

AF-122

August-2021

B.Sc., Sem.-VI

**311 : Microbiology
(Biotechnology)****[Max. Marks : 50]****Time : 2 Hours]**

- Instructions :** (1) All questions in **Section – I** carry equal marks.
 (2) Attempt any **three** questions in **Section – I**.
 (3) **Section – II** is **COMPULSORY**.

Section – I

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|----|---|---|
| 1. | (A) Justify "Biotechnology as a multidisciplinary science". | 7 |
| | (B) Write a note on: Future or Scope of Biotechnology. | 7 |
| 2. | (A) Differentiate between Old and New biotechnology. | 7 |
| | (B) Write a note on: Biotechnology in Gujarat. | 7 |
| 3. | (A) Write the principle and applications of UV visible spectrophotometer. | 7 |
| | (B) Write a note on: Biosensors. | 7 |
| 4. | (A) Describe the types and working of centrifugation with applications. | 7 |
| | (B) Explain Agarose gel electrophoresis and its applications. | 7 |
| 5. | (A) Write note on: "Various additives in plant tissue culture media". | 7 |
| | (B) Discuss Northern blotting technique with applications. | 7 |
| 6. | (A) Give a brief note on: Primary animal cell culture. | 7 |
| | (B) Explain : CRISPR CAS 9. | 7 |

7. (A) Explain the development of genetically modified rice and tomatoes. 7
 (B) Define IPR, and explain the types of IPR. 7
8. (A) Mention the applications of transgenic animals. 7
 (B) Explain the role of Enzyme biotechnology in industries and therapeutics. 7

Section – II

9. Answers the following in 1- 2 lines : (any 8) 8
- (1) Which department has been established by Government of Gujarat to encourage science and technology ? 1
 - (2) List out the major products of Biocon. 1
 - (3) Who is known as Father of Biotechnology in India ? 1
 - (4) Mention any two products which are considered as Old Biotechnology. 1
 - (5) What is the use of differential centrifugation ? 1
 - (6) Define : Rf value 1
 - (7) Enlist the component part of electrophoresis apparatus. 1
 - (8) List the parts of: Biosensor. 1
 - (9) What is "Trypsinization" ? 1
 - (10) Why callus needs to be sub-cultured ? 1
 - (11) What is "Reverse Northern Blot" ? 1
 - (12) Define : Totipotency 1
 - (13) What is an edible vaccine ? 1
 - (14) Why genetically modified tomatoes exhibit delayed ripening ? 1
 - (15) Define : Trade mark 1
 - (16) Give the therapeutic use of amylase. 1
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(Geo-Microbiology)

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Section – I

1. (A) Discuss the distribution of microbes in soil. 7
(B) Describe significance of Geomicrobiology. 7
2. (A) Write a note on: Earth as microbial habitat 7
(B) Discuss microbial population found in fresh water habitat 7
3. (A) Discuss culture independent approaches to study geoactive microbes 7
(B) Discuss role of microbes as catalysts of geochemical processes 7
4. (A) Discuss genetical approaches to study important microorganisms in geomicrobiology 7
(B) Describe geomicrobially active physiological groups of prokaryotes. 7
5. (A) Discuss Direct oxidation of metal sulphides by microbes. 7
(B) Discuss Acid mine drainage. 7
6. (A) Discuss Bioleaching of copper ore. 7
(B) Write a note on: Biobeneficiation. 7

P.T.O.

- 7 (A) Write a note on: Methanogenesis. 7
(B) Discuss in brief fossil fuels. 7
8. (A) Describe the role of microbes in peat formation. 7
(B) Explain microbial desulfurization of coal. 7

Section – II

9. Answer in short : (any eight) 8
- (1) What is biosphere ?
 - (2) Define soil.
 - (3) What is lithification ?
 - (4) What is humus ?
 - (5) Give full form FISH.
 - (6) Name any two geomicrobially important bacteria.
 - (7) What are photolithotrophs ?
 - (8) Name any one laboratory method used to study geomicrobial processes
 - (9) Name any two metal sulphides of geomicrobial interest
 - (10) Name any two pyrite oxidizing bacteria.
 - (11) What is AMD ?
 - (12) What is bioleaching ?
 - (13) Name any one novel coenzyme present in methanogens
 - (14) What is peat ?
 - (15) Name any two fossil fuels.
 - (16) Name any one type of coal.
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