Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: EC365

Course Name: BIOMEDICAL ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

1 a) Explain about electrode-electrolyte interface and the electrical activity associated with one contraction in a muscle. (10)

b) Explain direct blood pressure measurement. (5)

2 a) What is a microelectrode ?Explain any two. (10)

b) Explain ultrasonic blood flow meters with neat diagram. (5)

3 a) With suitable diagram explain electro conduction system of heart. (10)

b) Draw the unipolar lead system. (5)

PART B

Answer any two full questions, each carries 15 marks.

4 a) Explain 10-20 electrode system with suitable diagram. (10)

b) Explain about spectrophotometer . (5)

5 a) What are different respiratory parameters ? Explain. (7)

b) What is meant by nerve conduction velocity. What is its significance ? (3)

c) Explain ventilator parameters? (5)

6 a) What is the difference between haemodialysis and peritoneal dialysis? (10)

b) Explain about ventricular defibrillation. (5)

PART C

Answer any two full questions, each carries 20 marks.

7 a) How ultrasonic wave propagates through tissues. (8)

b) Explain X-Ray imaging. (8)

c) Explain basic approaches to protection against shock. (4)

8 a) Explain about micro shock hazards. (8)

b) Draw the diagram of Single channel telemetry and explain. (8)

c) What is real time ultrasonic imaging? (4)

9 a) Explain the biological effects of NMR imaging. (7)

b) What is basic pulse echo system? (5)

c) What are macro shock hazards? (8)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: EC365

Course Name: BIOMEDICAL ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

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

1 a) What is the need for a biomedical instrument? With a neat block diagram explain the significance of each basic component in it. (8)

b) Compare direct and indirect blood pressure measurement. What is Korotkoff sound in blood pressure measurement? (7)

2 a) A patient was subjected to non-invasive method of blood pressure measurement. Which is the method used? What is the principle behind the method and how is it done? (10)

b) With a neat diagram explain carrier amplifier. (5)

3 a) What is ECG? With a neat sketch explain the various segments of an ECG waveform. (8)

b) How does depolarisation and repolarisation occur in a cell? (7)

PART B

Answer any two full questions, each carries 15 marks.

4 a) A person was found to have variation in the oxygen content in his blood. Which method would have helped him determine this? With a neat diagram explain any one type of this method. (8)

b) Explain any one type of a dialyzer with a neat diagram. (7)

5 a) Define the term nerve conduction velocity. (2)

b) Draw a figure showing how the electrodes are placed in a 10-20system of placement of electrodes to perform the EEG analysis. (5)

c) What is a cardiac defibrillator? With a neat diagram explain DC defibrillator. (8)

6 a) Explain with a neat diagram the respiratory system of a human body. (7)

b) What is surgical diathermy? Explain the various electro surgery techniques available. (8)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	List any four properties of X-ray. With a neat block diagram explain the working of a X-ray machine.	(10)
	b)	What is the principle behind NMR imaging? What are the advantages of NMR imaging?	(10)
8	a)	Explain about image reconstruction in CT scan.	(7)
	b)	Compare CT scan and X-ray imaging technique.	(4)
	c)	With a neat block diagram explain single channel ECG telemetry transmitter.	(9)
9	a)	With a neat block diagram explain basic pulse echo system.	(10)
	b)	What are the requirements of a real time ultrasonic imaging system?	(3)
	c)	What are the precautions taken to minimize electric shock hazards?	(7)

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