



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – APRIL 2017

BT 3823- PLANT BIOTECHNOLOGY

Date: 28-04-2017
09:00-12:00

Dept. No.

Max. : 100 Marks

PART – A
Answer all the questions

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

- The Father of plant tissue culture is
a) Norman Borlaug b) Karl Ereky c) Ross Harrison d) Gottlieb Haberlandt
- A good source for chitinase genes
a) Sunflower b) *Bacillus* c) Tobacco hornworm d) Daffodils
- The hormone which plays an important role in callus induction
a) 2,4-D b) BAP c) GA₃ d) TDZ
- The herbicide resistance has been developed in crops using
a) Protease inhibitors b) *bar* gene c) *Bt* gene d) Lectins
- Chlamydomonas* produce carbohydrates such as
a) Arabinose b) Xylose c) Rhamnose d) Glucose

II. State whether the following are true or false(5 x 1 = 5 Marks)

- Male sterile plants can produce viable eggs.
- Alpha amylase inhibitors are used to develop bacterial resistant crops.
- IBA is a rooting hormone.
- Ingo Potrykus first developed the *Bt* corn.
- Cephalosporins are secondary metabolites produced by *Spirulina*.

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

- Virus free plants can be raised through _____ culture.
- GBNV stands for _____.
- _____ are photoreceptor proteins like flavoproteins that mediate phototropism responses in higher plants.
- Model plant used for genetic studies _____.
- An example for green algae is _____.

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

16. Mention the role of cytoplasmic male sterility in agriculture?
17. Define PR proteins.
18. Which pathway is used in biosynthesis of auxin?
19. Distinguish between Ri Plasmid and Ti Plasmid.
20. Which fungi produce taxol?

PART – B

Answer the following, each within 500 words. Draw diagrams wherever necessary.
(5 × 8 = 40 Marks)

21. (a) How are secondary metabolites produced through plant tissue culture?

OR

- (b) Write a short note on somatic embryogenesis.

22. (a) Give a note on chitinase and glucanase genes and their role in fungal resistance.

OR

- (b) Explain the physical methods of plant gene transformation.

23. (a) Briefly describe the role of hormones in plant tissue culture.

OR

- (b) What are seed storage proteins? Write briefly on the different kinds of seed storage proteins in legumes.

24. (a) *Agrobacterium tumefaciens* is called as natural genetic engineer. Justify

OR

- (b) Discuss the role of *nif* genes in increasing crop productivity

25. (a) Write briefly on mass cultivation of blue green algae.

OR

- (b) What is VAM? Add a brief note on its importance.

PART – C

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

26. How are hybrids produced under *in vitro* culture technique.
27. Give an account on the importance of insect resistant genes in agricultural biotechnology.
28. Explain in detail the applications of transgenic plants.
29. Write a detailed account on the occurrence, distribution and economic importance of algae.
