

4th Sem, **Branch** : Eltx. Engg.**Subject** : Medical Electronics**Time** : 3 Hrs.**M.M.** : 100**SECTION-A**

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

- Q.1 Electrodes to measure EEG are placed on \_\_\_\_\_  
a) Forehead                      b) Scalp  
c) Cheeks                        d) Ears
- Q.2 Which of the following is an example of internal electrodes?  
a) Needle electrode      b) Suction electrode  
c) Metal plate electrode d) Floating electrode
- Q.3 \_\_\_\_\_ is the way toward recording the electrical action of the heart over some stretch of time.  
a) EEG\                        b) ECG  
c) EMG                        d) MRI
- Q.4 Which of the following is not an example of therapeutic equipment?  
a) Nebuliser                      b) Pacemaker  
c) Ventilator                      d) ECG machine
- Q.5 LVDE works on the principle of \_\_\_\_\_  
a) Variable resistor      b) Variable inductance  
c) Variable capacitance d) Variable pressure

- Q.6 What is the average heartbeat of Human being?

a) 100                              b) 72  
c) 60                              d) 82

- Q.7 MRI stands for \_\_\_\_\_

a) Magnetic radio imaging  
b) Moving radio imaging  
c) Magnetic resonance imaging  
d) None of the above

- Q.8 What is the signal amplitude of EMG?

a) 1.5-5.0 volts                  b) 0.1-9.0 volts  
c) 2.5-5.0 volts                  d) 0.1-5.0 volts

- Q.9 ECG stands for \_\_\_\_\_

a) Electro cardio gram  
b) Electro cardio graph  
c) Electrical cardio graph  
d) None of the above

- Q.10 CT' stands for \_\_\_\_\_ of CT scan.

a) Cardiac tomography  
b) Computed tomography  
c) Computer transducer  
d) None of the above

**SECTION-B**

**Note** : Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 What is a tissue?
- Q.12 How much blood is pumped by human heart?
- Q.13 Name different types of lobes of cerebrum.

- Q.14 Name any two diagnostic equipment.
- Q.15 Whether MRI is a diagnostic equipment or a therapeutic equipment?
- Q.16 What is the frequency range of ECG machine? (0.05 to 120 Hz)
- Q.17 What is the device scientific name of blood pressure meter?
- Q.18 What is the use of Spirometer?
- Q.19 What is gross shock?
- Q.20 What is the standard number of electrodes used in ECG diagnostic test.

### SECTION-C

**Note :** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 What is pressure transducer? Explain any one briefly.
- Q.22 What is the purpose of defibrillator?
- Q.23 What is the need of cardiac pacemaker?
- Q.24 Distinguish between clinical laboratory equipment differ from diagnostic equipment.
- Q.25 Write a short note on heart rate measurement.
- Q.26 What do you mean by bio-senor? What is its working principle?
- Q.27 Give the basic of contact impedance.
- Q.28 Explain the methods to measure temperature of the body.
- Q.29 Distinguish between ECG and EMG.

- Q.30 What are the various safety aspects of medical equipment?
- Q.31 What is EEG machine? Draw and explain block diagram of EEG machine.
- Q.32 Draw and explain ECG waveforms.
- Q.33 Write a short note on X-ray machine.
- Q.34 What is leakage current?
- Q.35 Draw and explain block diagram of respiration rate monitor.

### SECTION-D

**Note :** Long Answer type question. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain in detail, how electrodes are classified on the basis of application and place where they are placed?
- Q.37 Describe the MRI system with neat and clean block diagram. Briefly explain function of each block.
- Q.38 Write a short note on any two of the following:
- Role of electronics engineers in medical electronics.
  - Photoelectric transducer.
  - Safety standards of medical instruments.