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Question Paper Code : 80404

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth Semester

Electronics and Communication Engineering

EC 2021/EC 601/EC 1001/10144 ECE 11 — MEDICAL ELECTRONICS

(Regulations 2008/2010)

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

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the characteristics needed for Bio amplifier.
2. Compare the signal characteristics ECG and 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. What is Radio pill? Give its two uses.
6. What is meant by Bradycardia and Tachycardia?
7. State the components of ionizing radiation.
8. Specify the need for SPECT.
9. Define the term thermograph.
10. What is the principle of diathermy?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss about the different types of electrodes used in Bio potential measurement. (10)
(ii) Explain the measurement of EMG. (6)

Or

- (b) Draw and explain the different lead configurations and its significances in ECG. (16)
12. (a) Explain the principle of operation of Coulter counter. What is its application? (16)

Or

- (b) Explain the working principle of electromagnetic blood flow meter. What are its advantages and disadvantages? (16)
13. (a) Explain the working of DC defibrillator. (16)

Or

- (b) Give the importance of biotelemetry and also explain the different elements involved in biotelemetry circuit. (16)
14. (a) With the aid of suitable diagrams, explain the construction and operation of LINAC used in radiotherapy. Also, mention the safety precautions to be followed in radiotherapy. (16)

Or

- (b) With suitable illustration, explain the functional aspects of X-Ray machine. Discuss the role of each part of the circuit. (16)
15. (a) (i) What is Leakage current? Explain the impact of leakage in cardiac patient and how it can be avoided? (12)
(ii) List the therapeutic application of Laser. (4)

Or

- (b) With neat sketch explain the following :
- (i) Surgical Diathermy (8)
(ii) Endoscopy unit. (8)