Model Question Paper -1 with effect from 2020-21(CBCS Scheme)

USN | | | | | | | | | | |

Fifth Semester B.E. Degree Examination
Biomedical Equipments

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			
Q.1	**(a)**	With simplified circuit diagram explain, i) Biopolar limb leads ii) Unipolar limb leads iii) Chest leads	12 Marks
	(b)	Explain Oscillometric method of Blood pressure measurement with neat figure.	08 Marks
OR			
Q.2	**(a)**	Explain the 10-20 system of EEG electrodes placement with neat figure.	10 Marks
	(b)	With a neat block diagram, explain instantaneous heart – rate meter.	10 Marks
Module – 2			
Q.3	**(a)**	With spirogram explain Respiratory volumes, Respiratory capacities and Dynamic Respiratory parameters.	12 Marks
	(b)	With a neat diagram explain a Basic Spirometer.	08 Marks
OR			
Q.4	**(a)**	Describe Bekesy Audiometer System with neat diagram	10 Marks
	(b)	Explain conventional hearing aid with neat block diagram.	10 Marks
Module – 3			
Q.5	**(a)**	Mention the types of pacemakers, explain implantable pacemakers along with is types.	10 Marks
	(b)	With a neat block diagram, explain ventricular synchronous demand pacemaker.	10 Marks
OR			
Q.6	**(a)**	Explain Pacer – Cardiometer – defibrillator with neat block diagram.	10 Marks
	(b)	Explain Surgical diathermy machine with neat block diagram of solid state electrosurgical unit.	10 Marks
Module – 4			
Q.7	**(a)**	Explain the principal of dialysis in the artificial kidney with a neat diagram.	10 Marks
	(b)	Describe the parallel flow dialyzer with a neat diagram.	10 Marks
OR			
Q.8	**(a)**	With a neat schematic sketch, explain the process of a hemodialysis machine.	10 Marks
	(b)	Explain heart lung machine with a neat diagram.	10 Marks
Module – 5			
Q.9	**(a)**	With a neat schematic diagram, discuss the components of Man – Instrument system.	10 Marks
	(b)	With a neat diagram, explain the path of leakage current in case of discontinuous ground.	10 Marks
OR			
Q.10	**(a)**	Explain the effects of electric current on human body.	10 Marks
	(b)	List any 10 precautions to Minimize Electric Shock Harzards.	10 Marks

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L1	CO1	PO1
	(b)	L3	CO1	PO2
Q.2	(a)	L2	CO1	PO1
	(b)	L2	CO1	PO1
Q.3	(a)	L3	CO2	PO1
	(b)	L3	CO2	PO1
Q.4	(a)	L3	CO2	PO2
	(b)	L2	CO2	PO1
Q.5	(a)	L1	CO3	PO1
	(b)	L2	CO3	PO1
Q.6	(a)	L2	CO3	PO1
	(b)	L3	CO3	PO2
Q.7	(a)	L2	CO4	PO1
	(b)	L2	CO4	PO1
Q.8	(a)	L3	CO4	PO2
	(b)	L2	CO4	PO1
Q.9	(a)	L3	CO5	PO2
	(b)	L2	CO5	PO2
Q.10	(a)	L3	CO5	PO2
	(b)	L2	CO5	PO1

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6

Model Question Paper -2 with effect from 2020-21(CBCS Scheme)

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Fifth Semester B.E. Degree Examination
Biomedical Equipments

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			
Q.1	**(a)**	With a neat block diagram, explain Electrocardigraph	10 Marks
	(b)	Define ECG leads. With the simplified circuit diagram, explain bipolar and unipolor limb leads and chest leads.	10 Marks
OR			
Q.2	**(a)**	Explain bedside patient monitoring system, with a neat block diagram.	10 Marks
	(b)	What are the different techniques used to measure heart rate? Explain instantaneous heart rate meters.	10 Marks
Module – 2			
Q.3	**(a)**	Write short notes on pulmonary function measurement: i) Respiratory volumes ii) Respiratory capacities iii) Compliance and Related pressure iv) Dynamic Respiratory parameters.	10 Marks
	(b)	With a neat diagram explain a Basic Spirometer.	08 Marks
	(c)	What is Ultrasonic Spirometer.	02 Marks
OR			
Q.4	**(a)**	With a neat block diagram of the Evoked response audiometer.	10 Marks
	(b)	Write short notes on: i) Hearing aids conventional ii) Digital hearing aids.	06 Marks
	(c)	Explain Cochlear Implants, with a diagram.	04 Marks
Module – 3			
Q.5	**(a)**	What is Cardiac pacemaker? Mention the types. Explain implantable pacemaker.	10 Marks
	(b)	With a neat block diagram, explain ventricular synchronous demand pacemaker.	10 Marks
OR			
Q.6	**(a)**	With a neat diagram, explain the principal of surgical diathermy machine.	10 Marks
	(b)	Discuss in detail, Solid State Electrosurgical Unit.	05 Marks
	(c)	With a neat schematic diagram, explain DC defibrillator.	05 Marks
Module – 4			
Q.7	**(a)**	Explain the principal of dialysis in the artificial kidney.	10 Marks
	(b)	With a neat diagram, explain Haemodialysis machine.	10 Marks
OR			
Q.8	**(a)**	With a neat block diagram, explain a proportional temperature controller used to maintain the temperature of air inside an infant incubator.	10 Marks
	(b)	What is stone disease problem? How was the first lithotripsy machine construction?	10 Marks
Module – 5			
Q.9	**(a)**	Explain Micro Shock and Macro Shock.	10 Marks
	(b)	Describe Man-Machine Interface.	10 Marks

		OR	
Q.10	**(a)**	What is grounding concept. Explain path of leakage current for ground failure in Biomedical Instruments.	10 Marks
	(b)	Discuss physiological effects of electrical current on human body	10 Marks

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome

Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L1	CO1	PO1
	(b)	L3	CO1	PO2
Q.2	(a)	L2	CO1	PO1
	(b)	L2	CO1	PO1
Q.3	(a)	L3	CO2	PO1
	(b)	L3	CO2	PO1
	(c)	L3	CO2	PO1
Q.4	(a)	L3	CO2	PO2
	(b)	L2	CO2	PO1
	(c)	L2	CO2	PO1
Q.5	(a)	L1	CO3	PO1
	(b)	L2	CO3	PO1
Q.6	(a)	L2	CO3	PO1
	(b)	L3	CO3	PO2
	(c)	L3	CO3	PO2
Q.7	(a)	L2	CO4	PO1
	(b)	L2	CO4	PO1
Q.8	(a)	L3	CO4	PO2
	(b)	L2	CO4	PO1
Q.9	(a)	L3	CO5	PO2
	(b)	L2	CO5	PO2
Q.10	(a)	L3	CO5	PO2
	(b)	L2	CO5	PO1

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
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	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6

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Fifth Semester B.E. Degree Examination

BIOMEDICAL INSTRUMENTATION

TIME: 03 Hours **Max. Marks: 100**

Note: 1. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
2.
3.

Module – 1			
Q.1	**(a)**	Explain the generation of bioelectric potentials at cellular level with a typical waveform.	10
	(b)	Describe the Electrode –Tissue interface with relevant sketches	10
OR			
Q.2	**(a)**	Draw and Explain the Electrodes used to record ECG	10
	(b)	Describe the Microelectrodes employed to study the electrical activity of cells with relevant sketches.	10
Module – 2			
Q.3	**(a)**	Make use of Electrocardiographic machine to record ECG.	10
	(b)	Explain with the neat block diagram of EEG Machine.	10
OR			
Q.4	**(a)**	Explain with the neat block diagram of Einthoven Triangle.	10
	(b)	Explain the Computerized Analysis of EEG.	10
Module – 3			
Q.5	**(a)**	Make use of Bedside monitoring system to monitor different parameters of patient.	10

	(b)	Utilize photoelectric methods to measure pulsatile blood volume changes.	10
OR			
Q.6	**(a)**	Make use of CO_2 Method to measure the respiration rate.	10
	(b)	Describe the principle of blood pressure measurement based on Korotkoff sounds.	10
Module – 4			
Q.7	**(a)**	Explain with the neat diagram of the principle of Electromagnetic flowmeter.	10
	(b)	Explain with the neat block diagram of Doppler shift Blood flow Velocity Meters.	10
OR			
Q.8	**(a)**	Describe the Measurement of continuous cardiac output derived from the aortic pressure waveform.	10
	(b)	Explain the different type of Implantable Pacemakers.	10
Module – 5			
Q.9	**(a)**	Explain with the neat diagram of Pump oxygenator.	10
	(b)	Explain with the neat diagram of Drug infusion pump.	10
OR			
Q.10	**(a)**	Discuss the precaution to be taken to prevent hazardous situations.	10
	(b)	Explain with the schematic diagram of Leakage current meter.	10

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Question		**Bloom's Taxonomy Level attached**	**Course Outcome**	**Programme Outcome**
Q.1	(a)	L2	CO1	PO1
	(b)	L2	CO1	PO3
Q.2	(a)	L2	CO1	3
	(b)	L2	CO1	PO3
Q.3	(a)	L3	CO2	PO2
	(b)	L2	CO2	PO3
Q.4	(a)	L2	CO2	PO2
	(b)	L2	CO2	PO3
Q.5	(a)	L3	CO3	PO3
	(b)	L3	CO3	PO3
Q.6	(a)	L3	CO3	PO2
	(b)	L2	CO3	PO3
Q.7	(a)	L2	CO4	PO2
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Q.8	(a)	L2	CO4	PO1
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Q.10	(a)	L2	CO5	PO1
	(b)	L2	CO5	PO3

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TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02.
03.

Module – 1			
Q.1	**(a)**	Explain the generation of bioelectric potentials at cellular level with a typical waveform.	
	(b)	Describe the Electrode –Tissue interface with relevant sketches	
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Q.2	**(a)**	Draw and Explain the Electrodes used to record ECG	
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	(b)	L2	CO1	PO3
Q.3	(a)	L3	CO2	PO2
	(b)	L2	CO2	PO3
Q.4	(a)	L2	CO2	PO2
	(b)	L2	CO2	PO3
Q.5	(a)	L3	CO3	PO3
	(b)	L3	CO3	PO3
Q.6	(a)	L3	CO3	PO2
	(b)	L2	CO3	PO3
Q.7	(a)	L2	CO4	PO2
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