

Code No: 07A51106

**R07****Set No. 2**

III B.Tech I Semester Examinations, May 2011  
BIOMEDICAL EQUIPMENT  
Bio-Medical Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. What is the principle behind chromatography? Discuss various types of Chromatographs, explain any one in detail. [16]
2. (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?  
(b) What are the problems with leads and electrodes used in cardiac pacemaker? [8+8]
3. (a) Discuss and justify the various differential amplifiers in the field of biomedical instrumentation.  
(b) Describe the frequency response and its importance while designing. [8+8]
4. What is Nebulizer? Explain nebulizer system used in anesthetic delivery System? [16]
5. Discuss on the cardiocotograph and its associated instruments for foetal monitoring. [16]
6. Describe on Micro shock and its maximum permissible leakage current through heart. [16]
7. Write short notes on:
  - (a) Dialysate pump.
  - (b) Conductivity cell.
  - (c) Blood pump.
  - (d) Blood leak detector. [4+4+4+4]
8. Discuss the different clinical electrodes used in ECG measurement. Explain how TMT is measured. [16]

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Set No. 4

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1. (a) Brief on the characteristics of galvanometers used in direct recorders.  
(b) Discuss on the effect of damping and its importance in recording. [8+8]
2. Write short notes on:
  - (a) Leakage current in patient leads
  - (b) Ground -Continuity test
  - (c) Safety codes for equipment. [5+5+6]
3. (a) With a block diagram explain the cell identification system.  
(b) Discuss the errors occurring in the electric cell counting technique. [8+8]
4. Explain the principle involved in the construction of IABP with suitable figure. [16]
5. (a) Bring out the principle of electro surgery equipment in a hospital, with the necessary diagram?  
(b) Explain about High frequency hazards, explosion hazards and how do you rectify them? [8+8]
6. Describe the ultrasonic Doppler shift based FHR measuring circuit with suitable figures. [16]
7. (a) Discuss the difference between external and internal pacemakers. Explain all the types of pacemakers based on the type of output waveform.  
(b) Discuss the Reliability aspects of cardiac pacemakers. [8+8]
8. Discuss on calibration procedures and principles used in the TMT measurement. [16]

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**R07**

**Set No. 1**

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Bio-Medical Engineering**

**Time: 3 hours**

**Max Marks: 80**

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

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1. With its suitable figures write short notes
  - (a) KIIL dialyser.
  - (b) hollow fibre dialyser. [8+8]
2. (a) Explain the working of defibrillator analyzer.  
(b) Write an electrode placement schemes for external defibrillation, with neat figures. [8+8]
3. List different grounding conditions. Discuss a method to reduce it. [16]
4. (a) Discuss on the various important parameters to be monitored with Arrhythmia monitor.  
(b) Brief on the QRS detection techniques in the arrhythmia monitor. [8+8]
5. What is chromatology? With a neat block diagram explain a solid liquid chromatograph. [16]
6. (a) Explain the working of nebulizers in the hospital environment?  
(b) Discuss the advantages and disadvantages of different types of ventilators? [8+8]
7. Brief on the various volumes , pressures and capacities with suitable figures. [16]
8. Explain the need and requirement for signal amplifier and conditioners for designing the biomedical instrument. [16]

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**Set No. 3**

**III B.Tech I Semester Examinations, May 2011**  
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**Bio-Medical Engineering**

**Time: 3 hours**

**Max Marks: 80**

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

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1. Explain the working of artificial kidney. Also mention how it is different from the natural one. [16]
2. Discuss in detail the physiological effects of electric current on the human body. [16]
3. (a) Explain a simple recording system with the help of basic block diagram.  
(b) Discuss in detail on the various types of transducers. [8+8]
4. Explain in detail any two types of chromatograph techniques used in laboratories and also discuss on its applications. [16]
5. (a) Bring out the principle of phonocardiography. Bring out the mechanical Sequences associated with the various heart sounds?  
(b) Describe briefly about foetal phonocardiogram. [8+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.  
(b) Explain about the principle of operation about the Nebulizer. [8+8]
7. Discuss in detail the on implantable pacemakers and also its batteries. [16]
8. Explain about the direct method of measuring blood pressure with suitable circuit diagram for measuring systolic and diastolic blood pressure. [16]

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