

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-III(New) • EXAMINATION – WINTER 2016**

**Subject Code:2131302**

**Date:04/01/2017**

**Subject Name:Environmental Microbiology & Bioremediation**

**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.

	<b>MARKS</b>
<b>Q.1 Short Questions</b>	<b>14</b>
1 What is plasmid?	
2 Which structure is responsible for bacterial motility?	
3 Give composition of bacterial cell wall.	
4 Write Name the methods for preservation of pure culture.	
5 What is the role of decomposers?	
6 Define resolving power.	
7 Which procedures can be used to isolate a pure culture of bacterium from mix population?	
8 Differentiate autotroph and heterotroph.	
9 Give significance of MPN test.	
10 Define the Sterilization.	
11 Which scientist is given credit for the discovery of first vaccine for the prevention of human disease?	
12 Who first described microorganisms such as bacteria?	
13 Differentiate Gram positive and Gram negative bacteria.	
14 Write short notes on Eutrophication.	
<b>Q.2 (a) Differentiate between Prokaryotes and Eukaryotes cell.</b>	<b>03</b>
(b) Give outline of methods for preservation of pure culture.	<b>04</b>
(c) Write a brief note on History of microbiology.	<b>07</b>
<b>OR</b>	
(c) Highlight the importance of microbiology in field of environmental Engineering.	<b>07</b>
<b>Q.3 (a) Remember and Enlist the chemical agents for control of microbes.</b>	<b>03</b>
(b) Justify the role of microbes in bioremediations processes.	<b>04</b>
(c) With the help of a neat sketch, explain the different parts of bacterial cell.	<b>07</b>
<b>OR</b>	
<b>Q.3 (a) Remember and Enlist the physical agents for control of microbes.</b>	<b>03</b>
(b) Give the classification of fungi and explain any one in detail .	<b>04</b>
(c) Enlist the diseases caused by bacteria and explain the symptoms, treatment and prevention of any one in detail.	<b>07</b>
<b>Q.4 (a) Enlist down the characteristics of an ideal disinfectant?</b>	<b>03</b>
(b) Enlist and explain the different types of media used in microbiology.	<b>04</b>

- (c) Write down the procedure to estimate the standard plate count of soil using serial dilution technique. **07**

**OR**

Differentiate between Pasteurization and Lyophilization. **03**

- Q.4** (a) **07**
- (b) Show the different stages of bacterial growth and explain about each stage. **04**
- (c) Explain the procedure to perform the presumptive test to estimate the MPN of water. Highlight the importance of MPN test in drinking water **07**

- Q.5** (a) Enlist the importance of protozoa in environmental microbiology field. **03**
- (b) Give outline technique for sterilization. **04**
- (c) Write down the types of bioremediation and discuss its constraints and priorities. **07**

**OR**

- Q.5** (a) What do you mean by Bioremediation? **03**
- (b) Explain the Monitored Natural Attenuation (MNA) process. **04**
- (c) Write down the products of industrial fermentations using microbes and write a procedure for Ethanol production. **07**