

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014**

**Subject code: 2711702****Date: 07-01-2015****Subject Name: Environmental Chemistry & Micro Biology****Time: 02:30 pm - 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.

- Q-1    A    Explain: **07**  
              1. Common ion effect and diverse ion effect  
              2. Homogeneous equilibrium and heterogeneous equilibrium
- B    What is adsorption? Briefly explain Freundlich and Langmuir isotherm. **07**
- Q-2    A    Explain order of reaction. Derive an expression for the rate of constant of a second order of reaction **07**
- B    Calculate the pH of a buffer solution containing 0.01 M acetic acid and 0.01 M sodium acetate. Then calculate the pH after enough HCl is added to give concentration of 0.001 M **07**
- OR
- B    What is hardness? Describe various methods used for measurement of hardness
- Q-3    A    Explain in detail gas chromatographic analysis **07**
- B    Discuss the types of bacteria based on nutritional requirement **07**
- OR
- Q-3    A    Bring out the environmental significance of DO and BOD **07**
- B    Name various types of microscopy and explain electron microscopy **07**
- Q-4    A    Discuss the various conditions affecting enzyme activity **07**
- B    Distinguish between **07**  
              1. Gram positive and negative bacteria.  
              2. Synchronous growth and steady state growth
- OR
- Q-4    A    Explain role of microorganisms in environment **07**  
          B    What is MPN? Briefly explain different tests used to measure MPN

Q-5 A Explaining various types of media, Write the steps in detail for media preparation onlinegtu.com  
07

B What is Virus? Explain Bacteriophages 07

OR

Q-5 A With neat labeled sketch , explain growth curve of bacteria

B Delineate the significance of algae in Environmental engineering 07

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