Code No: RR321003 **Set No. 1**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2007
BIO-MEDICAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is meant by central neurons system? Explain the different parts of it and their activity.
   (b) What are bioelectric potentials? Discuss the frequency and voltage range of ECG, EEG, EMG and ERG signals. [6+10]
2. (a) Bring out the salient features of phonocardiography.
   (b) Explain in detail the origin of different heart sounds. [8+8]
3. (a) Draw the electrical equivalent circuit of a microelectrode and explain its electrical nature.
   (b) Discuss the different types of surface electrodes and their uses. [8+8]
4. (a) Explain the measurement of conduction velocities in motor nerves.
   (b) Discuss any two types of FM transmitters with their merits & demerits, used for the transmission of EMG signal. [6+10]
5. (a) Explain in detail the genesis of the ECG signal.
   (b) Draw and explain the Einthonen triangle and prove the Einthoren triangle. [6+10]
6. (a) Explain the clinical value of the EEG and also describe the various characteristics of an abnormal EEG.
   (b) Discuss about the type of electrodes used in the measurement of EEG and also different locations of these electrodes on the skull in order to take the EEG. [8+8]
7. (a) Describe the principle and working of a computer based arrhythmia monitoring system.
   (b) Explain the indirect methods of measurement of blood pressure in detail. [8+8]
8. (a) Explain the types of leakage currents.
   (b) What are the precautions to be taken to minimize electric shock hazards? [8+8]

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Code No: RR321003 **Set No. 2**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2007
BIO-MEDICAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Describe the different Physiological systems of the body.
   (b) Give an account on the different chemical compositions in the intra and extra cellular fluids and their effects in the case of blood serum . [8+8]
2. (a) Bring out the salient features of phonocardiography.
   (b) Explain in detail the origin of different heart sounds. [8+8]
3. (a) What are the different types of electrodes? Discuss the advantages and disadvantages of them?
   (b) What are the various errors associated with electrodes in measurement of body potential. [10+6]
4. (a) Draw and explain a typical strength-duration curve.
   (b) Derive the expressions for rheobase and chronaxie. [8+8]
5. Write short notes on
   (a) Electrodes and leads in ECG
   (b) Einthonen triangle. [8+8]
6. (a) With a neat block diagram explain the working principle and operation of various blocks in an EEG recorder.
   (b) What type of electrodes are used and how they are placed on the skull in order to record EEG signal. Explain with a neat sketch. [8+8]
7. (a) With the help of a neat block diagram explain the working of an internal pace maker.
   (b) With a neat diagram explain the operation of an Arrythmia monitor. [8+8]
8. (a) With a neat block diagram explain the different elements involved in the biotelemetry.
   (b) What are the problems associated with the implant telemetry circuits. [8+8]

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Code No: RR321003 **Set No. 3**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2007
BIO-MEDICAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With neat diagrams explain the terms Resting Potential and Active potential . How are these generated in Muscles?
   (b) With the help of sketches explain about polarized cell and depolarized cell. [8+8]
2. (a) With the help of a neat sketch explain about the physiology of the heart.
   (b) What are the different parts and how bioelectrical potentials are generated within it? [8+8]
3. (a) What is half cell potential? Explain briefly.
   (b) With neat sketches explain the sources of noise while recording low level signals? [6+10]
4. (a) What are the different types of muscles? Explain the importance of motor unit in the muscular contraction.
   (b) Discuss about the various electrodes used in EMG. [10+6]
5. Write short notes on
   (a) Electrodes and leads in ECG
   (b) Einthonen triangle. [8+8]
6. (a) With a neat block diagram explain the working principle and operation of various blocks in an EEG recorder.
   (b) What type of electrodes are used and how they are placed on the skull in order to record EEG signal. Explain with a neat sketch. [8+8]
7. (a) With a circuit diagram explain the working of a short wave diathermy unit.
   (b) Explain the terms w.r.t shortwave diathermy treatment:
      i. Condensor method.
      ii. Inductive method. [8+8]
8. (a) Explain the types of leakage currents.
   (b) What are the precautions to be taken to minimize electric shock hazards? [8+8]

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Code No: RR321003 **Set No. 4**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2007
BIO-MEDICAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) With neat diagrams explain the terms Resting Potential and Active potential . How are these generated in Muscles?
   (b) With the help of sketches explain about polarized cell and depolarized cell. [8+8]

2. Write notes on any two of the following:
   (a) Sources of Bioelectric potentials
   (b) Electro physical properties of muscles. [8+8]

3. (a) Define Half cell potential. What are polarizable and non polarizable electrodes.
   (b) What are the uses of the electrode paste applied during biomedical recording? [10+6]

4. (a) Describe the components of a typical EMG recording system.
   (b) What are the technical differences between the recorders used for EMG and ECG? [8+8]

5. (a) Discuss the various lead configurations of ECG recording.
   (b) Give the six positions of the chest electrodes used in the precordial lead system. [10+6]

6. (a) What is meant by the 10 - 20 EEG electrode placement system? Describe it.
   (b) Name five common EEG machine malfunctions. [10+6]

7. (a) With the help of a neat block diagram explain the working of an external pacemaker.
   (b) Write short notes on short wave diathermy. [8+8]

8. Write short notes on:
   (a) Displays used in patient monitoring system.
   (b) Calibration and repeatability of patient monitoring equipment. [8+8]

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