min b) 4-6 L/min
   c) 4-6 min/L d) 4L/min
7. The efficiency of X-rays machine is about _____.
   a) 80% b) 20%
   c) 50% d) 1%
8. 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

9. 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

10. 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

PART B (10 x 2 = 20 Marks)

11. Define sodium pump
12. What are the different types of transducers?
13. Write short notes on differential amplifiers.
14. Draw the block diagram of EEG recording system.
15. Define pH of blood
16. How the blood pressure is being basically measured in Human body?
17. List the difference between Radio graphic and fluoroscopic techniques.
18. Write short notes on Patient monitoring system.
19. State any four differences between external and internal Pacemakers.
20. What is the working principle of Hemodialyser?

PART C (5 x 14 = 70 Marks)

21. a) Describe the structure of a living cell of human body with a neat diagram and explain its constituents in detail.

(OR)

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

(ii) Explain any two types of active transducers used to measure the bio signal? (7)

22. a) Explain in detail the role of any three types of amplifiers in Bio-Medical instrumentation with necessary diagram.

(OR)

b) With a neat block diagram explain the recording set up and working of an ECG Machine?

23. a) (i) Explain any one method of measuring blood pressure (7)

(ii) Write a note on Plethysmography (7)

(OR)

b) Explain in detail the various methods to measure cardiac output?

24. a) Explain in detail about the various components of X-ray machine with necessary diagrams (10)
List out the properties of X-rays. (4)

(OR)

b) Explain in detail about how 3D images can be formed using Computerized Tomography (CT)

25. a) Discuss the different types of defibrillators in detail with neat sketches.

(OR)

b) Explain the working of Heart – Lung machine with a neat sketch.

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