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B.E. (Part Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2013

Electronics and Communication Engineering

Seventh Semester

37

PTEC 541 / PTEC 9351 – MEDICAL ELECTRONICS

(Regulation 2005/ 2009)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Define action potential and resting potential of a cell.
2. Draw and list the characteristics of an instrumentation amplifier and give its advantage.
3. Mention the transducers used for measurement of temperature, pulse and respiration.
4. Mention the uses of Electrophoresis.
5. Draw the air and bone conduction responses of normal ear.
6. What is ultra filtration?
7. Draw the current waveforms normally used in electro diagnostic and electrotherapy.
8. List the applications of bio-telemetry?
9. Draw the cut and coagulation waveform in electro surgical diathermy unit and also state the significance of it.
10. What are cryogenics? List few applications

Part – B (5 x 16 = 80 marks)

11. Draw the Einthoven triangle and explain the various type of lead connections with typical ECG waveforms
12. a) With neat diagrams explain the working principle of any one
 - (i) Electrophoresis
 - (ii) Calorimeter

OR

- b) Explain the principle of working of electromagnetic blood flow meter.
13. a) Discuss the types of implantable pacemakers with neat diagrams.

OR

- b) With neat block diagram discuss the working principle of a heart lung machine, and types of oxygenators used.

14. a) With neat block diagram explain the diagnostic / therapeutic stimulating unit and its advantages.

OR

- b) Define the terms Earth leakage current and Patient Leakage current.
Draw and explain the electrical safety unit with various tests involved in it.

15. a) Explain the principle of different types of lasers in medicine and give their applications.

OR

- b) Explain the various types of electrosurgery technique commonly used in surgical diathermy machines.