

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

CLASS: MSC
BRANCH: Bioinformatics & Computational Biology

SEMESTER : I
SESSION : MO/2023

SUBJECT: BI101 CELL & MOLECULAR BIOLOGY

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.
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		CO	BL
Q.1(a)	Define the term Life. Explain diagrammatically the theory of chemical evolution of life.	[5]	1 2
Q.1(b)	Draw a labeled eukaryotic cell structure and write function of any two cell organelles.	[5]	3 2
Q.2(a)	Differentiate between deoxyribose nucleic acid (DNA) and ribose nucleic acid (RNA).	[5]	1 1
Q.2(b)	Give a brief account on the central dogma of molecular biology.	[5]	2 2
Q.3(a)	Explain the mode of action of enzyme and write any two industrial applications of enzymes.	[5]	4 3
Q.3(b)	Describe different steps of the glycolytic pathway with total energy yield from one molecule of glucose in the form of ATP under anaerobic conditions.	[5]	2 2
Q.4(a)	Describe Mendel's laws of inheritance.	[5]	1 1
Q.4(b)	Write a note on blood groups in humans.	[5]	1 2
Q.5(a)	Describe the polymerase chain reaction (PCR) technique and its applications.	[5]	4 2
Q.5(b)	Describe concept of clustered regularly interspaced short palindromic repeats (CRISPR) gene editing technique and its limitations.	[5]	4 3

:::29/11/2023 E:::