

GUJARAT TECHNOLOGICAL UNIVERSITY**M.SC. INDUSTRIAL BIOTECHNOLOGY(IB) - SEMESTER - 3 EXAMINATION - WINTER - 2023****Subject Code:1330102****Date: 05 Dec 2023****Subject Name:Environmental Biotechnology****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw neat and clean diagrams as required

Q.1 Write a note on following**(Marks-
10X2=20)**

1. Operational Taxonomic Units
2. Food chain
3. Producers
4. Biological nitrogen fixation
5. PGPR
6. Bioreactor
7. Bioleaching
8. Acid rain
9. Food web
10. Bioaccumulation

Q.2 Answer the following (Any 2 out of 3)**(Marks-
2X10=20)**

1. Write about PGPR role in improving plant growth along with its mechanism and affecting factors of colonization
2. Give detail note on bioremediation principles and process
3. Explain the principles of biological treatment, kinetics and reactor design

Q.3 Answer the following (Any 6 out of 8)**(Marks-
6X5=30)**

1. Write about environmental laws and policies in India
2. Brief GMOs in bioremediation and biodegradation
3. Describe the ecto- and endo- mycorrhizae
4. Write a note on global environmental problems
5. Explain the numerical taxonomy
6. Comment on energy in ecological systems
7. Difference between open and closed GMD's
8. Emphasis microbial enhanced oil recovery
