APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Scheme for Valuation/Answer Key

Scheme of evaluation (marks in brackets) and answers of problems/key

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: BM482

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

			Marks
1	a)	Depolarisation(2marks) and repolarisation(2marks) of a cell membrane. Draw an action potential waveform for a cell membrane(3marks)	(7)
	b)	Classify pacemakers according to their placement(2X2=4marks). Discuss the encapsulation and power for an implantable pacemaker(4marks)	(8)
2	a)	Principle of LVDT(3marks) with the help of a suitable diagram(4marks)	(7)
	b)	Different waves(3marks) in ECG with the mechanical sequence of events performed by the heart,relation with mechanical events(5marks)	(8)
3	a)	Brief on any four features -Non-polarisable, biocompatible, good mechanical properties, less contact impedance, reduce motion artefact etc.(7marks)	(7)
	b)	Compare oscillometric and auscultatory methods for non-invasive blood pressure measurement(4X2=8marks)	(8)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	Identify method-Lithotripsy (1 mark), Principle (2 marks), Block diagram (3 marks), Explanation(2 marks)	(8)
	b)	Applications	(4)
	c)	Use of spirometry	(3)
5	a)	EMG – term definition(1 mark), block diagram(3 marks), working(4 marks)	(8)
	b)	Working principle with description of each component	(7)
6	a)	Diagram (4 marks), principle(4 marks)	(8)
	b)	Definition and characteristics of the waveform(3 marks)	(3)
	c)	Figure to place electrodes(4marks)	(4)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	Comparison of conventional X-ray(3D information on a 2D plane) and CT(sectional images reconstructed from projections)	(4)
	b)	X-ray tube and its associated circuits	(6)
	c)	Principle of US doppler with necessary schematic(7marks) and its applications(3marks)	(10)
8	a)	Principle of iterative reconstruction (4marks), illustration with example(6marks)	(10)
	b)	Principle of MRI(2marks), Schematic showing the components of MRI(4marks) and description of the components(4marks)	(10)
9	a)	(i) Detectors (6marks) (ii) Central slice theorem- principle of CT- (4marks) iii) Pulse sequences in MRI(10marks)	(20)

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