

**Master of Science (M.Sc.) Semester-IV (CBCS) (Microbiology) Examination**  
**ELECTIVE-MICROBIAL DIVERSITY, EVOLUTION AND ECOLOGY (MDEE)-II**

**Optional Paper-3**

**Paper-III**

Time : Three Hours]

[Maximum Marks : 80

**N.B. :—** All questions are compulsory and carry equal marks.

1. Explain the various components of terrestrial environment. 16

**OR**

Describe various microbial communities. 16

2. Describe the tolerance and inhibition patterns of succession. 16

**OR**

(a) Explain Sorensen coefficient. 8

(b) Explain community stability. 8

3. Discuss the measurement of genetic variation at DNA levels. 16

**OR**

Explain the Hardy-Weinberg natural selection and assortative mating. 16

4. (a) Explain Gause hypothesis. 8

(b) Describe syntrophy. 8

**OR**

Explain microbial interactions with plant. 16

5. Write notes on :

(a) Biofilms. 4

(b) Shannon index. 4

(c) Genotype frequencies. 4

(d) Antagonism. 4

M.Sc. Fourth Semester (Microbiology) (C. B. C. S.)  
**Elective Optional Paper-III - Microbial Diversity, Evolution and Ecology  
(MDEE)-II**

P. Pages : 1  
Time : Three Hours



PRS/KS/24/1708

Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.  
2. Draw well labelled diagram wherever necessary.

1. Describe fresh water environments and their components. 16
- OR**
- Explain impact of communities on microbial ecosystem. 16
2. Explain Shannon and Brillouin Indices of Diversity. 16
- OR**
- Discuss community stability of ecosystem and add a note on stability hypothesis. 16
3. Explain Hardy-Weinberg Law and give its significance in natural selection. 16
- OR**
- Discuss the measurement of genetic variation at DNA levels. 16
4. Write note on:-
- a) Syntrophism and commensalism. 8
- b) Gause hypothesis 8
- OR**
- c) Parasitism and Antagonism. 8
- d) Animal microbial interaction. 8
5. Write notes on:-
- a) Hydrothermal vents 4
- b) Inhibition patterns of succession. 4
- c) Inbreeding 4
- d) Oil spills management. 4

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M.Sc. Fourth Semester (Microbiology) (C. B. C. S.)  
**Elective Optional Paper-III - Microbial Diversity, Evolution and Ecology  
(MDEE)-II**

P. Pages : 1  
Time : Three Hours



PRS/KS/24/1708  
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**Master of Science (M.Sc.) Semester-IV (C.B.C.S.) (Microbiology) Examination**  
**ELECTIVE – MICROBIAL DIVERSITY, EVOLUTION AND ECOLOGY (MDEE)-II**  
**Paper-III (Optional)**

Time : Three Hours]

[Maximum Marks : 80

**N.B. :—** All questions are compulsory and carry equal marks.

1. Describe the different steps involved in biofilm formation and give the ecological significance of biofilm. 16
- OR**
- Write a detail account on microbial population structure. 16
2. What is succession ? Explain the tolerance and inhibition pattern of succession. 16
- OR**
- Write notes on :
- (a) Diversity indices. 8
  - (b) Community stability. 8
3. Discuss the different factors affecting gene frequencies. 16
- OR**
- Describe assumptions, derivation and extension of Hardy-Weinberg Equation. 16
4. Give an account on various types of positive microbial interaction with plant and animal. 16
- OR**
- Write notes on :
- (a) Management and improvement of barren land. 8
  - (b) Oil Shore Management. 8
5. Write notes on :
    - (a) Hydrothermal vents 4
    - (b) Rank abundance diagrams 4
    - (c) Genotype frequency 4
    - (d) Predation. 4



Master of Science (M.Sc.) Semester—IV Choice Based Credit System (CBCS)  
 (Microbiology) Examination  
 ELECTIVE—MICROBIAL DIVERSITY, EVOLUTION AND ECOLOGY (MDEE)—II  
 Optional Paper—3  
 Paper—III

Time : Three Hours]

[Maximum Marks : 80

N.B. : All questions are compulsory and carry equal marks.

✓ Explain the steps involved in Biofilm formation and its significance. 10/12 16

OR

Write a detail account on microbiology of Lentic and Lotic lakes. 16

✓ What is Succession ? Explain the various theories of Succession. 10/12 16

OR

Write notes on :

(a) Diversity indices 8

(b) Stability hypothesis. 8

3. Discuss the measurement of genetic variation at DNA levels. 16

OR

✓ Describe various factors effecting gene frequencies. 05 16

4. ✓ Give an account on various types of positive microbial interaction with suitable examples. 10/12 16

OR

Write notes on :

(a) Gause hypothesis 8

(b) Oil spills. 8

5. Write notes on :

(a) Guilds 4

(b) Sorensen Coefficient 4

(c) Assortive mating 4

(d) Syntrophy. 4



NKT/KS/17/9330

Master of Science (M.Sc.) (Microbiology) Semester—IV (C.B.C.S.) Examination  
ELECTIVE : MICROBIAL DIVERSITY, EVOLUTION AND ECOLOGY (MDEE)—II  
Paper—III (Optional)

Time : Three Hours]

[Maximum Marks : 80

N.B. :— All questions are compulsory and carry equal marks.

1. What is Environment ? Give the brief account on various climatic factors affecting biotic environment. 16

OR

Write detailed notes on :

- (a) Hydrothermal vents
- (b) Biofilm.

8

8

2. What is species diversity ? Discuss the Shannon and Brillouin indices with specific example. 16

OR

Write notes on :

- (a) Community stability
- (b) Succession.

8

8

3. Describe Hardy-Weinberg Law in detail. 16

OR

Write notes on :

- (a) Genotype Frequency
- (b) Random genetic drift.

8

8

4. What is sustainable development ? Explain the different microbial technology for achieving the sustainable development. 16

OR

Write notes on :

- (a) Oil shore management
- (b) Antagonism.

8

8

5. Write notes on :

- (a) Homeostatis
- (b) Jaccard coefficient
- (c) Inbreeding
- (d) Wasteland management.

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