Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 11297

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Sixth Semester

Electronics and Communication Engineering

EC 2021/EC 601/EC 1001 — MEDICAL ELECTRONICS

(Regulation 2008)

(Common to PTEC 2021 – Medical Electronics for B.E. (Part-Time) Seventh Semester – ECE – Regulation 2009)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name the electrodes used for recording EMG and ECG.
2. What is PCG?
3. What is an autoanalyser? What are the essential units in it?
4. Give the typical values of blood pressure and pulse rate of an adult.
5. Specify the frequencies used for biotelemetry.
6. What are the batteries used for implantable pacemaker?
7. What is meant by ionising radiation?
8. What is a betatron? What is its application?
9. Give the types and frequencies of operation of diathermy units.
10. Mention the applications of laser in ophthalmology.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What should be the characteristics of biopotential amplifier? Explain with proper justification. (8)

(ii) Write about 10-20 system of recording EEG. (8)

Or

(b) (i) Explain the origin of biopotential. (8)

(ii) Draw a typical ECG waveform and mark the important features and the associated function of the heart. (8)

12. (a) Explain the principle of operation of Coulter counter. What is its application?

Or

(b) Explain the working principle of electromagnetic blood flow meter. What are its advantages and disadvantages?

13. (a) (i) With neat diagram, Describe the function of ventricular inhibited pacemaker. (8)

(ii) What is a radiopill? Explain with the help of an example. (8)

Or

(b) How is atrial fibrillation arrested? Explain with the help of relevant diagram of the setup.

14. (a) Draw the setup of a typical diagnostic X-ray unit and explain, with proper justification, the need for each component in it.

Or

(b) Explain the principle of operation of scintillation detectors. How is it modified for in vivo application?

15. (a) (i) Discuss about Electrical Safety in Medical Equipment. (8)

(ii) What is an endoscope? Justify the need for each of the essential components in it. What are the applications of endoscope? (8)

Or

(b) Draw the basic setup of a medical thermograph unit and explain the function of each unit in it. Mention the applications of thermograph.
