

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023****ELECTRICAL AND ELECTRONICS ENGINEERING****(2020 SCHEME)****Course Code : 20EET312****Course Name: Biomedical Instrumentation****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. With the help of a neat diagram write about physiology of respiratory system.
2. Identify the various problems encountered in biomedical measurements?
3. Explain about impedance plethysmography.
4. List the uses and write a note on phonocardiography.
5. With neat diagram explain the working of spirometer.
6. Enumerate the different rhythms in EEG with frequency ranges.
7. Explain the principle of MRI scanning.
8. Explain the principle of diathermy.
9. Write a note on infant incubators.
10. Explain the working of a heart lung machine.

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) Explain each components of a man instrument system with relevant block diagram. (9)
- b) Explain the anatomy of Human Nervous System with relevant diagrams. (5)

**OR**

12. a) List and explain the various types of transducers used in Biomedical engineering. (10)
- b) Distinguish between resting and action potential. (4)

**MODULE II**

13. a) Explain the working of Electro Cardiography Machine with suitable block diagram and waveform. (10)
- b) Compare direct and indirect blood pressure measurement. What is Korotkoff sound in blood pressure measurement? (4)

**OR**

14. a) Explain Einthoven triangle and mention its necessity. (7)  
b) Write a short note on photo electric plethysmography. (7)

**MODULE III**

15. a) Illustrate the working of Electroencephalogram with the help of a block diagram. (10)  
b) Elucidate about Pneumograph with suitable diagrams. (4)

**OR**

16. a) Explain Electromyogram recorder with the help of block diagram (10)  
b) Discuss the 10-20 system of EEG electrodes placement. (4)

**MODULE IV**

17. a) With neat diagram, explain the working of X-ray machine. What are the uses of X-rays in medicine? (10)  
b) Describe the procedure in lithotripsy. (4)

**OR**

18. a) With the help of diagram, explain i) hemodialysis ii) ultrasonic imaging system. (10)  
b) With the help of a neat diagram write about DC defibrillator. (4)

**MODULE V**

19. a) Enumerate about physiological effects of electric currents & write briefly about various susceptance parameters. (10)  
b) Enumerate different applications of telemedicine. (4)

**OR**

20. a) What are the chemical blood tests carried out in a clinical laboratory. (10)  
b) Describe the methods of prevention of shock hazards. (4)

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