LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – NOVEMBER 2007

AE 13

PB 5504 - PLANT BIOTECHNOLOGY

Date : 29/10/2007 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

PART A (20 marks)

Answer All questions

I Choose the Correct Answer *(5 x 1 = 5 marks)*

01. Most suitable explant for the production of haploid plant is …

a. anther b. microspore c. ovule d. both a and b

02. In plant tissue culture, …… is a suitable hormone for root initiation.

a. IBA b. BAP c. 2,4 – D d. IAA

03. Pick the odd one out.

a. PEG b. Poly vinyl alcohol c. Calcium ions d. Calcoflour white

04. ***Cytoplasmic male sterility*** gene is encoded in ……. genome.

a. chloroplast b. mitochondrial c. nuclear d. both a and b.

05. *Gracilaria* belongs to …… algae.

a. red b. brown c. green d. blue

II State whether the following statements are True or False *(5 x 1 = 5 marks)*

06. Phenosafranin is used to identify dead protoplast.,

07. Vegetative part of the microspore cell is differentiated into callus.

08. T – DNA refers to transfer DNA.

09. Nylon membrane filter is used for southern blotting technique.

10. Sodium alginate is extracted from *Laminaria* sps.

III. Complete the following *(5 x 1 = 5 marks)*

11. Glasswares are sterilized in hot air oven at ….. C. for ……. minutes.

12. The required photoperiod for direct differentiation is …….. hours light and ……. hours darkness.

13. ……virus has single stranded DNA.

14. Taq DNA polymerase enzyme is extracted from ……

15. Cyanobacteria are commonly called as ……

IV. Answer all, each in about 50 words *(5 x 1 = 5 marks)*

16. Define somatic hybridization.

17. Ddistinguish between batch and continuous culture.

18. What is chimeric DNA?

19. What are opines?

20. Mention any four algal seaweeds.

PART B *(5 x 8 = 40 marks)*

Answer any five, each within 350 words only. Draw diagrams and flowcharts wherever necessary.

21. Define androgenesis. Explain how haploids are produced under *in vitro* condition.

22. Distinguish between:

    a. single cell clone and somaclone

    b. embryo and embryoid.

    c. *Ti* plasmid and *Ri* plasmid

    d. Gemini virus and CaMV virus.

23. Describe the Polymerase Chain Reaction technology.

24. Write notes on: a. Restriction enzymes b. pBR 322.

25. Give the biotechnological importance of yeast.

26. Describe the genetic organization and function of chloroplast genome.

27. Enumerate the significance of Blue Green Algae.

28. Describe the methodology of sodium alginate production. Add a note on their significance.

PART C *(2 x 20 = 40 marks)*

Answer the following, each within 1500 words only. Draw diagrams and flowcharts wherever necessary.

29. a) Give an account of:
    i. production of hybrids (12 marks)
    ii. micropropagation and its significances. (8 marks)

    or

    b) Describe the genetic aspects involved in nitrogen fixation in *legume – rhizobium* interaction

30. a) What is rDNA technology? Describe any four molecular techniques used in rDNA technology

    or

    b) Discuss in detail the application of *Agrobacterium tumefaciens* in biotechnology.

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