Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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)	Differentiate depolarisation and repolarisation of a cell membrane. Draw an action potential waveform for a cell membrane	(7)
	b)	Classify pacemakers according to their placement. Discuss the encapsulation and power for an implantable pacemaker	(8)
2	a)	Explain the principle of LVDT with the help of a suitable diagram	(7)
	b)	Relate the different waves in ECG with the mechanical sequence of events performed by the heart	(8)
3	a)	Summarize the desirable characteristics of the electrodes for biopotential measurement	(7)
	b)	Compare oscillometric and auscultatory methods for non-invasive blood pressure measurement	(8)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	A person is diagnosed with kidney stone. Suggest a method to remove it noninvasively and explain the method preferred.	(8)
	b)	List the medical applications of evoked potential.	(4)
	c)	What is spirometer?	(3)
5	a)	Explain with block diagram the working of EMG recorders.	(8)
	b)	Describe the working principle of heart-lung machine.	(7)
6	a)	Explain the principle of surgical diathermy with neat diagram.	(8)
	b)	Define Electro encephalogram.	(3)
	c)	Draw a figure showing how the electrodes are placed in a 10-20 system of placement to perform the EEG analysis.	(4)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	Compare CT and conventional X-ray imaging techniques.	(4)
	b)	How X-rays are generated in an X-ray machine.	(6)
	c)	Explain the principle of operation of ultrasound Doppler flow mapping and explain its applications	(10)
8	a)	Describe mathematically the iterative methods of image formation in CT	(10)
	b)	With the help of block diagram explain MR imaging systems	(10)
9	a)	Write notes on i) Detectors used in CT ii) Central slice theorem iii) Pulse sequences in MRI	(20)

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