

B.E./B. Tech. DEGREE EXAMINATION, MAY/JUNE 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. List the important characteristics required for bioamplifier.
2. Mention the electrodes used to record biopotential from a single muscle fibre.
3. Define Cardiac output. Find the cardiac output of a person if his heart rate is 70 BPM and stroke volume is 70 ml.
4. State the different types of test performed using auto analyser.
5. Why are asynchronous pacemaker no longer used?
6. When do you need heart lung machine?
7. List the devices used to safeguard against electric hazards.
8. What is radio pill? Mention the application of radio pill.
9. State the applications of telemedicine.
10. List the types of pumping sources used in LASER.

PART - B (5 × 16 = 80 Marks)

11. (a) (i) Explain the international standard 12 lead system used to record ECG. (10)
(ii) List and discuss the characteristics and frequency bands of EEC signal. (6)

OR

- (b) (i) Discuss in detail about the origin of action potential and resting potential with necessary equations. (10)
(ii) Describe the typical recording setup of EMG. (6)
12. (a) (i) Describe the measurement of pH of blood using pH meter. (8)
(ii) Explain the measurement of respiration rate using spirometry technique. (8)

OR

- (b) (i) State and explain the working principle of electromagnetic blood flow meter. (8)
(ii) Briefly describe the working of coulter counter. (8)
13. (a) With a neat diagram explain the block diagram of arterial and ventricular triggered pacemaker. (16)

OR

- (b) Explain in detail the principle block diagram and working of haemodialyser. (16)
14. (a) (i) Explain the working and application techniques of shortwave diathermy. (10)
(ii) Discuss the different operations performed using surgical diathermy. (6)

OR

- (b) (i) Describe the physiological effects of electricity on humans. (10)
(ii) Write short notes on frequency selection for telemetry applications. (6)
15. (a) (i) What is thermography? Explain the block diagram of infrared imaging system. (10)
(ii) Describe the different operations performed using endoscopy. (6)

OR

- (b) (i) What is cryogenic? List some cryogenics agents with its operating temperature and explain how it is used to perform surgery. (10)
(ii) Write short notes on applications of LASER in medicine. (6)