

## Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

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### Fifth Semester B.E. Degree Examination Bioanalytical Techniques

TIME: 03 Hours

Max. Marks: 100

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

<b>Module – 1</b>			
<b>Q.1</b>	(a)	Discuss on the methodology for the preparation of extracts for biochemical investigations	10
	(b)	What is Iso electro focussing ? Explain on the applications of iso electro focussing with respect to proteomics	10
<b>OR</b>			
<b>Q.2</b>	(a)	Define Chromatography? Add a note on its principle and applications	06
	(b)	State your point of view on Bioaffinity Chromatography	08
	(c)	With a neat labelled diagram explain agarose gel electrophoresis	06
<b>Module – 2</b>			
<b>Q.3</b>	(a)	Discuss on the working principle, Instrumentation of HPLC	10
	(b)	With the schematic representations, Explain the working mode of Ion exchange chromatography	10
<b>OR</b>			
<b>Q.4</b>	(a)	Describe the principle, construction and working of Gas Chromatography	10
	(b)	Write a note on flow cytometry and its applications	10
<b>Module – 3</b>			
<b>Q.5</b>	(a)	What is NMR spectroscopy? Add a note on its applications	10
	(b)	Explain in brief the theory and principle of UV-Visible spectroscopy	10
<b>OR</b>			
<b>Q.6</b>	(a)	Discuss on the concept of IR spectroscopy and its advantages	10
	(b)	How can be a Mass spectroscopy be used for determination of analytes	10

<b>Module – 4</b>			
<b>Q.7</b>	<b>(a)</b>	With a schematic representation explain the protocol of X ray diffraction	10
	<b>(b)</b>	What do you mean by Biomolecular mass spectrometry and explain its working mode	10
<b>OR</b>			
<b>Q.8</b>	<b>(a)</b>	What are the different methods available to study for determination of crystal structure	10
	<b>(b)</b>	What are the role of Neutron diffraction, add a note on its advantages	10
<b>Module – 5</b>			
<b>Q.9</b>	<b>(a)</b>	Discuss on the concept of SEM and its applications	10
	<b>(b)</b>	Explain the importance of Confocal microscopy in analytics	10
<b>OR</b>			
<b>Q.10</b>	<b>(a)</b>	Draw the comparisions between X-ray photo electron spectroscopy and X-ray diffraction	10
	<b>(b)</b>	Elaborate on the studies of DTA-Diffrential Thermal Analyser	10
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Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome					
Question		Bloom's Taxonomy Level attached	Course Outcome	Programme Outcome	
<b>Q.1</b>	(a)	L2	CO1	PO12	
	(b)	L2	CO1	PO12	
<b>Q.2</b>	(a)	L1	CO1	PO12	
	(b)	L1	CO1	PO12	
	(c)	L2	CO1	PO12	
<b>Q.3</b>	(a)	L2	CO1	PO10	
	(b)	L2	CO1	PO10	
<b>Q.4</b>	(a)	L2	CO1	PO10	
	(b)	L1	CO1	PO10	
<b>Q.5</b>	(a)	L1	CO1	PO10	
	(b)	L2	CO1	PO10	
<b>Q.6</b>	(a)	L3	CO1	PO10	
	(b)	L1	CO1	PO10	
<b>Q.7</b>	(a)	L1	CO3	PO9	
	(b)	L1	CO2	PO11	
<b>Q.8</b>	(a)	L1	CO3	PO9	
	(b)	L2	CO2	PO11	
<b>Q.9</b>	(a)	L1	CO4	PO8	
	(b)	L1	CO4	PO8	
<b>Q.10</b>	(a)	L3	CO4	PO8	
	(b)	L2	CO4	PO8	
<b>Bloom's Taxonomy Levels</b>	<b>Lower order thinking skills</b>				
	Remembering (knowledge): <input type="checkbox"/> 1	Understanding Comprehension): <input type="checkbox"/> 2	Applying (Application): <input type="checkbox"/> 3		
	<b>Higher order thinking skills</b>				
	Analyzing (Analysis): <input type="checkbox"/> 4	Valuating (Evaluation): <input type="checkbox"/> 5	Creating (Synthesis): <input type="checkbox"/> 6		



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**18BT55****TIME: 03 Hours****Max. Marks: 100**Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

<b>Module – 1</b>			
<b>Q.1</b>	<b>(a)</b>	Give an account on Principle and Equipment of Electrophoresis	10
	<b>(b)</b>	Explain Isoelectric focusing and discuss about applications of Electrophoresis in analyzing macromolecules.	10
<b>OR</b>			
<b>Q.2</b>	<b>(a)</b>	Explain the Principle of chromatography and give a brief note on different methods of chromatographic techniques.	10
	<b>(b)</b>	Discuss in detail on Ion exchange and Gel exclusion Chromatography with neat representative illustrations.	10
<b>Module – 2</b>			
<b>Q.3</b>	<b>(a)</b>	Distinguish between Column, Thin layer and Paper Chromatography methods.	10
	<b>(b)</b>	Discuss in detail about Cell fractionation and Flow cytometer with applications.	10
<b>OR</b>			
<b>Q.4</b>	<b>(a)</b>	Write about HPLC and its instrumentation in detail.	10
	<b>(b)</b>	Discuss in detail about Gas Chromatography and its instrumentation.	10
<b>Module – 3</b>			
<b>Q.5</b>	<b>(a)</b>	Explain different methods of spectroscopy in analyzing macromolecules.	10
	<b>(b)</b>	Distinguish between NMR and Mass spectroscopy in detail.	10
<b>OR</b>			
<b>Q.6</b>	<b>(a)</b>	Give an account on different types of NMR techniques.	10
	<b>(b)</b>	Explain the role NMR imaging in the analysis of structures of Macromolecules.	10

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### Module – 4

<b>Q.7</b>	<b>(a)</b>	Write a note on Mass analyzers and ion detectors and their significance.	10
	<b>(b)</b>	What is X-ray diffraction and explain methods to study diffraction patterns.	10
<b>OR</b>			
<b>Q.8</b>	<b>(a)</b>	Discuss about Electron and Neutron diffraction in detail.	10
	<b>(b)</b>	Write a detailed account on specific applications of spectroscopy.	10
<b>Module – 5</b>			
<b>Q.9</b>	<b>(a)</b>	Describe the principle and working of SEM.	10
	<b>(b)</b>	Explain the principle and working of FTIR.	10
<b>OR</b>			
<b>Q.10</b>	<b>(a)</b>	Explain the principle, procedure for the analysis of biomolecules using UV-Visible spectrophotometer.	10
	<b>(b)</b>	Describe the Principle and functioning of X-ray photoelectron spectroscopy.	10

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
	Question	Bloom's Taxonomy Level attached	Course Outcome	Programme Outcome
<b>Q.1</b>	<b>(a)</b>	L1	CO1	PO1
	<b>(b)</b>	L2	CO2	PO1
<b>Q.2</b>	<b>(a)</b>	L1	CO1	PO3
	<b>(b)</b>	L2	CO3	PO2
<b>Q.3</b>	<b>(a)</b>	L1	CO1	PO5
	<b>(b)</b>	L3	CO1	PO1
<b>Q.4</b>	<b>(a)</b>	L2	CO4	PO3
	<b>(b)</b>	L2	CO1	PO5
<b>Q.5</b>	<b>(a)</b>	L1	CO1	PO2
	<b>(b)</b>	L2	CO1	PO1
<b>Q.6</b>	<b>(a)</b>	L3	CO1	PO5
	<b>(b)</b>	L2	CO1	PO3
<b>Q.7</b>	<b>(a)</b>	L1	CO3	PO2
	<b>(b)</b>	L3	CO2	PO1
<b>Q.8</b>	<b>(a)</b>	L2	CO3	PO3
	<b>(b)</b>	L3	CO2	PO2
<b>Q.9</b>	<b>(a)</b>	L4	CO4	PO5
	<b>(b)</b>	L4	CO4	PO5
<b>Q.10</b>	<b>(a)</b>	L2	CO4	PO2
	<b>(b)</b>	L3	CO4	PO3
<b>Lower order thinking skills</b>				
<b>Bloom's Taxonomy Levels</b>	Remembering (knowledge): <i>L</i> <sub>1</sub>		Understanding Comprehension): : <i>L</i> <sub>2</sub>	Applying (Application): <i>L</i> <sub>3</sub>
	<b>Higher order thinking skills</b>			
	Analyzing (Analysis): <i>L</i> <sub>4</sub>		Valuating (Evaluation): <i>L</i> <sub>5</sub>	Creating (Synthesis): <i>L</i> <sub>6</sub>