# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**M.Sc.** DEGREE EXAMINATION – **BIOTECHNOLOGY**

THIRD SEMESTER – **NOVEMBER 2017**

**16PBT3MC02 – PLANT BIOTECHNOLOGY**

Date: 03-11-2017 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

**PART – A**

**Answer ALL the Questions**

**I. Choose the correct answer (5 x 1 = 5 Marks)**

1. Plant tissue culture (PTC) was done for the first time in which plant?
   a) Datura b) Elm c) Orchids d) Tobacco
2. Microcarrier which is used in gene gun
   a) Silver b) Gold c) Aluminium d) Copper
3. Which of the following is not an abiotic stress?
   a) Drought b) Salt c) Herbicide d) Insect
4. Which of the following is not a biodegradable plastic?
   a) Polyhydroxy butrate b) Hydroxy apetite c) Hydroxyl ethyl d) Poly glycon
5. *Ex-situ* conservation includes
   a) Sacred grove b) Seed banking c) Gene sanctuary d) Hot spots

**II. State whether the following are true or false. (5x1=5 Marks)**

6. The UV range which kills microbes in PTC is from 240-260 nm.
7. Selectable marker protects the plant from a selective agent which would kill the plant.
8. Consumption of _____ rice can reduce Vitamin A deficiency.
9. Plant bioreactor is also called as molecular farming.
10. Nagoya protocol is a supplementary agreement to the Convention on Biological Diversity.

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

11. Virus free plants can be obtained by _____culture.
12. _____ gene is used to determine if foreign DNA is inserted into the host organism.
13. Herbicide tolerance is an example of _____ stress.
14. _____ is a fungal resistance gene, which secretes PR proteins.
15. _____are legal documents which give the owner exclusive rights to market a product.

**IV. Answer the following within 50 words (5 x 1 = 5 Marks)**

16. Define totipotency
17. What is meant by sonication assisted gene transfer?
18. Cite two examples of chemical mutagens.
19. Mention two methods for the separation of phytochemical.
20. What is patenting of genes?

**PART B**

**Answer the following each within 500 words. (5 x 8 = 40 marks)**
**Draw diagrams wherever necessary**

21. (a) Discuss the requirements in setting up a PTC laboratory.

OR

(b) Distinguish between callus and cell suspension cultures.

22. (a) Briefly explain the role of SCAR and SSR markers.

OR

(b) Describe the *in vitro* breeding tools used in crop improvement.

23. (a) Discuss two chloroplast transformation methods.

OR

(b) Explain bacterial resistance genes.

24. (a) Distinguish between quantitative and qualitative estimation of phytochemicals.

OR

(b) Explain bacterial resistance genes.

25. (a) Discuss briefly on the biosafety and ethical issues involved in production of genetically modified crops.

OR

(b) Give a short note on the protection of plant varieties and Farmers Right Act.

## PART – C

**Answer any TWO of the following, each within 1500 words. (2 x 20 = 40 Marks)**
**Draw diagrams wherever necessary.**

26. Explain somaclonal variations seen in PTC.
27. Write an account on any two methods of gene transfer.
28. Discuss the production of Flavr Savr tomato using antisense RNA gene.
29. Describe how plant is used as a bioreactor for the production of pharmaceuticals.

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