



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – NOVEMBER 2011

PB 5518/PB 5512/PB 5504 - PLANT BIOTECHNOLOGY

Date : 08-11-2011
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART – A (20 Marks)

Answer ALL the questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

01. Which of the following is a disinfectant used in plant tissue culture?
a. DMSO b. Sodium alginate c. Mercuric chloride d. Sodium citrate
02. Virus free plants are generated through
a. Ovule culture b. Embryo culture c. Meristem culture d. Anther culture
03. *Agrobacterium rhizogenes* is used for
a. Hairy root induction b. Cell proliferation c. Root initiation d. Opine synthesis
04. *cDNA* is synthesized by the use of
a. *Taq* polymerase b. Reverse transcriptase c. Klenow fragment d. RNase
05. Which of the following is used as a reporter gene?
a. CAT gene b. CRY gene c. CpT1 gene d. ALS gene

II. State whether the following statements are True or False

(5 x 1 = 5 Marks)

06. Embryo rescue technique is used for breaking seed dormancy.
07. Sodium alginate is used for cryopreservation.
08. Nod genes and nif genes are located in chromosomal DNA of *Rhizobium*.
09. Phagemid is a vector with oriC region and single stranded phage DNA.
10. Bt gene is used against lepidopteran insects when cloned in transgenic plants.

III. Complete the following

(5 x 1 = 5 Marks)

11. Shoot induction in callus is achieved by increasing the level of -----.
12. Micropropagation is also called as----- propagation.
13. Cytoplasmic male sterility in maize is through the ----- parent.
14. A process by which proteins are electrophoretically separated, transferred to a membrane is called -----.
15. ----- strategy is the most favoured strategy to make virus resistant plants.

IV. Answer all each in about 50 words

(5 x 1 = 5 Marks)

16. Totipotency
17. Somatic embryogenesis
18. Chloroplast DNA
19. RAPD
20. Autoradiography

PART - B

Answer the following, each within 500 words only.

Draw diagrams and flowcharts wherever necessary.

(5 x 7 = 35 Marks)

21. a) Give an account of culture media and their components used for plant tissue culture.
Or
b) Define callus and give the steps involved in induction of callus.
22. a) Describe the technique of protoplast fusion.
Or
b) Outline the protocol used for generating haploid plants using plant tissue culture.
23. a) Describe the structure and function of *Ti*-plasmid.
Or
b) Write notes on post transcriptional & translational modification in plant genome.
24. a) Write short notes on i) Southern hybridization ii) Microinjection
Or
b) What are restriction enzymes? How are they used in genetic engineering?
25. a) Describe the technique of RFLP and its applications.
Or
b) What are the different selectable markers used in screening of recombinants.

PART – C

Answer any THREE of the following, each within 1200 words only.

Draw diagrams and flowcharts wherever necessary.

(3 x 15 = 45 Marks)

26. Give a detailed account on suspension cell culture and its significance.
27. Write an essay on cryopreservation of plant materials.
28. Explain the molecular interaction of *Rhizobium* and the legume plants.
29. Describe the steps involved in the construction of a *cDNA* library.
30. Elaborate on the Genetic engineering of herbicide resistant transgenic plants.

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