Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
Course Code: AE403
Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.   Marks

1	a)	Describe the electrical activity of the cell.	(6)
	b)	What are implantable transducers?	(4)
	c)	Explain the different types of needle electrodes. What are its applications?	(5)
2	a)	What is the significance of Einthoven's triangle? Explain the 12-lead system of ECG measurement.	(10)
	b)	Describe a method to carry out blood flow measurements.	(5)
3	a)	Explain the electrode-skin interface with equivalent electronic circuit for acquiring a biomedical signal.	(10)
	b)	What is fibrillation? Explain the working of a defibrillator.	(5)

PART B
Answer any two full questions, each carries 15 marks.

4	a)	Define the important lung capacities and explain them.	(8)
	b)	What is the function of a neuromuscular stimulator?	(2)
	c)	Explain the working of a hearing aid.	(5)
5	a)	What are the applications of a biotelemetry system?	(5)
	b)	What are the methods for preventing electrical hazards on a patient?	(10)
6	a)	What is meant by diathermy? Explain the working of a short wave diathermy unit.	(10)
	b)	Describe the components of a cardiac care unit.	(5)

PART C
Answer any two full questions, each carries 20 marks.

7	a)	What is a spectrophotometer? What are the various components of spectrophotometer?	(10)
	b)	What are blood gas analysers? Explain the blood pCO_2 measurement.	(10)
8	a)	Explain the need for the collimator and grid arrangement in X-ray imaging with diagrams.	(8)
	b)	With a block diagram, explain the components of an NMR system.	(12)

9 a) What is an echocardiograph? Explain. (8)

  b) Explain the principle of operation of endoscopy. (3)

  c) Explain two methods of blood cell counting with diagrams. (9)

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