

**III B.Tech I Semester Regular Examinations, November 2006**  
**BIO-MEDICAL EQUIPMENT**  
**(Bio-Medical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Explain briefly preamplifier, filters and writing part used in EEG? How is evoked potentials recorded in EEG and discuss various waveforms of EEG? [16]
2. What is a Buffer solution? How is it helpful in  $P^H$  measurements. How is  $P^H$  of a solution measured . Explain any one method? [16]
3. (a) What is a phonocardiograph? Explain the origin of heart sounds? Explain how it is measured using a phonocardiograph? [8]  
(b) List out general considerations for bioelectric recorder amplifier? [8]
4. (a) Give the classification of pacemakers? Explain the principle of operation of n-demand external pacemaker? [8]  
(b) what are the different safety measures to be taken while using Defibrillators? [8]
5. Explain the principle of operation of ultrasound Diathermy. List its applications. [16]
6. What is Nebulizer? Explain nebulizer system used in anesthetic delivery System? [16]
7. What is the use of recorder in medical system? Discuss any two types of recorders in detail. [16]
8. (a) What are the types of hazards a patient can face in a hospital? How are they eliminated? [8]  
(b) Bring out the importance of patient isolation? [8]

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1. Explain briefly preamplifier, filters and writing part used in EEG? How is evoked potentials recorded in EEG and discuss various waveforms of EEG? [16]
2. What is  $P^H$ ? What is the principle of  $P^H$  measurement? Discuss various types of electrodes used for  $P^H$  measurement? [16]
3. With neat schematic explain the indirect method of blood pressure measurement? [16]
4. What is the need for cardiac pacemaker ? Discuss various types of pacemakers? Explain with neat block diagram ventricular synchronous demand pacemaker? [16]
5. (a) Explain the production of microwave. [8]  
(b) with a neat schematic explain the microwave Diathermy? [8]
6. (a) What is the need of artificial ventilation ? Positive pressure ventilators are successful in treating pulmonary disorder patients than negative pressure ventilators. Discuss. [8]  
(b) Explain about the principle of operation about the Nebulizer? [8]
7. (a) With a neat block diagram explain the basic recording system. What are the general considerations for bioelectric recorder amplifier? [8]  
(b) What are general features of thermal recorder? [8]
8. List different leakage currents. Discuss a method to reduce it? [16]

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1. (a) Describe the origin of ECG and discuss its measurement in different configurations? [8]  
(b) Describe various types of electrodes used in ECG measurement? [8]
2. What is Chromatology ? With neat block diagram explain gas-liquid chromatograph? [16]
3. With neat schematic explain the indirect method of blood pressure measurement? [16]
4. (a) What does the pacemaker consist of? Explain the working of a typical pacemaker bring out the functional difference between demand and fixed type pacemaker. Is there any difference in the patient population of the above two pacemakers? [8]  
(b) what are the problems with leads and electrodes used in cardiac pacemaker? [8]
5. Explain the principle of operation of ultrasound Diathermy. List its applications. [16]
6. What is Nebulizer? Explain nebulizer system used in anesthetic delivery System? [16]
7. What is the use of recorder in medical system? Discuss any two types of recorders in detail. [16]
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1. (a) Describe the origin of ECG and discuss its measurement in different configurations? [8]  
(b) Describe various types of electrodes used in ECG measurement? [8]
2. What is Chromatology ? With neat block diagram explain gas-liquid chromatograph? [16]
3. (a) What are various indirect methods of blood pressure measurement and Explain any one in detail? [8]  
(b) Compare the advantages and disadvantages of direct and indirect blood pressure measurement? [8]
4. With a neat block diagram explain the programmable pacemaker . List its merits? [16]
5. (a) Infusion pumps and suction apparatus form a very important portion in the operation theatre. Explain the working of these two equipment. Give out the specifications of these machines? [8]  
(b) What is the principle of Diathermy? Bring out the difference between microwave and ultra sound diathermy. [8]
6. What is Nebulizer? Explain nebulizer system used in anesthetic delivery System? [16]
7. What is the use of recorder in medical system? Discuss any two types of recorders in detail. [16]
8. (a) With a necessary sketch explain how leakage current can be reduced in electro medical equipment? [8]  
(b) List the different precautions to be taken to prevent hazardous situations in a hospital? [8]

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