

Total number of printed pages-4

1A (Sem-1/ITEP) BOT01 MJ

2025

BOTANY

(Major)

Paper : BOT0100104-N

(Plant and Microbial Diversity)

Full Marks : 45

Time : 2 hours

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

1. Answer the following questions : (**all** are **compulsory**) 1×5=5
- (a) What are coacervates?
 - (b) What is the cell wall composition of fungi?
 - (c) Which form of lichen looks like crust on rocks?
 - (d) What is Epipetalous?
 - (e) What is capsid?

2. Answer the following questions : **(any five)**
2×5=10

- (a) Explain the role of Cyanobacteria in coralloid roots.
- (b) Define mycobiont and phycobiont.
- (c) What kind of atmosphere existed on primitive earth?
- (d) Describe the distribution of pigments found in algae and mention their functions.
- (e) What is the function of asci in Ascobolus?
- (f) Differentiate between Lamiaceae and Orchidaceae.
- (g) What are the basic structural components of a virus?
- (h) State the characteristics of Archaeobacteria.
- (i) Write the demerits of natural system of classification.
- (j) Define racemose inflorescence with suitable example.
- (k) Write the name of *two* commercially important plants of Orchidaceae.

3. Write short notes on : **(any four)** 5×4=20

- (a) Baltimore system of classification of virus.
- (b) "Viruses are biologist puzzle" – justify the statement.
- (c) State the nutritional types of bacteria.
- (d) Cymose type of inflorescence.
- (e) Major classes of fungi as per 'Ainsworth's' classification.
- (f) Whittaker's *five* kingdoms classification system with suitable example.
- (g) What are hyphae? Explain the types of hyphae based on the presence of septa.
- (h) General morphology of Chara with suitable diagram.

4. Write **any one** of the following : 10×1=10

- (a) Discuss the affinities of gymnosperm with pteridophytes and angiosperms.
- (b) Write a note on economic importance of lichen. Why lichen are called pollution indicators?

(c) Write in detail about TMV and Bacteriophage with suitable diagram.

(d) Give a detail account on life history of polytrichum.

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1A (Sem-1) BOT 2/ITEP

2025

BOTANY

Paper : BOT0100204-N

(Microbiology)

Full Marks : 45

Time : 2 hours

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

1. Choose the correct answer: (***all are compulsory***) 1×5=5
- (a) Bacteria which grow in extreme cold temperature is known as _____
- (i) Psychrophile
 - (ii) Thermophile
 - (iii) Halophile
 - (iv) None of the above

- (b) Germ theory of disease was first put forth by _____
- (i) John Tyndall
 - (ii) Louis Pasteur
 - (iii) Robert Koch
 - (iv) Antonie Van Leeuwenhoek
- (c) Which of the following cannot perform photosynthesis ?
- (i) Fungi
 - (ii) Colorless algae
 - (iii) Chemoheterotrophs
 - (iv) All of the above
- (d) E-Coli is an example of _____
- (i) Mesophile
 - (ii) Thermophile
 - (iii) Psychrophile
 - (iv) Psychrotroph
- (e) When the Cocci bacteria are arranged in chains it is called _____
- (i) Staphylococcus
 - (ii) Gaffkya
 - (iii) Streptococcus
 - (iv) Sarcinae

2. Answer the following questions in short :
(any five) 2×5=10
- (a) Define thermophilic bacteria with example.
 - (b) What is the role of Rhizobium in N₂ cycle ?
 - (c) What does GMO Stands for ? Name *one* bacterium commonly used in genetic engineering.
 - (d) Name *two* antibiotics and their producing organism.
 - (e) Name *two* RNA virus that infects human.
 - (f) What is 'germ theory of disease' ?
 - (g) Differentiate between saprotrophs and symbionts .
 - (h) Define biofertiliser with example.
 - (i) Name the major elements required in microbial nutrition.
 - (j) What are the symptoms and causal organism of early blight of potato ?
3. Answer the following questions : **(any four)**
5×4=20
- (a) Write a note on host-pathogen interaction.
 - (b) Explain the process of making SCP by using microbes.

- (c) Give an account of different nutritional groups of microorganisms.
- (d) Explain how the doctrine of spontaneous generation was rejected.
- (e) Explain the role of soil microbes in maintaining the soil health.
- (f) Write the Baltimore classification of virus in detail.
- (g) Discuss the role of microbes in nitrogen or carbon cycle.
- (h) Give a general account on viral replication with suitable diagram.

4. Answer the following questions in brief : **(any one)** 10×1=10

- (a) Describe the source and types of microbes present in the air. Write in brief about some microbial diseases that spread through the air:
- (b) Elucidate the process of genetic recombination of bacteria with suitable diagram.
- (c) Write note on microbes used in pharmaceutical industry.
- (d) Explain in brief the lytic and lysogenic cycle with appropriate illustration.