

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023****Subject Code:3131302****Date:24-07-2023****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.

		MARKS
Q.1	(a) Define the following terms : (i)Pure culture (ii)Mixed culture (iii)Inoculation	03
	(b) Differentiate between dark field and bright field microscopy	04
	(c) Explain the importance of microbiology in the field of Environmental Engineering.	07
Q.2	(a) Define the terms: (i) Disinfection (ii) Sterilization (iii) Pasteurization	03
	(b) Prepare a list of different physical agents for killing of microbes and explain any one.	04
	(c) Give the classification of Bacteria based on its Morphology & Nutritional requirement	07
	OR	
	(c) With the help of a neat sketch, explain the stages of typical bacterial growth curve.	07
Q.3	(a) Prepare a list of different chemical agents for control of microbes.	03
	(b) Differentiate clearly between : Sterilization and Disinfection	04
	(c) Write a short note on morphology of Bacteria.	07
	OR	
Q.3	(a) Explain Osmotic shock as a mechanism of microbial control.	03
	(b) Differentiate clearly between : Pasteurization and Lyophilization	04
	(c) Write important characteristic of viruses.	07
Q.4	(a) List down the characteristics of an ideal disinfectant.	03
	(b) Enlist the diseases caused by bacteria and viruses.	04
	(c) Briefly explain the SPC test of milk using serial dilution technique	07
	OR	
Q.4	(a) List out the different staining techniques and explain gram staining in detail.	03
	(b) Differentiate between Eucaryotic and Procaryotic cell giving at least seven points of difference.	04
	(c) Explain the procedure for production of Lactic Acid.	07
Q.5	(a) Describe the working principle of Transmission Electron Microscopy.	03
	(b) Enlist and explain the different types of media used in microbiology.	04
	(c) Write a short note on phytoremediation.	07

OR

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| Q.5 | (a) List out the various culture methods. | 03 |
| | (b) Differentiate between biodegradation and bioremediation. | 04 |
| | (c) Discuss the advantages and disadvantages of In-situ Bioremediation. | 07 |
