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Question Paper Code : 40928

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
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. What are the requirements of bio amplifiers ?
2. State the importance of PCG signals.
3. What is colorimeter ? State its uses.
4. Define cardiac output. What are the methods used to measure cardiac output ?
5. What is the function of haemodialysis system ?
6. What types of electrodes are used in a defibrillator ?
7. List the devices used to protect against electrical hazards.
8. What does the term fulguration refer to ?
9. Define medical thermograph.
10. Mention the advantages of performing surgery using laser.

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) Discuss about the measurement of pH and pO_2 of the blood with the help of neat diagrams. (13)
- (OR)
- b) Explain the different techniques used in the measurement of pulse rate. (13)
13. a) Explain the different modes of cardiac pacemakers. (13)
- (OR)
- b) i) Explain the principle and operations of dc defibrillators. (6)
- ii) Elucidate the application of heart lung machine during open heart surgery. (7)
14. a) Explain the following :
- i) Short-wave diathermy. (6)
- ii) Microwave diathermy. (7)
- (OR)
- b) i) What is radio pill ? (5)
- ii) Draw the block diagram of single channel ECG telemetry system and explain the components. (8)
15. a) i) Write short notes on Helium-Neon Laser and its general applications in medicine. (8)
- ii) What is an endoscope ? With diagram, discuss its working. (5)
- (OR)
- b) i) Write notes on cryogenic surgery. (5)
- ii) Explain how telemedicine helps the patients and medical practitioners. (8)

PART - C

(1×15=15 Marks)

16. a) Compare the signal characteristics of ECG, EEG, EMG and PCG. (15)
- (OR)
- b) What is the need of electrical safety in hospital ? Discuss the various physiological effects of electricity. (15)