Register Number:……..

KUMARAGURU
college of technology
character is life

B.TECH DEGREE EXAMINATIONS: MAY, 2023

(Regulation 2018)

Sixth Semester

BIOTECHNOLOGY

U18BTT6002**:** Cell Culture Techniques

COURSE OUTCOMES

CO1:	Outline and design model laboratory layout for setting up a plant tissue culture and animal cell culture lab.
CO2:	Compare and illustrate plant and mammalian cell culture techniques and media for culturing of plant and mammalian cells
CO3:	Elaborate and compare various plant tissue culture technique
CO4:	Significant applications of tissue culture techniques in generating transgenic plants
CO5:	Explain and illustrate techniques for development of primary and established cell culture and measurement of cell viability.
CO6:	Illustrate the plant and mammalian cell techniques for economic importance

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Differentiate primary and secondary containment in tissue culture laboratory.	CO1	[K_2]
2.	Mention a challengeable biological hazard in tissue culture laboratory.	CO1	[K_1]
3.	Give MS media stock solutions and their required volumes to prepare 1 Liter of MS media.	CO2	[K_2]
4.	Doubling time and generation time are same or different? – If so, justify.	CO2	[K_3]
5.	Why we prefer shoot tip as explant to culture viral free plants?	CO3	[K_4]
6.	Differentiate primary and secondary hardening.	CO3	[K_2]
7.	Specify the name and concentration of dye used in cell viability and MTT assay.	CO4	[K_2]
8.	Give one example for anchorage dependent and independent culture.	CO4	[K_1]
9.	List any two-drought resistant plant produced by transgenic approach.	CO5	[K_2]
10.	What do you mean by transfection technology?	CO6	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Specify challenges associated with establishment of aseptic techniques and suggest proposed solutions which were encountered by you.	10	CO1	[K_4]

	b)	How it is important to study various biosafety level before handling of plant or animal cells/tissue inside the research laboratory?	6	CO1	[K_3]
12.	a)	Dedifferentiation and redifferentiation is cooperative and integrated process in callus formation – Justify your answer with suitable example.	10	CO2	[K_3]
	b)	Why we have to use serum and serum free media for culturing of mammalian cells – Justify your answer with suitable examples.	6	CO2	[K_3]
13.	a)	Recommend plant tissue culture technique to produce any one low volume high value product. -Explain the process with suitable illustration.	10	CO3	[K_4]
	b)	List the merits and demerits of PEG mediated protoplast fusion techniques.	6	CO3	[K_2]
14.	a)	Now a days, primary culture system gained greater attention as tool in cellular and molecular biology, providing excellent model systems for studying physiology of cells and it has limitless application – Give your insight views with specific application to justify the above statements.	10	CO4	[K_4]
	b)	Suggest reactors with specifications to handle infinite cell lines for production of metabolites.	6	CO4	[K_3]
15.	a)	How will you apply knowledge on cell counting by using haemocytometer – Explain steps with suitable illustration.	10	CO5	[K_3]
	b)	Illustrate the steps involved in MTT assay to study cytotoxicity potential of cell line.	6	CO5	[K_3]
16.	a)	How will you produce recombinant coagulation factors under *invitro* conditions- Suggest techniques and procedures with suitable illustration.	10	CO6	[K_3]
	b)	Tissue culture banana is one of the most successful plants obtained via micropropagation- but success rate is very less for other plants? – give your comments	6	CO6	[K_3]

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