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Question Paper Code : 73407

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

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. What are the requirements of a biological amplifier?
2. Draw the waveform of a typical PCG signal and label its components.
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. What are Soft and Hard X-rays?
8. Mention the characteristics required for the radio isotope to be used for medical imaging.
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 EEG. (16)
12. (a) Illustrate the procedure of a modern spirometry test conduction. Discuss the clinical implications of flow-volume graph. (16)

Or

- (b) Show the application of ultrasonic waves in measuring :
(i) Blood flow. (8)
(ii) Blood pressure. (8)
13. (a) Explain the working of DC defibrillator.

Or

- (b) Give the importance of biotelemetry and also explain the different elements involved in biotelemetry circuit.
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) 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)