

2025

(FYUGP)

(1st Semester)

BOTANY

(MINOR)

Paper Code : M1/BCC-01

(Microbiology and Phycology)

Full Marks : 75

Pass Marks : 40%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

*The figures in the margin indicate full marks
for the questions*

UNIT—I

1. (a) Write a note on the species concept.
How do the different concepts differ
from each other?

10

Or

- (b) Describe the different modes of microbial nutrition with suitable examples. Discuss the factors affecting microbial growth. 5+5=10

UNIT—II

2. (a) Describe the structure and general characteristics of bacteria in terms of morphology, size and reproduction. 10

Or

- (b) Explain the different modes of bacterial reproduction with suitable examples.

UNIT—III

3. (a) Describe the structure and functional features of retrovirus with special reference to replication strategy. 10

Or

- (b) Explain the replication cycle of T_4 bacteriophage with diagram.

UNIT—IV

4. (a) Describe the range of thallus organization in algae with suitable examples. 10

Or

(b) Write short notes on the following : 10

(i) Methods of reproduction in algae

(ii) Role of algae in industry

UNIT—V

5. (a) Describe the life cycle of *Chara* with reference to its advanced features. 10

Or

(b) Write notes on any *two* of the following :

5×2=10

(i) Evolution of population

(ii) Types of bacteria

(iii) Discovery of viruses

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Subject Code : Bs/M1/BCC-01

To be filled in by the Candidate

BA / BSc / BCom / BBA / BCA
1st Semester End Term
Examination, 2025 (FYUGP)

Subject

Paper

INSTRUCTIONS TO CANDIDATES

1. The Booklet No. of this script should be quoted in the answer script meant for descriptive type questions and vice versa.
2. This paper should be ANSWERED FIRST and submitted within 1 (one) Hour of the commencement of the Examination.
3. While answering the questions of this booklet, any cutting, erasing, overwriting or furnishing more than one answer is prohibited. Any rough work, if required, should be done only on the main Answer Book. Instructions given in each question should be followed for answering that question only.

Signature of
Scrutiniser(s)

Signature of
Examiner(s)

Booklet No. A

231

Date Stamp

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To be filled in by the
Candidate

BA / BSc / BCom / BBA / BCA
1st Semester End Term
Examination, 2025 (FYUGP)

Roll No.

Regn. No.

Subject

Paper

DESCRIPTIVE TYPE

Booklet No. B

Signature of
Invigilator(s)

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(FYUGP)

(1st Semester)

BOTANY

(MINOR)

Paper Code : M1/BCC-01

(Microbiology and Phycology)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 15)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×15=15

1. What is the central idea of Darwin's theory of evolution?

- (a) Inheritance of acquired characters ()
- (b) Natural selection ()
- (c) Mutation pressure ()
- (d) Genetic drift ()

2. Which of the following provides the smallest unit of evolution?

- (a) Gene ()
- (b) Individual ()
- (c) Population ()
- (d) Ecosystem ()

3. Archaeobacteria differ from Eubacteria mainly in

- (a) the presence of cell wall ()
- (b) the types of membrane lipids ()
- (c) the presence of flagella ()
- (d) ribosome size ()

4. The bacterial cell wall component that provides rigidity is

- (a) chitin ()
- (b) cellulose ()
- (c) peptidoglycan ()
- (d) lignin ()

5. The genetic material of bacteria is usually present in

- (a) nucleus ()
- (b) nucleoid ()
- (c) mitochondria ()
- (d) endoplasmic reticulum ()

6. Which bacterium is used in the production of vinegar?

- (a) *Clostridium* ()
- (b) *Acetobacter* ()
- (c) *Lactobacillus* ()
- (d) *Pseudomonas* ()

7. Integration of viral genome into host DNA occurs in

- (a) lytic cycle ()
- (b) lysogenic cycle ()
- (c) latent infection ()
- (d) apoptosis ()

8. Viroids differ from viruses in that, they

(a) contain DNA instead of RNA ()

(b) lack protein coat ()

(c) infect animals only ()

(d) are larger than viruses ()

9. Transfer of bacterial DNA through bacteriophage is known as

(a) transformation ()

(b) conjugation ()

(c) transduction ()

(d) replication ()

10. The reserve food material in Phaeophyceae (brown algae) is

(a) floridean starch ()

(b) laminarin and mannitol ()

(c) starch and oil ()

(d) paramylon ()

11. Which of the following thallus organizations is found in *Spirogyra*?

(a) Colonial ()

(b) Filamentous unbranched ()

(c) Siphonaceous ()

(d) Unicellular motile ()

12. In *Nostoc*, heterocysts are mainly associated with

(a) photosynthesis ()

(b) nitrogen fixation ()

(c) spore formation ()

(d) sexual reproduction ()

13. The life cycle of *Nostoc* is

(a) haplontic ()

(b) diplontic ()

(c) haplo-diplontic ()

(d) asexual only ()

14. The thallus of *Ectocarpus* is

- (a) unicellular colonial ()
- (b) branched filamentous ()
- (c) coenocytic siphonaceous ()
- (d) parenchymatous ()

15. In *Chara*, the female reproductive organ is

- (a) globule ()
- (b) nodule ()
- (c) nucule ()
- (d) capsule ()

SECTION—II

(Marks : 10)

Answer/Write on any *five* of the following in few sentences : $2 \times 5 = 10$

1. Define sympatric speciation.

2. What are methanogens? Give an example.

(Marks : 10)

Answer/Write on any five of the following in few sentences :
2-5=10

1. Define sympatric speciation.

2. Define allopatric speciation.

3. Define convergent evolution.

4. Define divergent evolution.

5. Define adaptive radiation.

6. Define co-speciation.

7. Define hybridization.

8. Define polyploidization.

3. Differentiate between Archaeobacteria and Eubacteria.

4. Structure and function of heterocysts in *Nostoc*

5. Vegetative structure of *Vaucheria*

6. Differentiate between DNA and RNA viruses with examples.

7. Conjugation in bacteria

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