

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

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### Fifth Semester B.E. Degree Examination Biomedical Instrumentation

TIME: 03 Hours

Max. Marks: 100

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

Module – 1			
<b>Q.1</b>	(a)	With a neat block diagram, explain the Basic Medical Instrumentation System.	10
	(b)	Discuss with neat diagrams, the sequence of events associated with the action potential of a cell.	10
<b>OR</b>			
<b>Q.2</b>	(a)	List and explain general constraints in design of biomedical, instrumentation system.	10
	(b)	Describe the Electrode - tissue interface in detail.	10
<b>Module – 2</b>			10
<b>Q.3</b>	(a)	Explain with a neat block diagram, the working of ECG machine.	10
	(b)	With a neat diagram, explain about 10 - 20% electrode system.	10
<b>OR</b>			
<b>Q.4</b>	(a)	Describe with a neat diagram, explain the ECG Lead system.	10
	(b)	With a neat block diagram, explain EEG system.	10
<b>Module – 3</b>			
<b>Q.5</b>	(a)	Explain the working of instantaneous heart rate meter with diagram.	10

	(b)	Bring out the principle of blood pressure measurement based on Korotkoff sounds with a neat sketch	10
<b>OR</b>			
Q.6	(a)	What are the vital parameters measured with a bedside patient monitor? Highlight the features of a microprocessor based bedside patient monitor.	10
	(b)	List the methods for the measurement of respiration rate. How is the respiration rate measured by CO <sub>2</sub> method?	10
<b>Module – 4</b>			
Q.7	(a)	Describe the working of Doppler Shift Blood Flow velocity meter with neat diagram.	10
	(b)	With a neat diagram, explain about Ultrasound method for cardiac output measurement.	10
<b>OR</b>			
Q.8	(a)	Explain the various types of Implantable pacemaker with neat diagrams.	10
	(b)	With a neat diagram, explain for D.C. Defibrillator.	10
<b>Module – 5</b>			
Q.9	(a)	Explain with a neat diagram, the working of Hemo dialysis system.	10
	(b)	With a neat diagram, explain the features of Drug Infusion pumps	10
<b>OR</b>			
Q.10	(a)	Discuss the methods of Testing of Biomedical equipments.	10
	(b)	Explain about the Electric Shock hazards.	10

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)	L2	1	1,2,4
	(b)	L2	1	1,2,4
Q.2	(a)	L1	1	1,2,4
	(b)	L2	1	1,2,4
Q.3	(a)	L1	3	1,2,4,9
	(b)	L2	3	1,2,4
Q.4	(a)	L2	3	1,2,4
	(b)	L2	3	1,2,4
Q.5	(a)	L2	4	1,4,9
	(b)	L2	4	1,4,9
Q.6	(a)	L2	3	1,4,9
	(b)	L2	3	1,2
Q.7	(a)	L2	6	1,4,9
	(b)	L2	6	1,2,4,5
Q.8	(a)	L2	6	1,2
	(b)	L2	6	1,2
Q.9	(a)	L2	4	1,4
	(b)	L2	4	1,4
Q.10	(a)	L2	5	1,2,4
	(b)	L2	5	1,2,4
Bloom's Taxonomy Levels	<b>Lower order thinking skills</b>			
	Remembering (knowledge): $L_1$		Understanding Comprehension): $L_2$	Applying (Application): $L_3$
	<b>Higher order thinking skills</b>			
	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 Instrumentation

TIME: 03 Hours

Max. Marks: 100

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

Module – 1			
<b>Q.1</b>	(a)	Explain the biomedical signals that originate from variety of sources.	10
	(b)	Discuss about the performance requirements of medical instrumentation system.	10
<b>OR</b>			
<b>Q.2</b>	(a)	With a neat diagram, explain about skin contact impedance.	10
	(b)	In brief explain about silver - silver chloride electrodes.	10
<b>Module – 2</b>			
<b>Q.3</b>	(a)	With a neat diagram, explain about ECG Lead system.	10
	(b)	With a neat diagram, explain about Multi channel ECG machine.	10
<b>OR</b>			
<b>Q.4</b>	(a)	With the typical EEG signal waveforms classify the basic frequency bands of EEG range for the purpose of analysis.	10
	(b)	List and explain the types in computerized analysis of EEG.	10
<b>Module – 3</b>			
<b>Q.5</b>	(a)	Define Oximetry. Explain its principle of operation.	6

	(b)	List and explain the types of techniques to calculate heart rate.	8
	(c)	With a neat block diagram, explain the Rheographic method of indirect blood pressure measurement.	6
<b>OR</b>			
Q.6	(a)	With a neat waveforms, explain the principle of blood pressure measurement based on Korotkoff sounds.	10
	(b)	With a neat block diagram, explain the apnoea monitor.	10
<b>Module – 4</b>			
Q.7	(a)	Explain the principle and working of Electromagnetic Blood flow meter.	10
	(b)	With a neat diagram, explain Doppler imaging method to measure blood flow	10
<b>OR</b>			
Q.8	(a)	List and explain types of Implantable Pacemakers.	10
	(b)	Discuss the working of a Pacer- Cardioverter Defibrillator.	10
<b>Module – 5</b>			
Q.9	(a)	With a neat diagram, explain positive pressure ventilator.	10
	(b)	Write a note on Implantable Infusion systems.	10
<b>OR</b>			
Q.10	(a)	Discuss about the precautions to minimize Electric Shock hazards	10
	(b)	With a neat schematic diagram, explain leakage measuring circuit.	10

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Q.1	(a)	L2	1	1,4
	(b)	L2	1	1,2,4
Q.2	(a)	L2	1	1,2,4
	(b)	L2	1	1,2
Q.3	(a)	L2	3	1,2,4,9
	(b)	L2	3	1,2,4,9
Q.4	(a)	L2	3	1,2,4,9
	(b)	L2	3	1,2,4,9
Q.5	(a)	L1	1	1,4,9
	(b)	L2	3	1,4,9
	(c)	L2	3	1,2,4
Q.6	(a)	L2	3	1,4,9
	(b)	L2	3	1,4,9
Q.7	(a)	L2	3	1,4,9
	(b)	L2	3	1,2
Q.8	(a)	L1	6	1,2,4
	(b)	L2	6	1,2,4
Q.9	(a)	L2	4	1,2,4
	(b)	L2	4	1,2,9
Q.10	(a)	L2	5	1,2,7
	(b)	L2	5	1,2,7
Bloom's Taxonomy Levels	<b>Lower order thinking skills</b>			
	Remembering (knowledge): $L_1$	Understanding (Comprehension): $L_2$	Applying (Application): $L_3$	
	<b>Higher order thinking skills</b>			
	Analyzing (Analysis): $L_4$	Valuating (Evaluation): $L_5$	Creating (Synthesis): $L_6$	

