

- 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 type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain EEG & its measurements with diagram

Q.37 Explain Heat lung machine with diagram.

Q.38 Write note on following:

  - a) Mechanics of Respiration
  - b) Lithotripter

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**3rd Sem / Medical electronics  
Subject:- Bio-Medical Instrumentation (BMI) - I /  
Biomed. Instr./ Basic of Instr.**

Time : 3Hrs. M.M. : 100

## **SECTION-A**

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

- Q.1 What are the frequency range of ECG signal?

  - a) 70-120 Hz
  - b) 0.05-100 Hz
  - c) 5-120 Hz
  - d) 12-200 Hz

Q.2 EEG Electrodes are placed on

  - a) Forehead
  - b) Cheek
  - c) Ears
  - d) Scalp

Q.3 Recording of Electrical activity of Muscles is called

  - a) ERG
  - b) EEG
  - c) EMG
  - d) EOG

Q.4 Which is not a blood component ?

  - a) RBC
  - b) Platelets
  - c) Neuron
  - d) Plasma

- Q.5 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.6 What is the signal amplitude of ECG Signal ?  
 a) 0.02-5 wv      b) 0.5-1 wv  
 c) 0-10 wv      d) 0-20 wv
- Q.7 Letter T in EEG measurement denotes.  
 a) Temporal Lobe      b) Tympanic membrane  
 c) Trace      d) Temper
- Q.8 The material used in limb surface electrode is  
 a) Gold      b) Copper  
 c) Platinum      d) German silver
- Q.9 Which instrument is used for listening heart sounds ?  
 a) Stethoscope      b) Endoscope  
 c) Colonscope      d) Protoscope
- 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 EMG  
 Q.12 Electrode  
 Q.13 Systole  
 Q.14 Expand NIBP  
 Q.15 What is Respiration Rate  
 Q.16 Expand CNS  
 Q.17 What is the Normal Glucose level in fasting stage of a healthy person ?  
 Q.18 What is called Natural Pacemaker of body?  
 Q.19 What do you mean by  $\text{SPO}_2$ ?  
 Q.20 What is Tidal 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.  
 Q.24 Explain Einthoven's Triangle with diagram.