

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III(NEW) EXAMINATION – WINTER 2022****Subject Code:3131302****Date:20-02-2023****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) Give the classification of bacteria.	03
	(b) Differentiate between Animal Cell & Plant Cell.	04
	(c) Draw the Bacterial Growth Curve and explain about each stage. Enlist and explain various culture preservation techniques.	07
Q.2	(a) What is significance of MPN test for water?	03
	(b) Write a short note on Whittaker five kingdom classifications.	04
	(c) Write down steps for the Ex-situ bioremediation for the contaminated wastewater.	07
	OR	
	(c) Justify the role of microbes in bioremediations processes.	07
Q.3	(a) Enlist the different types of media used in microbiology.	03
	(b) Compare Gram Positive bacteria with Gram Negative bacteria.	04
	(c) Explain the complete procedure to perform MPN test for water.	07
	OR	
Q.3	(a) Describe a list of different techniques used for preservation of pure culture.	03
	(b) List out the different staining techniques and explain gram staining in detail.	04
	(c) Briefly explain the SPC test of milk using serial dilution techniques.	07
Q.4	(a) Write the importance of protozoa in brief.	03
	(b) Differentiate between Bright field and dark field microscopy.	04
	(c) Enlist the diseases caused by fungi and explain the symptoms, treatment and prevention for any one disease.	07
	OR	
Q.4	(a) Explain the role of algae in environment	03
	(b) Explain working principle of Transmission Electron Microscopy.	04
	(c) Give the classification of viruses with respect to their shape and types. Also enlist the typical diseases caused by virus	07
Q.5	(a) Enlist and explain any two physical agents for control of Microbes.	03
	(b) Differentiate between biodegradation and bioremediation.	04
	(c) Explain the procedure for production of Lactic Acid.	07
	OR	
Q.5	(a) Enlist and explain any two chemical agents for control of Microbes.	03
	(b) Write a short note: In-situ bioremediation of soil	04
	(c) Write a short note on Ethanol production using microbes.	07