

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 :

2×10

- (a) Name two potential algal genera used for biodiesel production.
- (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.
- (j) Name two Basidiomycetous fungi used as food.

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2. Answer *any four* questions of the following :

5×4

- (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 :

2½×4

Lysine, Amylase, Griseofulvin, Riboflavin.

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- (b) (i) State the importance of *Bacillus thuringensis* 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.
(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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(3)

Z(3rd Sm.)-Botany-H/
SEC-A-1 & SEC-A-2/CBCS

Paper : SEC-A-2

(Biofertilizers)

Full Marks : 80

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1. Answer *any ten* questions :

- (a) What is eutrophication?
- (b) Write one symbiotic and one non-symbiotic N₂-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? 5
- (d) Give an outline idea of field applications of vermicompost. 5
- (e) Write a short note on application of *Azolla* in rice cultivation. 5
- (f) Describe crop response with vesicular arbuscular mycorrhiza. 5

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3. Answer *any four* questions :

- (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
- (e) Why is there a need to switch to organic farming? Explain different types of composting techniques. 3+7
- (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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