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

Question Paper Code : 90168

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Fifth Semester

Electronics and Communication Engineering

EC8073 – MEDICAL ELECTRONICS

(Common to : Electronics and Telecommunication Engineering)

(Regulations 2017)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A (10×2=20 Marks)

1. What are the important bands of frequencies in EEG and state their importance.
2. Define latency as related to EMG.
3. What is electrophoresis ?
4. State the uses of gas analyzers.
5. Distinguish between Internal and External pacemakers.
6. Mention the type of electrodes used in Defibrillator.
7. State the types of current that are used for medical applications.
8. What is the modulation techniques used for biotelemetry ? Mention the reason for adopting that modulation scheme.
9. What are the advantages of performing surgery using LASER ?
10. What is the purpose of using resuscitation unit ?

PART – B (5×13=65 Marks)

11. a) With a neat block diagram explain the working principle of ECG signal.

(OR)

b) Give a detailed account on the circuit model of Bio-potential electrodes and mention its types.

12. a) Explain the working principle and calibration procedure followed in collimeter with a neat diagram.

(OR)

b) With relevant diagram explain the construction and working principle of conductive and dark field blood cell counter.

13. a) Draw the block diagram of cardioverter and explain its working principle.

(OR)

b) Describe in detail the working of Heart lung machine.

14. a) Give a detailed account on biotelemetry transmitter and receiver. With relevant diagram explain the principle of Biolink PWM transmitter.

(OR)

b) Describe in detail about micro and macro shock. Explain the approaches to protection against shock.

15. a) Write the principle of Laser and give a detailed account on the types of laser.

(OR)

b) Describe the working principle and image acquisition technique using thermograph.

PART – C

(1×15=15 Marks)

16. a) A 6-year-old girl without any medical history experienced a drowning incident for a duration of 2 min, according to witnesses. This was followed by cardiopulmonary resuscitation, during which the Automatic External Defibrillator (AED) detected a shockable rhythm and subsequently delivered a single electroshock. At the time of admission, her medical history was unclear and as her chest had been wet, it was not clear if the AED had been capable of correctly analyzing the rhythm. The AED printout, however, revealed Ventricular Fibrillation (VF), which proved to be a primary cardiac cause at the time of the incident. Justify how the value of AED print out act as a diagnostic tool.

(OR)

b) Give a detailed account on the working principle of spectrophotometer.
