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This question paper contains 1 printed page

Roll No.....

Unique Paper Code : 2513010013  
Name of the paper : Medical Electronics and Instrumentation (DSE)  
Name of the Course : B.Sc.(H) Electronics (NEP)  
Semester : VI  
Duration : 3 Hrs  
Maximum Marks : 90

Instructions for candidates:

All questions carry equal marks

Attempt any five questions in all including question no. 1 which is compulsory.

Use of non-programmable Scientific Calculator is allowed

1.
  - a) Define ECG. (3)
  - b) Write the effect of power line interference in bio signal recording? (3)
  - c) What is the need for band pass filters in biological pre-amplifiers? (3)
  - d) What transducers are used in a blood oximeter? (3)
  - e) What is korotkoff sound? (3)
  - f) What is the origin of biomedical signals? (3)
2.
  - a) What are the different artefacts encountered while recording EEG? (6)
  - b) Discuss the different components of EEG measurement. Discuss the desired features of electromyography. (6)
  - c) What are the components of a bedside monitor? Explain briefly their functions. (6)
3.
  - a) What is a CT scan? How is it different from a conventional X-ray? Briefly discuss the processes involved in a conventional CT-Scan. (6)
  - b) What is an MRI scan? Discuss the basic principle behind an MRI scan? What precautions or prerequisites are necessary for an MRI scan? (6)
  - c) Discuss the functioning of a Doppler scan. How is it different from a sonographic scan? (6)
4.
  - a) Discuss the physiological body system involving the cardiovascular system. (6)
  - b) Elaborate on the use of microprocessors/microcontrollers in medical instruments. (6)
  - c) Briefly discuss the different types of transducers used in various medical instruments. (6)
5.
  - a) What precautions one needs to follow to minimize electric shock hazards? (6)
  - b) Explain the working of Blood flow meters. (6)
  - c) Draw the block diagram of a microprocessor controlled ventilator (6)
6.
  - a) Discuss the Nervous system of the human body. (6)
  - b) Explain the working of a cardiac pacemaker. How is it useful to a patient? (6)
  - c) Discuss the principle behind NMR imaging and the components involved. (6)
7.
  - a) Discuss the various parameters measured in a cardiovascular monitoring system. (6)
  - b) Describe the working of an Electric safety analyser. (6)
  - c) Discuss the functioning of Blood gas analysers (6)