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**M. Tech. (BIOTECHNOLOGY)**  
**FIRST SEMESTER EXAMINATION, 2010-11**  
**MICROBIOLOGICAL GENETICS AND ENGINEERING**

Time : **3 Hours**

Total Marks : **100**

**Note :** (i) Attempt any **FIVE** questions.  
(ii) Marks are indicated against each question.

1. (a) Describe the nutritional requirement of the four major nutritional groups and give some major examples of each. **10**
- (b) Why do microbiologists use chemically defined media? **5**
- (c) Describe the kinetics for microbial growth in batch culture. **5**
2. (a) Discuss the use of the chemostat in obtaining Continuous cultures. **10**
- (b) Explain the importance of pH in the growth of micro-organisms. **5**
- (c) Explain the concept of exponential growth. **5**
3. Comment on : **5 x 4 = 20**
- (a) Specialized Transduction
- (b) Biological Oxygen demand
- (c) Synchronous Culture
- (d) Complementation
4. Differentiate the following : **5 x 4 = 20**
- (a) Batch and Continuous

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- (b) Thermal death of spores
- (c) Chemical and Steam Sterilization
- (d) Enriched and Enrichment media

5. Write short notes on:

**5 x 4 = 20**

- (a) Horizontal gene transfer
- (b) Replication of RNA tumor viruses
- (c) Fed batch culture
- (d) Mapping of bacterial genes

6. (a) Determine the kinetic parameters by batch culture. **10**
- (b) Describe the role of maintenance and endogenous metabolism in substrate utilization and growth. **10**

7. (a) Evaluate the kinetics of growth and product formation by filamentous organism. **5**
- (b) Briefly describe the following: **15**
- (i) Compartmental and metabolic models.
  - (ii) Genetic map with an example.
  - (iii) Factors influencing the antifoam agents.

