Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech Mid Semester Exam

Semester: 4 **Date: (30/01/2024)**
Subject Code: (303144253) **Time: (1hr: 30min)**
Subject Name: (Techniques in Biotechnology) **Total Marks: 40**

Sr. No.		Marks
Q.1	(A) One-line questions: i) Define good laboratory practices. ii) What do you understand by partition coefficient? iii) Discuss the role of Ion Source in the Mass Spectroscopy. iv) Outline the role of plasma in the AES. v) In GLC (Gas Liquid Chromatography) stationary phase is used as non-volatile liquid. List out two examples of stationary phase.	05
	(B) Five Fill in the blanks: i) The column of GLC is made of .....metals (useful up to 250^0C) and coiled. ii) In the HPLC separation is based on .....between the stationary and mobile phases. iii) % error is determined as ..... iv) Electromagnetic radiation was first predicted in ..... equations in 1864. v) Lambert's law is the relation between the ..... light and the ..... through which the light traverse.	05
Q.2	Attempt any four (Short Questions) (1) Demonstrate the SOP of Laminar Air Flow. (2) Discuss the different components of Mass Spectrometer. (3) Distinguish between cationic and anionic ion exchangers with examples. (4) Explain the principles and applications of CD spectroscopy. (5) Define reverse phase chromatography. Illustrate the principles and applications of TLC.	12
Q.3	Attempt any two questions (1) Which spectroscopy is used to determine the functional groups present in the compounds? Discuss their working methodology, principles and applications. (2) Briefly explain the Ion-exchange chromatography by taking an example of Cationic Exchangers. (3) Why calibration of analytical instruments is needed? Contrast on the calibration methodology used for pH meter with suitable examples.	08
Q.4	(A) One person wants to analyze the mixture of two protein samples whose molecular weight approx. 150 KDa and 64 KDa respectively. Discuss the methods, applications and principles of chromatography he used during the experimentation.	05
	(B) Discuss the principles, applications and methodology of Mass Spectroscopy.	05
	OR	
	(B) Explain the principles, applications and methodology of HPLC.	05