QP Code: PV25B003

Reg. No : .....

Name : .....

ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

II SEMESTER (CBCSS-VPG) DEGREE EXAMINATION, MARCH 2025

M Voc Applied Biotechnology

GEC2AB06 : PLANT AND AGRICULTURAL BIOTECHNOLOGY

2024 Admission Onwards

Time:3 Hours **Maximum Weightage:30**

Part A

*Short answer type questions: Answer **any four** questions. Weightage **2** for each question.*
(4x2 = 8 Weightage)

1. What are the key components of a plant tissue culture medium? How do they influence plant growth? [BTL1]
2. Write Briefly on [BTL1]
   a) Expression vectors
   b) 35S promoter
   c) Genetic markers
   d) Reporter genes
   e) Viral vectors
3. Demonstrate the role of cyanobacteria in Nitrogen fixation in aquatic ecosystem. [BTL3]
4. Describe the process of protoplast isolation and culture. [BTL2]
5. Describe the setting up of a vermicomposting bin for a small household. [BTL3]
6. Examine the role of Bt cotton in reducing pesticide usage in agriculture. [BTL4]
7. Evaluate the advantages and limitations of RNA interference (RNAi) versus CRISPR interference (CRISPRi) for gene silencing in a model organism. [BTL5]

Part B

*Short essay-type questions: Answer **any four** questions. Weightage **3** for each question.*
(4x3 = 12 Weightage)

8. Explain the Mechanism of RNAi Technology. [BTL2]
9. Explain somaclonal variations. [BTL1]
10. A botanical garden wants to preserve the germplasm of an endangered orchid species using cryopreservation. Describe the steps to be followed for this process. [BTL3]

Turn Over

11. Apply an IPM strategy for managing a pest outbreak in wheat crops. [BTL3]

12. How can techniques like cell suspension culture be used for secondary metabolite production? [BTL4]

13. Analyze the impact of intellectual property rights on small-scale farmers using GM seeds. [BTL4]

14. Analyze the role of transgenic technology in production of antibiotics. [BTL4]

Part C

*Essay-type questions: Answer **any two** questions. Weightage **5** for each question.*
(2x5 = 10 Weightage)

15. List major plant growth regulators and their primary functions. [BTL1]

16. Explain the technique of *Agrobacterium* mediated transformation. [BTL2]

17. How can transgenic crop like sweet potato be integrated into sustainable agricultural practices? Explain. [BTL3]

18. Explain the technique of antisense RNA technology. Comment on the application of this technique in delaying the ripening and softening of fleshy fruits. [BTL3]

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