LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **APRIL 2023**

PBT 3502 – PLANT BIOTECHNOLOGY

Date: 04-05-2023 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART A

Answer ALL the questions

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

1 The process of preservation of plant germplasm at ultralow temperature
a) Cryotherapy b) Cryopreservation c) Cryotreatment d) Cryopsy

2 Which one of the following is a visual marker?
a) GUS b) nptII c) hpt d) bar

3 The gene for golden rice was isolated from
a) *Psidium* b) *Bacillus* c) *Erwinia* d) *Agrobacterium*

4 Find out the one which is not a secondary metabolite?
a) Vincristine b) Vinblastine c) Phytoalexins d) Virus

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.** **(5 x 1 = 5)**

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 yellow rice can reduce vitamin A deficiency.

9 Terpenoids are plant secondary metabolites.

10 Patent is an intellectual property right to use or sell an invention for a limited period.

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

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 done for introducing novel genes in plants by genetic engineering.

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)**

16 Mention the composition of macerozyme used in protoplast isolation.

17 What are allozymes?

18 Define plantibodies.

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 organogenesis and somatic embryogenesis

22 a) Describe the *in vitro* breeding tools used in crop improvement
OR
b) Enumerate the RNAi applications in plant biotechnology

a) Explain bacterial resistance genes in genetic engineering

23 OR

b) Describe the *Agrobacterium* method of gene transfer in crop plants

a) Discuss about two abiotic stresses in plants

24 OR

b) Give an account on thin layer chromatography technique in separation of phytochemicals

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

25 OR

b) Explain the importance of cartgena protocol in food safety

PART C

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

26 With the help of illustration explain the biosynthesis of auxins

27 Give an account on RAPD markers and applications

28 Explain the production of genetically modified tomato plants

29 Discuss in detail IPR and different regulation involved in it .

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