Roll No.

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2023

B.E. BIOMEDICAL ENGINEERING
V Semester
BM5501 & Diagnostic and Therapeutic Equipment- I
(Regulation 2019)

Time: 3hrs   Max.Marks: 100

CO 1	Apply different medical devices in the measurement of parameters related to Cardiology, Neurology.
CO 2	Use various cardiac assist devices.
CO 3	Measure and analyse signals generated by muscles.
CO 4	Perform continuous monitoring and transmission of vital parameters.
CO 5	Comprehend the need for special diagnostic and therapeutic devices and extra-corporeal

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	What is meant by HRV? State its significance.	2	1	2
2	Write short notes on Pacemaker batteries.	2	2	1
3	Explain the gate control theory of pain.	2	1	2
4	Draw and label the Normal VEP.	2	1	1
5	Differentiate between central fatigue and peripheral fatigue.	2	3	4
6	Explain the role of muscle stimulator in FES.	2	3	2
7	Write the differences between single and multi-channel Biotelemetry	2	4	4
8	Mention any 4 ICU equipments and its applications.	2	4	1
9	What is Lithotripsy? What are its types?	2	5	1
10	What is meant by polygraph?	2	5	1

PART- B (5 x 13 = 65 Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks	CO	BL
11 (a) (i)	What is Pacemaker? Give a detailed description of the components, working and different types of pacemakers.	13	2	2
	OR			
11 (b) (i)	Describe in detail defibrillator and its types.	13	2	2
12 (a)	Compare and contrast EEG and MEG.	13	1	4
12 (b) (i)	Compare and contrast Visual and Auditory evoked potentials.	13	1	4
13 (a)	Explain in detail (i) Electro Gastro Graph	7	3	2
	(ii) Magneto Myo Graph	6	3	2
	OR			
13 (b) (i)	What is TENS? Discuss the different types of TENS in detail	7	3	2
(ii)	How do you perform quantitative analysis of EMG signal?	6	3	2
14 (a) (i)	Explain Optical Biotelemetry	5	4	2

(ii)	Write brief notes on disposable hematology sensors	8	4	2
	OR			
14 (b)	Write notes on (i) Infusion Pumps	5	4	2
	(ii) Bedside monitors	8	4	2
15 (a)	Compare and contrast various types of oxygenators and pumps used in Heart Lung Machine.	13	5	4
	OR			
15 (b) (i)	Compare and contrast Tonometer and auto Refractometer.	13	5	4

PART- C (1 x 15 = 15 Marks)
(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16 (i)	Differentiate between Hemodialysis and Peritoneal dialysis.	5	5	4
(ii)	Explain in detail thermography.	10	5	2