## 2023

## **BOTANY — HONOURS**

Paper: SEC-A-1 and SEC-A-2

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Paper: SEC-A-1

(Applied Phycology, Mycology and Microbiology)

Full Marks: 80

1. Answer the following questions:

- Answer the following questions:

  (a) Name two potential algal genera used for biodiesel production.

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- (b) What is diatomite? Write one practical application of it.
- (c) What is Agar-agar? Name one agar-producing alga.
- (d) What is Camembert cheese?
- (e) Write two fungal sources of the amino acid tryptophan.
- (f) Name two soil microbes used in mineral processing.
- (g) Write two fungal sources of Aflatoxin.
- (h) What is mycoprotein?
- (i) Write the names of two bacteria used as biofertilizer.
- (i) Name two Basidiomycetous fungi used as food.
- 2. Answer any four questions of the following:

- (a) Write a note on the role of algae in bioplastic production.
- (b) Give an outline idea of single cell protein (SCP) production from algae.
- (c) Give a flow chart of industrial production of ethanol.
- (d) What are the harmful effects of Aflatoxin on human health? Classify Aflatoxin.
- (e) Write a brief note on Rhizobium used as biofertilizer.
- (f) Give an outline of the industrial production of Streptomycin.
- 3. Answer any four questions of the following:
  - (a) Write the source organism and uses of the following: Lysine, Amylase, Griseofulvin, Riboflavin.

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(b)	(i) State the importance of Bacillus thuringenesis as biopesticide.	
` '	(ii) Write a brief note on algal toxins.	5+5
(c)	(i) Discuss the role of fungi in preparation of fermented food and beverage.	
	(ii) Mention the nutritional importance of mushrooms.	6+4
(d)	(i) Give an outline of vinegar production by 'Submerged fermentation' method.	
	(ii) Write a flow chart on the production of β-carotene.	5+5
(e)	(i) Give an outline of industrial production of cheese.	.01
	(ii) Discuss the role of algae in production of Carrageenan.	6+4
(f)	(i) What is VAM? Discuss the beneficial role of VAM.	
•	(ii) Write a note on the role of microbes in mineral processing.	(2+4)+4

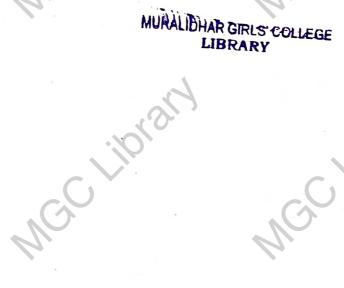
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Paper: SEC-A-2

(Biofertilizers)

Full Marks: 80

## Answer any ten questions: (a) What is eutrophication? (b) Write one symbiotic and one non-symbiotic $N_2$ -fixer. (c) What is Green manuring? (d) Mention any two associative effect of Azospirillum and crop response. (e) What is bacterization? (f) Give composition of the medium used for isolation of Rhizobium. (g) Write the basic difference between biocompost and vermicompost. (h) Write two advantages of the use of biofertilizers. (i) Name two inert materials used as carrier. (j) Mention two species of Rhizobium with their associated legume plants. (k) What is Monotropoid mycorrhiza? (l) How cyanobacteria increase soil fertility? (m) What do you mean by 'mycobeads'? (n) What do you mean by the startar culture? (o) What are the advantages of planting Casuarina plant? 2. Answer any four questions: (a) Briefly describe the process of biodegradation of municipal wastes. 5 (b) Mention two characteristic features of Frankia. How do you isolate Frankia? 2+3 (c) How does mass production occur in phosphate solubilizers? (d) Give an outline idea of field applications of vermicompost.

(e) Write a short note on application of Azolla in rice cultivation. (f) Describe crop response with vesicular arbascular mycorrhiza.

## 3. Answer any four questions:

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- (a) Write the systematic position of Azolla. Briefly describe the Azolla-Anabaena azollae association. 2+8
- (b) Write notes on isolation and field applications of Azotobacter.

5+5

- (c) Mention the systematic position of genus *Rhizobium*. Briefly describe the isolation and mass production of *Rhizobium*. 2+4+4
- (d) How are N-biofertilizers added to the field? What is seed pelleting?

6+4

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- (e) Why is there a need to switch to organic farming? Explain different types of composting techniques.
- (f) Give the differences between Ectomycorrhiza and Endomycorrhiza. Write a concise account on role of mycorrhizae in phosphorus nutrition and growth.

  5+5

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