Code No: 07A61002 **R07** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
BIO-MEDICAL INSTRUMENTATION
Electronics And Instrumentation Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Describe the electrical conduction of the heart and its resulting ECG waveform. [16]
2. With a suitable figure explain the 10-20electrode system placement of EEG. [16]
3. Write short notes on:
   (a) Voltage pacemakers
   (b) Current pacemakers
   (c) Current limited voltage pacemakers. [5+5+6]
4. (a) Brief on the intelligent medical instrumentation system and its importance.
   (b) Discuss on the general constrains in design of medical instrumentation systems. [8+8]
5. Describe the principle of electromagnetic flowmeter with suitable figures and also discuss on various types of flow heads. [16]
6. Explain the electrical activity associated with one muscle with suitable figure. [16]
7. Explain on any two types of artificial mechanical ventilators . [16]
8. Discuss on the four types of brain waves and their occurrences. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A61002 **R07** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
BIO-MEDICAL INSTRUMENTATION
Electronics And Instrumentation Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Explain the importance of calomel electrode and Discuss its electrical characteristics. [16]
2. (a) Explain the various types of electrodes used for EEG with suitable figures.
   (b) Discuss the specifications of the EEG machine. [8+8]
3. Derive the expression for the Nernst equation for the resting membrane potential and explain in detail each step involved in derivation. [16]
4. Discuss the ECG lead system and its various methods. [16]
5. Discuss in detail on the five objectives of any medical instrument. [16]
6. Discuss on the generation of systolic and diastolic pressure associated with heart. [16]
7. Classify various types of ventilators based on inspiratory phase, pressure and safety limit and explain each. [16]
8. With the help of the block diagram explain the blood leak detector for the dialysis. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A61002 **R07** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
BIO-MEDICAL INSTRUMENTATION
Electronics And Instrumentation Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Explain the stimulators incorporated in the EMG machine. [16]
2. (a) Explain the electrical activity associated with one contraction in a muscle with suitable figures.
   (b) Discuss in detail on the neuromuscular junction and its conduction system. [8+8]
3. (a) Explain the various blocks in detail with suitable figures for biomedical instrumentation system.
   (b) Discuss on the various types of bio-amplifiers required in design of medical instrument with suitable figures. [8+8]
4. Explain the skin contact impedance and discuss on the motion artifact problem in bio-potential measurement. [16]
5. Write short notes
   (a) Patient isolation circuits
   (b) CMRR improvement circuits. [8+8]
6. Brief on pulmonary and systemic circulation of the heart with the help of suitable figures. [16]
7. Write short notes on
   (a) Volume ventilators
   (b) Pressure ventilators. [8+8]
8. Explain the haemodialysis machine with the help of schematic diagram. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A61002 **R07** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
BIO-MEDICAL INSTRUMENTATION
Electronics And Instrumentation Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Describe the need of biochemical electrodes for a living system and its applications. [16]
2. Explain the conduction through nerve to neuromuscular junction. [16]
3. Describe the classification of pacemakers with suitable applications for each. [16]
4. Explain about mechanical activity of the heart and its output. [16]
5. Describe how the conduction velocity is required during the measurement of EMG signal and its significance. [16]
6. Write short notes on
   (a) Sine wave flowmeters
   (b) Square wave flowmeters. [8+8]
7. Describe a simple positive pressure ventilator with suitable block diagram. [16]
8. Discuss on the various Problems encountered with measurements from human being. [16]

⋆ ⋆ ⋆ ⋆ ⋆