STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted during the academic year 2023– 2024)

M. Sc. DEGREE EXAMINATION, APRIL 2024
BIOTECHNOLOGY
SECOND SEMESTER

COURSE : CORE
PAPER : ANIMAL AND PLANT BIOTECHNOLOGY
SUBJECT CODE : 23BY/PC/AP24
TIME : 3 HOURS

MAX. MARKS: 100

Q. No.	SECTION A Answer ALL Questions (10 x 1 = 10 marks)	CO	KL
1	What is the term used to describe specialized facilities equipped with bioreactors for large-scale production of animal cell cultures?	1	1
2	What is the name of the common vessel used for small-scale experiments and routine maintenance in animal cell culture?	1	1
3	What is the term used to describe the culture of cells directly isolated from animal tissues, with a limited lifespan in culture?	1	1
4	What is the process called when cells are modified to achieve indefinite proliferation in culture?	1	1
5	What is the term for the process of inducing somatic cells to undergo embryo-like development in plant tissue culture	1	1
6	Define protoplast technology.	1	1
7	What are genes that are attached to regulatory sequences of other genes and used as markers to study gene expression called?	1	1
8	What is the biotechnological technique used to introduce foreign DNA into the chloroplast genome of plants called?	1	1
9	Recall disease model.	1	1
10	What is the term used to describe a condition in plants where the male reproductive structures lack functionality, leading to an inability to produce viable pollen?	1	1
Q. No.	**SECTION – B** **Answer ALL Questions (5 x 2 = 10 marks)**	**CO**	**KL**
11	How does SOPs contribute to maintaining consistency and quality in laboratory practices?	1	2
12	Discuss suspended cell culture.	1	2
13	What are the primary objectives of screening secondary metabolites in plants and microorganisms?	1	2
14	Can you explain the purpose of using reporter genes in molecular biology experiments.	1	2
15	What is the primary mechanism through which plants develop herbicide tolerance?	1	2

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Q. No.	SECTION C Answer ALL Questions (4 x 10 = 40 marks)	CO	KL
16a	Compile how would you design a quality control protocol using GLP to ensure accurate application of aseptic techniques in animal cell culture. **(or)**	2	3
16b	Show how would you design a protocol for media preparation and sterilization in an animal cell culture lab, ensuring optimal growth conditions and minimizing contamination risks.		
17a	Recommend the techniques that are employed to establish cell lines and conduct molecular characterization, demonstrating comprehension of the foundational principles **(or)**	2	3
17b	Construct the potential applications of Somatic Embryogenesis in enhancing crop yield and genetic improvement strategies.		
18a	Outline how a protocol for embedding plant embryos in synthetic seeds to ensure successful germination and growth is deviced. **(or)**	3	4
18b	Examine the tissue culture protocol to efficiently propagate a rare and endangered orchid species for conservation purposes.		
19a	Organize the principles of techniques for plant transformation to design a transformation protocol for introducing a foreign gene into a specific plant species. **(or)**	3	4
19b	Investigate the practical application of transgenic animals in biomedicine through the development of a genetically modified mouse model for studying cancer progression?		
Q. No.	**SECTION – D** **Answer ALL Questions (2 x 20 = 40 marks)**	**CO**	**KL**
20a	Evaluate the specific techniques that are employed in the production of haploid plants and germplasm conservation, demonstrating comprehension and application of the concepts. **(or)**	4	5
20b	Present how would you assess the suitability of different cell types for banking, considering their specific characteristics and requirements for preservation and storage.		
21a	Modify the existing protocol for *Agrobacterium tumefaciens* - mediated gene transfer to enhance transformation efficiency in a specific plant species. **(or)**	5	6
21b	Propose how you can manipulate reproduction in farm animals.		

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