

- Q.24 Explain Einthoven's Triangle with diagram.
- Q.25 Explain EMG with block diagram.
- Q.26 Write a note on muscular system & its functions.
- Q.27 Explain various electrodes used in EEG measurements.
- Q.28 Write a short note on blood pressure measurement by direct method.
- Q.29 Explain central monitoring system.
- Q.30 Write a note on Brain waves.
- Q.31 Explain different body potential & explain generation of bio-potential in body.
- Q.32 Explain Biomedical simulator.
- Q.33 Explain Effects of artifacts in ECG tracing. Also discuss general instructions in ECG procedure.
- Q.34 Write a short note on noise in medical instrumentation.
- Q.35 Explain bed side monitor with diagram.

#### SECTION-D

**Note: Long answer questions. Attempt any two questions out of three Questions. (2x10=20)**

- Q.36 Explain EEG & Its measurements with diagram.
- Q.37 Explain Heart lung machine with diagram.
- Q.38 Write note on following:
- a) Mechanics of Respiration
  - b) Lithotripter

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**3rd Sem. Branch : Med Eltx.**  
**Sub.: Biomedical Instrumentation -I /**  
**Biomed Instr./ Basic of Instr.**

Time : 3 Hrs. M.M. : 100

#### SECTION-A

**Note: Multiple type Questions. All Questions are compulsory. (10x1=10)**

- Q.1 Which is not a Radiology & imaging equipment.
- a) X-Ray Machine b) CT-Scan
  - c) Ultrasound d) Pulse Oximeter
- Q.2 One cardiac cycle completes about
- a) 3 Sec b) 2 Sec
  - c) 0.8 Sec d) 0.5 Sec
- Q.3 The Term "MONTAGE" is used in
- a) EEG b) ECG
  - c) EMG d) ERG
- Q.4 What is the frequency range of ECG Signal?
- a) 70-120 Hz b) 0.05-100 Hz
  - c) 5-120 Hz d) 12-200 Hz

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- Q.5 EEG Electrodes are placed on
- a) Forehead                      b) Cheek
- c) Ears                              d) Scalp
- Q.6 Recording of Electrical activity of Muscles is called
- a) ERG                              b) EEG
- c) EMG                              d) EOG
- Q.7 Which is not a blood component?
- a) RBC                              b) Platelets
- c) Neuron                          d) Plasma
- Q.8 Heart rate of a healthy person in resting state should be:
- a) 90 Beats/minute              b) 72 beats/minute
- c) 120 beats/minute              d) 45 beats/minute
- Q.9 Which instrument is used for listening heart sounds?
- a) Stethoscope                      b) Endoscope
- c) Colonoscope                      d) Proctoscope
- Q.10 Which is called Natural Pacemaker?
- a) Aorta                              b) SANode
- c) AVNode                              d) Bundle of HIS

## SECTION-B

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

- Q.11 Expand ECG.
- Q.12 Transducer.
- Q.13 Systole.
- Q.14 Expand IBP.
- Q.15 What is Breathing Rate.
- Q.16 Expand CSF.
- Q.17 What is the normal Blood pressure level in fasting stage of a healthy person?
- Q.18 What is called Natural Pacemaker of body?
- Q.19 What do you mean by  $sPo_2$ ?
- Q.20 What is Residual Volume?

## SECTION-C

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

- Q.21 Discuss any two biomedical signals and their generation.
- Q.22 Write a short note on perspective of Biomedical Engineering.
- Q.23 Explain various ECG Electrodes.