Q. Code:493015

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

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Fifth Semester

EC18009 – MEDICAL ELECTRONICS

(Electronics and Communication Engineering)

(Regulation 2018 / 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Illustrate and explain various bio-potential measuring instruments.	**2**
CO 2	Distinguish and categorize bio chemical and Non electrical parameter measurements.	**4**
CO 3	Identify and differentiate various assist devices.	**3**
CO 4	Illustrate and explain the operation of therapeutic and telemetric devices.	**2**
CO 5	Identify and explain the operation of advanced diagnostic devices.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Define Sodium pump.	**1**	**2**
2.	Classify bio potential electrodes.	**1**	**3**
3.	What type of medical test can be performed using Auto Analyzer?	**2**	**2**
4.	What is meant by total lung capacity?	**2**	**2**
5.	Write the advantages and disadvantages of artificial heart valves.	**3**	**2**
6.	Distinguish between internal pacemaker and external pacemaker.	**3**	**3**
7.	What is the use of ultrasonic diathermy?	**4**	**2**
8.	List out the different types of earthing schemes.	**4**	**2**
9.	Mention a few applications of BMI based systems.	**5**	**2**
10.	State the advantages of magnetic resonance imaging.	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Explain the types of bio potential electrodes with neat diagrams.	**(14)**	**1**	**2**
	(OR)			
(b)	Explain the three types of ECG Lead configurations with neat diagrams.	**(14)**	**1**	**2**
12. (a)	Describe about the measurement of pH in blood.	**(14)**	**2**	**3**
	(OR)			
(b)	Enumerate the principle of blood cell Counter using a schematic diagram.	**(14)**	**2**	**3**
13. (a)	Discuss the principle of operation of a heart lung machine in supporting cardiac surgery.	**(14)**	**3**	**3**
	(OR)			
(b)	Analyze the functional blocks of digital hearing aids with neat block diagram and assess how each block contributes to the overall functionality of the device.	**(14)**	**3**	**3**
14. (a)	Explain in detail of ultrasound therapy. How do we control the dosage in ultrasonic therapy units?	**(14)**	**4**	**3**
	(OR)			
(b)	Explain how electrical safety is ensured for the biomedical equipments?	**(14)**	**4**	**3**
15. (a)	Discuss the applications of LASER in different fields of medicine.	**(14)**	**5**	**3**
	(OR)			
(b)	Describe the working principle of the single channel ECG telemetry system with a block diagram.	**(14)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Analyze the fundamental principle underlying magnetic resonance imaging including the concept of nuclear magnetic resonance used in medical imaging.	**(10)**	**5**	**4**

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