

KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

(6 Pages)

Reg. No:

Question Code No : 25003504

Course Code : 24PMB034

PG Degree - End Semester Examinations, November 2025

Third Semester

M.Sc. BOTANY

Industrial Botany

(For those who joined in July 2024 onwards)

Time : 3Hours

Maximum : 75 Marks

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer:

1. Which mineral is widely used in the glass industry?
(a) Quartz (b) Magnetite
(c) Chalcopyrite (d) Hematite
2. Find the leguminous plant commonly used for fodder.
(a) Maize (b) Lucerne
(c) Rice (d) Jute

3. What catalyst is typically used in the chemical preparation of oxalic acid from carbohydrates?
- (a) Magnesium oxide (b) Sodium hydroxide
(c) Calcium chloride (d) Sulfuric acid
4. Name the enzyme traditionally used to coagulate milk in cheese-making.
- (a) Pepsin (b) Trypsin
(c) Rennet (d) Amylase
5. Find the stimulant compound present in tea leaves:
- (a) Nicotine (b) Theobromine
(c) Caffeine (d) Piperine
6. Select the correct pair of plant and its gum:
- (a) Acacia – Gum arabic (b) Pinus – Gum tragacanth
(c) Aloe – Myrrh (d) Commiphora – Agar-agar
7. Show which bacteria is widely used in bioleaching of copper.
- (a) *Thiobacillus* (b) *Rhizobium*
ferrooxidans *leguminosarum*
(c) *Lactobacillus* (d) *Aspergillus niger*
acidophilus
8. Summarize the two main stages of biogas digestion.

- (a) Hydrolysis and combustion
(b) Fermentation and photosynthesis
(c) Oxidation and reduction
(d) Acid formation and methanogenesis

9. Infer why Golden Rice is considered a biofortified crop.

- (a) It contains herbicide resistance genes
(b) It produces β -carotene to combat vitamin A deficiency
(c) It increases grain size only
(d) It delays ripening

10. Outline the purpose of the barnase-barstar system in transgenic plants:

- (a) Enhance nitrogen fixation
(b) Induce male sterility for hybrid seed production
(c) Delay fruit ripening
(d) Improve flavor in vegetables

PART - B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) Organize a flowchart showing how seaweed biomass is harvested, processed and packaged for fertilizer use.

(OR)

(b) Construct the schematic diagram of the steps involved in the commercial production of agar and explain.

12. (a) Identify the industrial applications of yeast.

(OR)

(b) Develop a step-by-step process for ethanol production.

13. (a) List five economically important fibre-yielding plants and examine their industrial applications.

(OR)

(b) Simplify the process of wood seasoning and explain its effect on timber quality.

14. (a) Contrast pasteurization and sterilization processes in dairy product manufacturing.

(OR)

(b) Divide the bioleaching process into its main stages and explain each briefly.

15. (a) Simplify the procedure for establishing a primary cell culture from plant tissue.

(OR)

(b) Inspect the development of Dhara Mustard Hybrid and analyze its importance in Indian agriculture.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Compare the production process and industrial uses of carrageenan and algin.

(OR)

- (b) Explain the industrial production process of diatomaceous earth and its major functions.

17. (a) Determine the influence of fermentation parameters on citric acid production.

(OR)

- (b) Criticize common methods of amylase production.

18. (a) Analyze the chemical pulping process in paper production.

(OR)

- (b) List common plant sources of gums and resins with their economic uses.

19. (a) Compose an outline of the stages in anaerobic digestion for biogas production.

(OR)

- (b) Combine phytoremediation and microbial remediation to propose a strategy for treating emerging pollutants.

20. (a) Compose an essay on the original concept behind Flavr Savr tomato development.

(OR)

(b) Construct a schematic diagram to represent the steps in developing Bt-brinjal and provide a short explanation.