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Question Paper Code : X 20416

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

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. List the types of Bioelectric potentials.
2. Sketch the PCG signal in synchronous with ECG signal.
3. Write the principle of colorimeter.
4. State the principle behind Rheographic method of blood pressure measuring technique.
5. What is the function of haemodialysis system ?
6. What types of electrodes are used in a defibrillator ?
7. What are the choices of radio carrier frequency for medical telemetry purposes ?
8. Define let go current.
9. What makes thermograph useful ?
10. List the properties of LASER beam.

PART – B

(5×13=65 Marks)

11. a) i) Draw the equivalent circuit of biopotential electrode interface and explain about half cell potential. (5)
ii) Explain the different types of electrodes used in biopotential measurement. (8)
(OR)
b) i) Draw and explain the 10-20 electrode system used for EEG measurement. (8)
ii) Explain the different lead systems used in an ECG recorder. (5)



12. a) i) Describe the measurement of PO_2 . (6)
ii) Explain the block diagram and working of colorimeter. (7)
- (OR)
- b) i) Define the term “Cardiac Output”. How is cardiac output measured by dye dilution technique ? Explain. (7)
ii) Describe the working of principle of electromagnetic blood flow meter. (6)
13. a) With a neat block diagram explain the principle of operation of a hemodialyzer machine. (13)
- (OR)
- b) Draw the block diagram of synchronized DC defibrillator and explain its working principle. (13)
14. a) Explain short wave and microwave diathermy.
- (OR)
- b) i) Discuss in detail about the various components of biotelemetry system. (9)
ii) Explain the working and construction of radio pill with an example. (4)
15. a) Explain the infrared thermographic instrumentation with a suitable block diagram and what are the different medical applications ?
- (OR)
- b) i) Write a note on cryogenic surgery. (7)
ii) Write a note on endoscopy unit. (6)

PART – C**(1×15=15 Marks)**

16. a) Explain the working of Heart Lung Machine (HLM) and state its application. Justify the scenarios where HLM can be used.
- (OR)
- b) Design a suitable amplifier that can be used in the front end of an ECG machine. Justify your by specifying the features of the selected amplifier.
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