

No. of Printed Pages : 4

181045/171045

Roll No.

**4th Sem / Eltx
Subject:- Medical Electronics**

Time : 3Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 The resting potential of a cell is about

- a) -60 to -100 mV
- b) +60 to +100 mV
- c) -10 to -20m V
- d) +10 to +20 mV

Q.2 Full form of ECG is

- a) Electric cardiogram
- b) Electro cardiogram
- c) Electric cardiograph
- d) None

Q.3 What are the standard number of electrodes used in ECG

- a) 4
- b) 6
- c) 8
- d) 10

Q.4 To convert biochemical signal into measurable signal _____ is required

- a) Amplifier
- b) Inverter
- c) Rectifier
- d) Transducer

Q.5 LVDT stands for

- a) Linear variable differential transformer
- b) Line variable differential transformer
- c) Linear variable different transformer
- d) Line variable different transformer

Q.6 The body temperature of normal human being ranges between

- a) 20°C to 30°C
- b) 15°C to 20°C
- c) 36.1°C to 37.2°C
- d) 40.1°C to 42.2°C

Q.7 The X-Ray machine is an example of _____

- a) Therapeutic equipment
- b) Diagnostic equipment
- c) Clinical laboratory equipment
- d) None of these

Q.8 MRI stands for

- a) Magnetic Resonance Imaging
- b) Material Resonance Imaging
- c) Magnetic Resonant Imaging
- d) None of these

Q.9 Beats/minute of a normal human being ranges from

- a) 30 to 60
- b) 60 to 100
- c) 100 to 120
- d) 120 to 150

Q.10 The full form of VCG is

- a) Vector cardiogram
- b) Velocity cardiogram
- c) Virtual cardiogram
- d) None

(1)

181045/171045

(2)

181045/171045

SECTION-B

Note: Objective type questions. All questions are compulsory. $(10 \times 1 = 10)$

Q.11 What is micro shock?

Q.12 The operation of thermocouple is based on _____ (Doppler/ See back effect)

Q.13 To observe working of brain _____ (ECG/ EEG/EMG) is used.

Q.14 Pacemaker is used when _____ (brain/heart) is not working properly.

Q.15 What is bio electrode?

Q.16 Diastolic pressure is the minimum pressure in the arteries (True/False)

Q.17 The frequency of muscle activity is very high (True/ False)

Q.18 PCG stands for _____

Q.19 What are the advantages of MRI over other imaging methods.

Q.20 Write two applications of EEG machine.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. $(12 \times 5 = 60)$

Q.21 Differentiate between ECG and EMG.

Q.22 Differentiate between invasive measurement and non-invasive measurement

Q.23 Explain metal electrolyte interface.

Q.24 Explain various body surface electrodes.

Q.25 What are therapeutic equipments? Name any two.

Q.26 Explain how strain gauge is used as pressure transducer.

Q.27 Draw and explain working of VCG.

Q.28 Differentiate between phono cardiogram and vector cardiogram.

Q.29 Draw and explain the structure of human heart.

Q.30 Write short note of pacemaker.

Q.31 Draw block diagram of ultrasound machine.

Q.32 Which type of electrodes are used for EMG measurements

Q.33 Differentiate between micro shock and macro shock.

Q.34 Explain active and passive transducers.

Q.35 What are biological amplifiers and name their types.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. $(2 \times 10 = 20)$

Q.36 Draw the block diagram of EEG machine and explain its working.

Q.37 What are the various safety aspects of medical instruments.

Q.38 Write short note on any two

- a) Electrode tissue interface
- b) Normal ECG waveform
- c) Defibrillator