Reg. No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: EE372

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3hours

PART A

Answer all questions. 5 marks each.

1. Discuss the functional organisation of peripheral nervous system.
2. With suitable examples write about chemical biosensors and chemicalanalytes with respect to blood
3. Explain the effect of electrode potential on biosignals.
4. What is blood pressure? How it is measured?
5. Write brief note on measurement of nerve conduction velocity.
6. Explain the properties and biomedical applications of X-rays.
7. Discuss the principle and application of diathermy.
8. What do you mean by telemedicine?

PART B

Answer any two questions.10 marks each.

9. a) Discuss what are the problems encountered in measurement on biological systems. (6)
   b) Explain the construction and working principle of microelectrodes (4)
10. a)Draw the block diagram of biomedical instrumentation system and explain the functions of each block (6)
    b) Briefly explain the physiological functions of human respiratory system (4)
11. a)What is cardiac vector ? Explain ECG leads with necessary figures. (6)
    b) Mention the applications of floating and flexible type surface electrodes with necessary figures. (4)

PART C

Answer any two questions.10 marks each.

12. a)Explain auditory method of blood pressure measurements with necessary figure (5)
    b) Explain any one method to measure blood flow (5)
13. a) Discuss electrical conduction path way of heart and explain the working principle of artificial cardiac pacemaker with necessary figures (10)

14. Write short note on
    a) Respiratory pneumograph (5)
    b) Photo plethysmograph (5)

PART D

Answer any two questions.10 marks each.

15. a) Mention different types of ventilators and write brief notes on the biomedical applications (5)
    b) List the main types of blood test and explain each (5)
16. a) With the help of a block diagram explain the basic principle of Computer tomograph (6)
    b) Write short note on infant incubator (4)
17. Explain physiological effects of electric currents and write brief notes on various susceptibility parameters. (10)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: EE372

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries5 marks. Marks

1		Explain biochemical system of human body.	(5)
2		Explain Einthoven triangle.	(5)
3		With the help of neat diagram explain ultrasonic method of blood pressure measurement.	(5)
4		What is the difference between internal and external pacemakers?	(5)
5		Enumerate uses of X-rays-diagnostic still picture.	(5)
6		Enumerate commonly used chemical tests on blood cells.	(5)
7		Explain telemedicine.	(5)
8		Explain basic principle of ultrasonic imaging system.	(5)

PART B

Answer any two full questions, each carries10 marks.

9	a)	Draw block diagram and explain different components of man-instrument system.	(7)
	b)	Enumerate different rhythms in EEG with frequency ranges.	(3)
10	a)	Explain equivalent circuit of bio-potential electrode interface.	(5)
	b)	Write a short note on 1) resting potential 2) action potentials.	(5)
11	a)	Describe different bio-potential electrode used to measure bioelectric events.	(6)
	b)	Explain events related to different waves in ECG	(4)

PART C

Answer any two full questions, each carries10 marks.

12	a)	With the help of neat diagram explain phonocardiography	(5)
	b)	Explain with the help of neat diagram, impedance plethysmograph for measurement of blood flow.	(5)
13	a)	What is blood pressure? How it is measured?	(5)
	b)	Explain DC defibrillator with the help of neat diagram	(5)

14 a) Explain standered 10-20 electrode placement system for EEG measurement (5)

b) Explain spirometer for measurement of respiratory parameters (5)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Explain heart lung machine with the help of neat diagram. (7)

b) What is infant incubator? How it works? (3)

16 a) With the help of a block diagram explain the basic principle of Computer tomograph. (5)

b) Explain different methods of electric accident prevention. (5)

17 a) Explain in detail different clinical tests conducted on blood. (10)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

Course Code: EE372

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries5 marks. Marks

1		What are bio signals? Give specific examples	(5marks)
2		Explain electro conduction pathway of heart.	(5marks)
3		What is Korotkoff sound? What are its biomedical applications?	(5marks)
4		Write brief notes on respiratory parameters.	(5marks)
5		Discuss the principle of Lithotripsy.	(5marks)
6		Write brief notes on ultrasound scanning.	(5marks)
7		What is micro shock? How it is affected to human body?	(5marks)
8		Discuss telemedicine. What are its biomedical applications	(5marks)

PART B

Answer any two full questions, each carries10 marks.

9	a)	Discuss the problems encountered in biomedical measurements.	(5marks)
	b)	Explain the developments of action potential with respect to human cells with necessary figures	(5marks)
10	a)	With the help of necessary figure explain the working of cardiovascular system of human body.	(5marks)
	b)	What is cardiac vector? Explain ECG leads with necessary figures.	(5marks)
11	a)	Draw and explain the block diagram of a biomedical instrumentation system.	(5marks)
	b)	What are microelectrodes? Explain the electrical equivalent circuit of a microelectrode skin interface,	(5marks)

PART C

Answer any two full questions, each carries10 marks.

12	a)	Write the method of measuring Blood Pressure by cardiac catheterisation.	(5marks)
	b)	Explain the working principle of phonocardiograph with sound waves.	(5marks)
13	a)	What is plethysmography? Explain impedance plethysmograph with necessary diagram	(5marks)

b) Explain about pneumograph with relevant diagrams. (5marks)

14 a) What are brain waves? Write notes on measurement of EEG with necessary block diagram. (5marks)

b) Describe the working of electronic pacemaker with necessary diagram. (5marks)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Explain the biomedical applications of X-Ray with supporting diagrams. (5marks)

b) What is infant incubator? Explain with necessary diagram. (5marks)

16 Explain the physiological effects of electric current, specifying important susceptibility parameters with necessary figures. (10 marks)

17 a) What is haemodialysis? Explain the working of an artificial kidney with necessary diagram. (5marks)

b) Write short notes on blood cell counter. (5marks)

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth semester B.Tech degree examinations (S), September 2020

Course Code: EE372

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		With the help of a neat block diagram write how a man instrument system working.	(5)
2		With the help of a neat diagram of the Einthoven triangle, mention the necessity of the Einthoven triangle.	(5)
3		How we can measure Blood pressure using Fibre optic system.	(5)
4		Identify difference between Internal and External pacemakers.	(5)
5		List various components in infant incubators? Mention function of components.	(5)
6		Identify the situation to use diathermy? Mention its applications?	(5)
7		Write a short note haematocrit.	(5)
8		Write a short note on Tele-medicine.	(5)

PART B

Answer any two full questions, each carries 10 marks.

9		Write a short note on Resting potential, Action potential and Propagation of Action potential with Action potential waveform.	(10)
10		Identify the various types of transducers used in Biomedical engineering? Write principle of operation of any 5 transducers.	(10)
11	a)	Identify the various problems encountered in biomedical measurements?	(5)
	b)	Enumerate various skin surface electrodes. Write principle of operation of any **THREE** electrodes	(5)

PART C

Answer any two full questions, each carries 10 marks.

12		With help of neat diagram write how the oscillometric method helps to measure Blood Pressure.	(10)

13	a)	Write a short note on tidal volume and vital capacity in breathing mechanism with neat diagram.	(5)
	b)	With neat diagram write how we can measure velocity of conduction in nerve.	(5)
14	a)	Write a short note on phonocardiography.	(5)
	b)	With neat diagram write the principle of working of a spirometer.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15		With neat diagram explain the working of X-ray machine. Enumerate the uses of X-rays in medicine?	(10)
16	a)	Write how a Spectrophotometer help in blood test.	(5)
	b)	Write how a Flame photometer helps in blood test.	(5)
17	a)	Identify how lithotripsy helps us. Write how it works.	(5)
	b)	List out various physiological effects of electric current.	(5)

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