BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M. SC./PRE-PHD **SEMESTER : II/I**
BRANCH: BIOTECHNOLOGY **SESSION : SP/2023**

SUBJECT: BT421 PROTEOMICS

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
--NIL----------

			CO	BL
Q.1(a)	Justify that various forces play important role in determining the protein structure.	[5]	1	5
Q.1(b)	Using a sketch diagram explain that protein disulfide isomerase and molecular chaperones have important role in the protein folding.	[5]	1	6
Q.2(a)	Give step by step methods for isolation and purification of proteins from control and stress treated leaf tissue.	[5]	2	6
Q.2(b)	Draw an experimental sketch showing separation, staining, imaging and analysis of proteins isolated from shoot and root using 2D IEF SDS-PAGE.	[5]	2	6
Q.3(a)	Design an experiment showing protein spots elution from gel, mass spectrometry-based identification and database development used in proteomics study.	[5]	3	6
Q.3(b)	Explain that denaturation of a protein may affect the whole pathway or overall growth of a plant.	[5]	3	5
Q.4(a)	Explain about Rubisco cloned and expressed protein structure determination using circular dichroism.	[5]	3	6
Q.4(b)	Design an experiment showing natural Rubisco protein isolation, purification, crystallization and X-ray crystallography-based structure determination.	[5]	3	6
Q.5(a)	Explain the concept needs to be considered while designing the new protein.	[5]	4	4
Q.5(b)	Design and explain a strategy that might be used to alter the specific amino acid of Rubisco protein using site-directed mutagenesis.	[5]	4	6

::::::28/04/2023::::::E