LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY & PLANT BIO-TECH.

FIFTH SEMESTER – APRIL 2010

PB 5512/PB 5504 - PLANT BIO-TECHNOLOGY

Date & Time:03/05/2010 / 1:00 - 4:00	Dept. No.	Max. : 100 Mark
	<u>PART - A</u> (20 Marks)	
	Answer ALL the questions	
I. Choose the correct answer		$(5 \times 1 = 5 \text{ Marks})$
01. Production of secondary	metabolites is mostly done through	h
a. Callus culture	 b. Cell suspension culture 	
c. Somatic embryogenes	sis d. Shoot culture	
02. Anther culture is used to	generate	
a. Diploid Plants	b. Triploid plants	
c. Tetraploids	d. Haploid plants	
03. Rhizobium-legume spec	cificity is governed by specific plant	t proteins called
a. Pectin	b. Lectins	
c. Pisatin	d. Lecithins	
04. Vectors having origin of known as	f replication site with single strand	DNA of bacteriophage are
a. Cosmids	b. Plasmids	
c. Phagemids	d. Phasmids	
05. Taq DNA polymerase e		
a. PCR	b. AFLP	
c. RAPD	d. PAGE	
II. State whether the following sta	tements are True or False	$(5 \times 1 = 5 \text{ Marks})$
06. Higher concentration of	auxin and lower concentration of c	ytokinin induces shoot formation.
07. Sodium alginate is used	as a medium for synthetic seed pro	duction.
08. Mitochondrial DNA is a	a circular and single stranded molec	rule.
09. Maxam and Gilbert's se	quencing method involves chain ter	rmination.
10. Gus gene is a reporter g	ene.	
III. Complete the following		$(5 \times 1 = 5 \text{ Marks})$
11. A property of normal ce	ell to give rise to a complete individ	ual is called
	ytoplasm of both the cells involved	
13. Ri- plasmid causes	disease in plants.	
14. A process by which pro	teins are electrophoretically separated antibody is called	ed, transferred to a membrane and
-	ies overlapping cloned sequences th	nat forms continuous segment of

IV. Answer all each in about 50 words

 $(5 \times 1 = 5 \text{ Marks})$

- 16. Define the term: Acclimatization.
- 17. What is Embryo rescue?
- 18. What you mean by Cytoplasmic male sterility?
- 19. What is Electroporation?
- 20. Write about the importance of *Bacillus thuringiensis*.

PART - B

Answer the following, each within 500 words only. Draw diagrams and flowcharts wherever necessary. $(5 \times 7 = 35 \text{ Marks})$

21. a) Give a detailed account on methods of sterilization techniques used in plant tissue culture.

Or

- b) What is an explant? How will you induce callus from it?
- 22. a) Write a detailed account on cryopreservation. Add a note on its application.

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- b) Suggest a method for developing virus-free plants through tissue culture.
- 23. a) Explain the functions of rhizobial genes.

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- b) Describe the structure and organization mitochondrial DNA.
- 24. a) Elaborate on PCR and its applications.

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- b) What is a cDNA library? How is it constructed?
- 25. a) Give the role of selectable markers in gene cloning.

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b) Give the strategies used for developing herbicide resistant plants.

PART - C

Answer any THREE of the following, each within 1200 words only. Draw diagrams and flowcharts wherever necessary. $(3 \times 15 = 45 \text{ Marks})$

- 26. Give a detailed account on various types of media, their composition and growth hormones used in plant tissue culture.
- 27. Describe the steps involved in isolation and fusion of protoplast. Add a note on the application of the technique.
- 28. Explain the genetic organization of Ti plasmid and role of T-DNA in developing transgenic plants.
- 29. Write an essay on any three cloning vectors used in rDNA technology.
- 30. What are molecular markers? How are they used in gene mapping?

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