

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2023)

CLASS: B.TECH
BRANCH: BIOTECHNOLOGY

SEMESTER : V
SESSION : MO/2023

SUBJECT: BE301- BIOANALYTICAL TECHNIQUES

TIME: 02 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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Q.1(a)	Explain the relative centrifugal force. How is it related to the speed of rotation of a centrifuge?	[2]	CO2	BL 05
Q.1(b)	A fixed-angle rotor exhibits a minimum radius, r_{min} , at the top of the centrifuge tube of 4.5 cm, and a maximum radius, r_{max} , at the bottom of the tube of 9.0 cm. If the rotor is operated at a speed of 25,000 rpm, what is the relative centrifugal field (RCF) at the top, middle and bottom of the centrifuge tube?	[3]	CO1	3
Q.2(a)	Discuss the characteristics of a good density gradient media.	[2]	CO2	6
Q.2(b)	Based on the cross-section of rotors, discuss the different types of rotors.	[3]	CO2	6
Q.3(a)	What is agarose? Why is it used in gel electrophoresis?	[2]	CO1	3
Q.3(b)	Describe the process of separation of DNA using agarose gel electrophoresis.	[3]	CO1	4
Q.4(a)	Define capacity factor and selectivity and mention its importance in chromatography.	[2]	CO1	3
Q.4(b)	Describe the schematic of HPLC and also mention the function of the main components.	[3]	CO3	04
Q.5(a)	What should be the characteristics of a good column?	[2]	CO1	3
Q.5(b)	What do you understand about chromatography? Enumerate the types of chromatography.	[3]	CO1	4

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