Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 31273

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Sixth Semester

Electronics and Communication Engineering

080290046 – MEDICAL ELECTRONICS

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is meant by perfectly polarized and Non-Polarized electrodes?

2.   Draw the relationship between action potential and muscle contraction.

3.   Define cardiac output. Also give the reason for decrease of cardiac output.

4.   What are the factors that affect the speed of migration in electrophoresis?

5.   How to treat fibrillation problems?

6.   Draw the different types of waveforms are used in Electrotherapy.

7.   What is the principle of computer axial tomography?

8.   Define Nuclear Magnetic Resonance.

9.   What is radio pill?

10. What is Arrhythmia?

PART B — (5 × 16 = 80 marks)

11. (a) (i)   Explain in detail various types of bio-potential electrodes.   (10)

          (ii) Explain the characteristics of resting Potential.   (6)

Or

     (b) Explain the working of

          (i)   ECG Recording Method

          (ii) EMG Recorder.   (8+8)

12. (a) Explain the following Cardiac output measurement techniques

    (i) Fick's Method (5)

    (ii) Impedance Change (5)

    (iii) Indicator dilution method. (6)

Or

(b) (i) Explain the principle of Electromagnetic blood flow meter. (8)

    (ii) Write short notes on Pulmonary function analyzers. (8)

13. (a) (i) Explain the working principle of capacitive discharge type of cardiac defibrillator with neat circuit diagram. (8)

    (ii) Explain the working of heart lung machine. (8)

Or

(b) (i) With a neat block diagram, explain the operation of dialyzer machine. (10)

    (ii) Write short notes on cutting and coagulation waveform in surgical diathermy. (6)

14. (a) Explain the operation of computer tomography by using the mathematical basis of image construction. Mention its application. (16)

Or

(b) Explain the following

    (i) MRI System (8)

    (ii) Ultrasonic Imaging System. (8)

15. (a) (i) Explain the latest trends in diagrams and therapy in medical field. (8)

    (ii) With neat block diagram explain the design process of Pattern recognition. (8)

Or

(b) (i) Explain the role of Expert Systems. (8)

    (ii) Explain the VLSI design tools in medical application. (8)

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