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223251

**5th Sem. / Medical Electronics**  
**Subject : Troubleshooting & Maintenance of**  
**Bio Medical Equipment**

Time : 3 Hrs.

M.M. : 60

**SECTION-A**

**Note: Multiple Choice Questions. All Questions are compulsory. (6x1=6)**

- Q.1 Electrodes used for recording EMG
- a) Limb Electrodes
  - b) Pre-gelled disposable electrodes
  - c) Floating electrodes
  - d) Needle Electrodes
- Q.2 EEG Signal frequency range
- a) 0.1 to 50hz
  - b) 0.5 to 50hz
  - c) 0.2 to 70hz
  - d) None of the above
- Q.3 Chest Electrodes are placed in \_\_\_\_\_ positions.
- a) 2
  - b) 5
  - c) 6
  - d) 10
- Q.4 The cause of first heart sound is closure of
- a) AV valves
  - b) Semilunar valves
  - c) Mitral valve
  - d) Pulmonary valve

- Q.5 Breathing rate of a healthy person in resting state should be-
- a) 10-80 Breaths/min    b) 0-40 Breaths/min  
c) 12-20 Breaths/min    d) None of the above
- Q.6 Doppler effect used to detect
- a) Sugar flow                      b) Lungs beat  
c) Blood flow                      d) None of the above

### Section-B

**Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)**

- Q.7 Expand SIMV.
- Q.8 Preventive Maintenance.
- Q.9 Fuse.
- Q.10 Expand SMPS.
- Q.11 Leakage current.
- Q.12 Trouble shooting

### Section-C

**Note: Short answer type Question. Attempt any eight questions out of Ten Questions. (8x4=32)**

- Q.13 Discuss various types of fuses used in medical equipment.
- Q.14 Explain ECG Machine & its electrodes.

- Q.15 Explain USP system with classification.
- Q.16 Explain constant voltage Transformer.
- Q.17 Write a note on Preventive Maintenance.
- Q.18 Explain Micro-Shock & Macro-shocks hazards of medical instruments.
- Q.19 Explain construction & working of Multi parameter monitor.
- Q.20 Write a note on different ventilation Modes.
- Q.21 Explain OT Light with diagram.
- Q.22 Explain Annual Maintenance contract.

### Section-D

**Note: Long answer questions. Attempt any two question out of three Questions. (2x8=16)**

- Q.23 Explain various physiological effects due to 50Hz current passage.
- Q.24 Explain Principle, working & maintenance of syringe pump with diagram.
- Q.25 Explain Principle, working & maintenance of operation theatre Table with diagram.