

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – NOVEMBER 2019

18PBT3MC02 – PLANT BIOTECHNOLOGY

Date: 31-10-2019

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)

- Plant hormone which induce flowering
a) 2-isopentyl adenine b) Thidiazuron c) GA₃ d) 6-furfurylamino purine
- Molecular markers are used to construct
a) Cytogenetic maps b) Random repeats c) Microsatellites d) Tandem repeats
- Virulence trait of *Agrobacterium tumefaciens* is borne on
a) Chromosomal DNA b) Plasmid DNA
c) Cryptic plasmid DNA d) Virulent chromosomal DNA
- Which of the following column are not used in high pressure liquid chromatography?
a) Analytical column b) Separation column c) Guard Column d) Capillary column
- How long do patents usually last for?
a) 10 years b) 20 years c) 40 years d) 5 years

II. State whether the following are true or false.

(5x1=5 Marks)

- Phenolic compounds in PTC can be removed by subculture.
- Streptomycin phosphotransferase is a selection marker for transformed plant cells.
- Post transcription gene silencing is particularly useful in plants.
- Phytochemicals have been shown to reduce cardiovascular disease and cataracts.
- Sunderbans is a hot spot of biodiversity in India.

III. Complete the following

(5 x 1= 5 Marks)

- Father of plant tissue culture is _____.
- _____ is signalling molecule which regulates the expression of *vir* genes.
- The process of RNA inactivation by siRNAs is termed as _____.
- Phytoalexins play a role in _____ resistance in crop plants.
- Equitable sharing of benefits is an objective of _____ protocol.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

16. Mention the role of magnesium in plants.
17. Name any four restriction enzymes.
18. What is gene pyramiding?
19. Which vitamin is found in carotenoids?
20. What is the function of regulatory agencies?

PART B

Answer the following, each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a) What are the various nutrient media used in PTC?

OR

- (b) Distinguish between organogenesis and somatic embryogenesis.

22. (a) Enumerate the RNAi applications in plant biotechnology.

OR

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

23. (a) Give an account on gene pyramiding.

OR

- (b) Discuss biotic stresses in plants.

24. (a) Give an account on phytoalexins.

OR

- (b) Explain the use of plants in bioreactor production.

25. (a) Give a brief note on patenting of transgenic organisms.

OR

- (b) Discuss the various ethical issues concerned with genetically modified foods.

PART – C

Answer any TWO of the following, each within 1500 words.

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Explain in detail the biosynthesis of auxins and add a note on their functions.
27. Write an account on SCAR and ISSR markers.
28. Give a detailed essay on the β -carotene pathway in production of golden rice.
29. Give an account on Nagoya protocol on access of bioresources and benefit sharing.
