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

Question Paper Code : 80312

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Sixth Semester

Electronics and Communication Engineering

EC 6001 — MEDICAL ELECTRONICS

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State all or none law.

2. What is meant by conduction velocity?

3. Define cardiac output.

4. State Beer's law.

5. Distinguish between endocardiac and myocardiac electrodes.

6. Mention few difference between internal and external defibrillator.

7. What are the choices of radio carrier frequency for medical telemetry purposes?

8. Define let go current.

9. Define the physical factors which affect the amount of infrared radiation from human body.

10. Mention few applications of lasers in medicine.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the genesis of ECG and explain the working of an ECG machine with suitable block diagram along with its various lead configurations. (16)

Or

(b) What is known as biopotential electrodes? Draw its equivalent circuit. Explain various types of biopotential electrodes with suitable diagram. (16)

12. (a) With suitable diagram describe how ultra sound principles are used in measuring the flow of blood. (16)

Or

(b) (i) Define blood pressure. How it can be measured using Sphygmomanometer? (8)

(ii) How the lung volume can be measured? Explain with necessary diagram. (8)

13. (a) How pacemakers are classified based on the modes of operation? Draw the block diagram of stand by and demand pacemakers and explain its working principle. (16)

Or

(b) Enumerate the following :

(i) Oxygenators. (8)

(ii) Peritonial dialysis. (8)

14. (a) Define diathermy. Draw the circuit diagram of a short-wave diathermy unit and discuss its impact on therapy purpose in detail. Also briefly describe how it can be applied to human subjects. (16)

Or

(b) (i) Explain the working of a ground fault interrupter. (8)

(ii) With suitable diagram, explain how the ECG signal can be transmitted using single channel telemetry system. (8)

15. (a) Explain the infrared thermographic instrumentation with a suitable block diagram and what are the different medical applications. (16)

Or

(b) (i) Write a note on cryogenic surgery. (8)

(ii) Write a note on endoscopy unit. (8)

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