

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2022****Subject Code:3131302****Date:11-07-2022****Subject Name:Environmental Microbiology & Bioremediation****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. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Give the classification of bacteria. **03**
(b) What are the steps of the Gram staining procedure? **04**
(c) Describe the scope of microbiology in the field of Environmental Engineering. **07**

- Q.2** (a) Differentiate between: animal Cell & plant Cell **03**
(b) Give different stages of bacterial growth curve and explain about each stage. **04**
(c) Explain the complete procedure to perform MPN test for water. **07**

OR

- (c) Write a short note on physical agents for the control of microbes. **07**

- Q.3** (a) Define & explain: (i) Disinfection (ii) Sterilization (iii) Antimicrobial agent **03**
(b) List out the major classes of industrial products & processes, in which micro-organisms are required. **04**
(c) Enlist the diseases caused by Protozoa and explain the symptoms, treatment and prevention of any one disease in detail. **07**

OR

- Q.3** (a) Define & explain: (i) Pasteurization (ii) Lyophilization (iii) Sanitation **03**
(b) Write a short note on lactic acid production. **04**
(c) Enlist the diseases caused by Fungi and explain the symptoms, treatment and prevention of any one disease in detail. **07**

- Q.4** (a) Give the classification of Microscopes. **03**
(b) Differentiate between biodegradation and bioremediation. **04**
(c) Write a brief note on In-situ bioremediation techniques. **07**

OR

- Q.4** (a) Define and explain: (i) Magnification (ii) Reflective Index (iii) Numerical Aperture **03**
(b) Differentiate between In-situ Bioremediation and Ex-situ Bioremediation. **04**
(c) Write a short note on role of microbes in Bioremediation. **07**

- Q.5** (a) Write the step-by-step procedure for streak plate culture method. **03**
(b) Give the list of diff. techniques used for maintenance and preservation of pure culture. **04**
(c) Write a short note on Fermentation processes. **07**

OR

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| Q.5 | (a) | What is difference between dye and stain? | 03 |
| | (b) | Enlist & briefly explain various types of media used in microbiology. | 04 |
| | (c) | Briefly explain the SPC test of milk using serial dilution techniques. | 07 |
