

01/2/23

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 Odd Semester-End term Examination (2023)
M.Sc. Programme - Biotechnology Semester I

Paper Name: **FUNDAMENTALS OF BIOTECHNOLOGY**
 Time: **3 Hours**

Paper Code: **MBT-CC100**
 Maximum Marks: **60**

Note: This paper has 3 sections A, B, and C. Attempt all the three sections Section A: Answer all the questions; Section B: Answer any 2 out of 4; Section C: Answer all the questions, each question has an internal choice

Abbreviations Used CO- Course Outcome, PO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6

COURSE LEARNING OUTCOMES

Upon the completion of course, the student will understand:

CLO100.1: Concept and Significance of Biotechnology; Concept of pH, buffers, thermodynamics, Molarity, Normality (Cognitive Level: Understand)

CLO100.2: Applications of techniques like Microscopy, Cell sorting, Recombinant DNA technology, Somatic hybridization, (Cognitive Level: Apply)

CLO100.3: Application of Plant Breeding technology, GMOs, Biofuel and Sewage treatment, Gene therapy, monoclonal antibodies, Gene pool conservation, Bio fortification, Nutraceuticals (Cognitive Level: Apply)

CLO100.4: Analyze the Ethical issues in Biotechnology for Agriculture and health care, Quality control, good manufacturing /laboratory practices. (Cognitive Level: Apply)

SECTION A

Q. No	Attempt all the question	1 × 10 = 10 marks	CO	BTL
1.	What is transgenesis process?		1	1
2.	List some examples of transgenic animals		2	2
3.	A solution is prepared by bubbling 1.56 grams of HCl in water. Here, the volume of the solution is 26.8 ml. Calculate the molarity of the solution.		1	5
4.	Define somatic hybridization?		2	2
5.	Given below is the pedigree of a common form of inherited color blindness. What pattern of inheritance best accounts for this pedigree?		3	4
6.	Give a brief account on recombinant enzymes.		2	2

7.	What are the two functions of hybridoma cells?	3	1
8.	What are single cell proteins?	4	1
9.	Define transformation in bacteria.	4	4
10.	Name one of the most controversial approaches in gene therapy.	3	6

SECTION B

Q. No	Attempt any TWO out of four Question	15 × 2 = 30 marks	CO	BTL
11.	Describe three methods of genetic recombination in bacteria.		2	2
12.	What is a patent and what are the criteria of patentability? Describe three different types of patents.		4	4
13.	Write a short note on the following a) Monoclonal antibodies b) Hybridoma technology c) Recombinant enzymes		3	2
14.	Discuss about different methods of gene transfer in transgenesis		1	2

SECTION C

Q. No	Attempt all the questions. Every question has an internal choice.	CO	BTL
	4 × 5 = 20 marks		
15.	What are genetically modified organisms? Explain with an example. OR Discuss about the BT cotton genetically modified plant. How the plant become insect resistant.	3	1
16.	Give a detailed account on Farmers' rights. OR What are the Good Laboratory Practices (GLP) and discuss about the levels?	4	5
17.	Explain the seven steps involved in recombinant DNA technology. OR What are the pros and cons of GMOs development?	2	3
18.	Discuss about two different types of immunity. OR What is somatic hybridization and discuss about fusing methods	1	2
19.	Discuss about various methods of food preservation OR What are different cells of immune systems which are involved in innate and adaptive immunity	3	6

Table 1: Distribution of question and marks among the units of syllabus

Unit	Question Numbers	Total Marks
1	1,3,14,18	21
2	2,4,6,11,17	22
3	5,7,10,13,19	22
4	8,9,12,16	21

Table 2: Mapping between CLOs and questions

Unit	BTL	Question Numbers	Total Marks
1	1,5,2,2	1,3,14,18	21
2	2,2,2,2,3	2,4,6,11,17	22
3	4,1,6,2,6	5,7,10,13,19	22
4	1,4,6,4,5	8,9,12,16	21