Q. Code: 878054

Reg. No. | | | | | | | | | | | | | |

M.E. / M.TECH. DEGREE EXAMINATIONS, MAY 2023

Second Semester

BY22201 – ANALYTICAL TECHNIQUES IN BOTECHNOLOGY

(Biotechnology)

(Regulation 2022)

TIME: 2 HOURS **MAX. MARKS: 60**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Create awareness about the hazardous chemicals and safety precautions in case of emergency.	**2**
CO 2	Learn about the qualitative and quantitative estimation of biomolecules.	**5**
CO 3	Elaborate on the working principle of instruments (pH meter and spectroscopy) used in biochemistry lab.	**3**
CO 4	Analyze the significance of biochemistry in research and clinical sample analysis.	**4**
CO 5	Demonstrate the application of spectroscopic methods in the quantification of bioproduct.	**5**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	What are the uses of IR spectroscopy in peptides study?	**5**	**2**
2.	Define Chemical shift.	**5**	**1**
3.	Write Isoelectric point (pI) and list out few softwares used for 2D-gel analysis.	**4**	**3**
4.	Compare reversed phase and normal phase chromatography.	**3**	**3**
5.	What are the limitations of AFM?	**3**	**1**
6.	Write the principle behind Electron microscope.	**3**	**1**
7.	Comment on radio immunoassay.	**1**	**2**
8.	Differentiate Direct and Indirect ELISA.	**2**	**3**
9.	List out the hypenated techniques used in the analysis of proteins.	**2**	**2**
10.	Distinguish between DGGE and PFGE in terms of DNA separation.	**2**	**3**

PART- B (3 x 10 = 30 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Explain the working principle and mechanism of fluorescence microscopy. Outline its biotechnological applications.	**(10)**	**3**	**4**
	(OR)			
(b)	How does a Confocal laser scanning microscope works? And give a detailed note on filters, detectors and scanners used in this system.	**(10)**	**3**	**4**

12. (a)	How will you analyze mixture of proteins by 2-D Electrophoresis? Add a short note on IPG-DALT and IEF.	**(10)**	**2**	**4**
	(OR)			
(b)	Give a clear note on separation columns and detectors used in HPLC with its application in proteomics.	**(10)**	**2**	**4**
13. (a)	Briefly explain the methods for the purification and characterization of Proteins based on Size and Shape: Net charge; Affinity or Bio-properties and Surface charge.	**(10)**	**4**	**3**
	(OR)			
(b)	Describe different types of biochips used in medicinal field.	**(10)**	**4**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.14 is compulsory)

		Marks	CO	RBT LEVEL
14.	Comment on High Throughput (HTP) protein production system based on molecular cloning, expression analysis procedure used in this system.	**(10)**	**5**	**5**

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