

GUJARAT TECHNOLOGICAL UNIVERSITY**M.SC. INDUSTRIAL BIOTECHNOLOGY SEM.– 3 • EXAMINATION – WINTER - 2022****Subject Code:1330102****Date: 21 Dec 2022****Subject Name:Environmental Biotechnology****Time:02:30 PM TO 05:00 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. Give an example of any two free living nitrogen fixing anaerobic bacteria.
 2. Give an example of any two phosphate-solubilizing fungi.
 3. Give an example of any two dye-degrading bacteria.
 4. Define BOD and COD.
 5. What is composting?
 6. Give the basic difference between *in situ* and *ex situ* Bioremediation.
 7. Define biosorption.
 8. Define taxonomic rank.
 9. Define food web.
 10. Define phylogenetic classification
- Q.2 Answer the following (Any 2 out of 3) (Marks-2X10=20)**
1. Discuss the role of PGPR in the improvement of plant growth.
 2. Discuss symbiotic and non-symbiotic nitrogen fixation in detail.
 3. Write a detailed note on bioleaching. Discuss bioleaching with any two examples.
- Q.3 Answer the following (Any 6 out of 8) (Marks-6X5=30)**
1. Write a brief note on numerical taxonomy.
 2. Discuss the interaction between microbes and animals. Explain its importance in the ecosystem.
 3. Write a short note on ozone depletion.
 4. Environmental laws and policies in India.
 5. Short note on global warming.
 6. Write a short note on the phosphorous cycle.
 7. Give advantages and disadvantages of phosphate solubilizing biofertilizer.
 8. Discuss the use of Genetical Engineered bacteria for Bioremediation with an example.
