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

Question Paper Code : 40424

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fifth Semester

Electronics and Communication Engineering

EC 8073 — 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. Brief about disposal electrode.
2. Define CMRR. Give its importance in physiological signal amplifiers.
3. What is a colorimeter?
4. Find the cardiac output of a person if his heart rate is 75 BPM and stoke volume is 75 ml.
5. What is A-mode in ultrasound imagining?
6. Compare hemodialysis and peritoneal dialysis.
7. What is fulguration?
8. Mention the principle behind ultrasonic diathermy.
9. What is Telemedicine?
10. Brief about Radio pill.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Discuss about the origin of Action potential and resting potential with necessary equations. (7)

(ii) Describe the typical recording setup of EMG. (6)

Or

(b) (i) Explain the International standard 12 lead system used to record ECG. (8)

(ii) List and discuss the important characteristics and frequency bands of EEG signal. (5)

12. (a) (i) Explain the measurement of respiration rate using impedance technique. (7)

(ii) How will you measures blood pressure using sphygmomanometer? (6)

Or

(b) Draw a block diagram of ultrasonic blood flow meter. Explain the method of measuring the velocity of blood flow using transit time principle and Doppler effect. (13)

13. (a) Discuss with suitable block diagram the different modes of operation of Cardiac pacemakers. (13)

Or

(b) Elaborate the principle of magnetic resonance imaging system with the help of appropriate illustrations. (13)

14. (a) Explain working principle of a surgical diathermy unit with a neat block diagram. (13)

Or

(b) Explain the multi channel biotelemetry system with neat diagram. (13)

15. (a) Discuss about :

(i) Endomicroscopy. (6)

(ii) Brain machine interface. (7)

Or

(b) Discuss about :

(i) Insulin pump. (7)

(ii) Applications of telemedicine. (6)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss about the unit that helps to detect our ion concentration in the blood.

Or

(b) Identify a device which shocks to the heart when it detects an irregular heartbeat. Explain the same with necessary illustrations. (15)

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