

- 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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|-----|----|--|------|
| Q.1 | A. | Discuss geomicrobiology as a branch of microbiology. | (07) |
| | B. | Explain ocean as a microbial habitat. | (07) |
| Q.2 | A. | Explain types of microbes and their distribution in mineral soil. | (07) |
| | B. | Explain microbial population of fresh water lakes, rivers and ground water. | (07) |
| Q.3 | A. | Write a note on geomicrobially important physiological groups of prokaryotes. | (07) |
| | B. | Describe <i>in situ</i> observation of geomicrobial agents by buried slide method. | (07) |
| Q.4 | A. | Write a note on laboratory reconstruction of geomicrobial processes in nature. | (07) |
| | B. | Explain <i>in situ</i> study of ongoing geomicrobial activity. | (07) |
| Q.5 | A. | Discuss direct oxidation of metal sulphides. | (07) |
| | B. | Write a note on acid mine drainage. | (07) |
| Q.6 | A. | Write a note on laboratory evidences for formation of metal sulphide. | (07) |
| | B. | Write a note on bioleaching of copper ore. | (07) |
| Q.7 | A. | Explain methanogenesis. | (07) |
| | B. | Describe role of microbes in coal formation. | (07) |
| Q.8 | A. | Discuss anaerobic methanotrophy. | (07) |
| | B. | Discuss microbial desulfurization of coal. | (07) |

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Section II

Q.9 Give short and specific answers in 1-2 lines only (any eight). (08)

- 1 Define biosphere.
- 2 What is lithosphere?
- 3 Which type of bacteria are dominating in soil?
- 4 In which horizon of soil maximum population of aerobic bacteria are found?
- 5 Name any two important prokaryotic microbes related to geomicrobiology.
- 6 Write full form of FISH.
- 7 Name two fluorescent dyes.
- 8 Define chromosomal painting
- 9 What is microbial consortium?
- 10 Name two iron oxidizing bacteria.
- 11 Name any two pyrite oxidizing bacteria.
- 12 Define biobeneficiation.
- 13 Name any two types of fossil fuel.
- 14 Name any two organisms involved in peat formation.
- 15 Define methanogenesis.
- 16 Name two methanotrophs.

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Candidate's Seat No : _____

B.Sc. Sem-6 Examination

S.E 311

Microbiology (B) Biotech

October 2021

Time : 2-00 Hours]

[Max. Marks : 50

- 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

Q.1	A	Biotechnology is a mixture of applications of different subjects- Explain the statement	7
	B	Explain Future or Scope of Biotechnology	7
Q. 2	A	Explain briefly about Old and New biotechnology.	7
	B	Write a note on: Biotechnology in Gujarat.	7
Q.3	A	Write the principle and applications of HPLC.	7
	B	Write a note on: Biosensors.	7
Q.4	A	Describe the types and working of centrifugation with applications.	7
	B	Explain SDS page electrophoresis and its applications.	7
Q.5	A	What is microporagation? Explain its various steps.	7
	B	Explain the principle of Northern blotting and draw an outline of its different stages.	7
Q.6	A	Discuss the ethical issues related to animal tissue culture.	7
	B	Write a note on CRISPR associated systems.	7
Q.7	A	Explain the development of genetically modified transgenic cow and transgenic sheep.	7
	B	Discuss briefly about IPR and its types.	7
Q.8	A	Mention the applications of transgenic plants.	7
	B	Discuss briefly the role of Enzyme biotechnology in industries and therapeutics.	7

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Section II

Q.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?	
2	Which is the only GM product approved in India	
3	Which is the only university in India dedicated to Biotechnology located in Gujarat state?	
4	Mention any two products which are considered as New Biotechnology.	
5	What is the use of gradient centrifugation?	
6	Define : partition coefficient	
7	What is the range of UV visible spectrophotometer?	
8	List the parts of: Biosensor.	
9	What should be the minimum size of the hybridization probes used for the northern blotting?	
10	Name the organism which was used to study Cas 9 crisper system for the very first time.	
11	Enlist the safety components need to be considered for animal tissue culture	
12	Define: Totipotency	
13	List out any two application of baker's yeast.	
14	Define: IPR	
15	What is the significance of Golden rice?	
16	Give the analytical application of any one enzyme.	