LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION

PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

SIXTH SEMESTER – **APRIL 2025**

UPB 6501 – PLANT BIOTECHNOLOGY

Date: 07-05-2025 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

	SECTION A - K1 (CO1)
	Answer ALL the Questions **(10 x 1 = 10)**
1.	**Fill in the blanks**
a)	Virus free plants can be produced by _____ .
b)	Polyadenylation is a _____ modification.
c)	Blue white colony selection is possible when the cloning plasmid contains _____ ,
d)	Gene gun uses _____ as bombardment particle.
e)	RFLP is expanded as _____ .
2.	**State whether the following statements are TRUE or FALSE**
a)	Haploid plants can be produced by embryo culture.
b)	Heterogenous mRNA is converted into nascent mRNA by posttranscriptional modifications.
c)	pBR322 is a natural plasmid that is used in genetic engineering research.
d)	Commonly used selection marker in genetic engineering research is pesticide resistance.
e)	Bt cotton is a genetically modified plant that has herbicide resistance properties.
	SECTION A - K2 (CO1)
	Answer ALL the Questions **(10 x 1 = 10)**
3.	**Choose the correct answer**
a)	Dry heat sterilization is done by using a)autoclave b) hot air oven c) pressure cooker d) UV radiation
b)	Changes that include formylation, hydroxylation, glycosylation, are collectively known as a) Post translational modification b) post transcriptional modification c) central dogma d) None
c)	In cDNA, c' refers to a) collective b) catamer c) complementary d) chloroplast
d)	_____ is the indirect gene transfer method. a) gene gun method b) microinjection c) electrofusion d) plasmid method
e)	Which is not true for biosafety? a) to use safe equipment b) not to release infectious agents c) safety of researchers d) IPR
4.	**Answer the following, each in about 50 words**
a)	What is acclimatization?
b)	Why is Arabidopsis used in genetic research?
c)	What is gene sequencing?
d)	Recall microinjection.
e)	Define golden rice.

	SECTION B - K3 (CO2)
	Answer any TWO of the following in 500 words (2 x 10 = 20) **Draw diagrams / flowcharts wherever necessary**
5.	Explain the production of artificial seeds and its significance.
6.	Elaborate the procedure and the applications of PCR.
7.	Discuss the importance of promotor gene and marker gene and its merits and demerits.
8.	Explain the direct gene transfer methods employed in plants.
	SECTION C – K4 (CO3)
	Answer any TWO of the following in 500 words (2 x 10 = 20) **Draw diagrams / flowcharts wherever necessary**
9.	Explain the post transcriptional changes that occurs in the mRNA.
10.	Compare and contrast the genomic and cDNA libraries.
11.	Explain the expression of nitrogen fixing genes in legumes.
12.	Illustrate the gene transfer technique in plants using *Agrobacterium*.
	SECTION D – K5 (CO4)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
13.	Discuss the interaction between rhizobial genes with its host.
14.	Elaborate on the different types of cloning vectors.
	SECTION E – K6 (CO5)
	Answer any ONE of the following in 1000 words (1 x 20 = 20) **Draw diagrams / flowcharts wherever necessary**
15.	Discuss the advantages and disadvantages of producing hybrid plants using protoplast.
16.	Explain any two blotting techniques and their applications.

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