**Basic Industrial & Environmental Bio Technology R09 December 2011**

**SET -1**

1. Describe in detail the production of lactic acid and its applications.
2. What can you explain about the term “Hazardous Waste”? Write about the different sources and types.
3. Explain the steps involved in the production and purification of penicillin from the microbial broth.
4. Explain in detail about the following aspects of biofilm ecology
	1. Gene Transfer.
	2. Predation and Competition.
	3. Interactions with pathogenic organisms.
5. Enumerate the various enzymes that find commercial application in food industry.
6. How can the bioremediation of Xenobiotics be done.
7. What is the role of biotechnology in the treatment of industrial effluents?
8. Differentiate between the conventional and recombinant vaccines. Give the advantages and disadvantages.

**SET -2**

1. Distinguish in situ from ex situ when it comes to strategies for remediation of a contaminated sub-surface site. Compare the advantages and disadvantages of each.
2. What are biopolymers? What are their characteristics? Name and explain stages in production of any one in biopolymer.
3. Write a short note on:
	1. Rotating biological contractors.
	2. Fluidized bed reactors.
4. Draw the flow chart of streptomycin production and discuss the various steps in purification.
5. Write a brief note on
	1. Functional specificity of interferons.
	2. Production of interferons.
	3. Applications of interferons.
6. Discuss the production of lactic acid highlighting the following steps
	1. Organisms used
	2. Production
	3. Recovery
7. Write short note on the following:
	1. Waste stream clean up.
	2. Wood treatment site clean-up.
	3. PLB degradation.
	4. Chemical manufacturing wastes.
	5. Ground water treatment.
8. Write in detail about the class of enzymes used in the paper industries.

**SET -3**

1. Describe the various steps involved in insulin production by recombinant microbial species.
2. Write in detail about the large scale production of phenylalanine and add a note on its applications.
3. Describe in detail about the stages in domestic waste water treatment.
4. What a microbial insecticides and explain in detail about mode of action of Bacillus thuringenesis, Bacillus sphaericus, Bacillus papilliae.
5. Describe the various types of bioremediation and give advantages for each one of them.
6. Describe the production and purification of cephalosporins industrially adding a note in its mode of action.
7. The pharmaceutical industry employs many microbial species for large scale production of enzymes. Give two examples along with their advantages.
8. How do we go for hazardous waste packaging and labeling.

**SET -4**

1. Briefly explain about the process of industrial production of lactic acid.
2. What is Bioremediation? Give an overview of bioremediation with few illustrations.
3. Write short notes on the following:
	1. Aerobic activated sludge process.
	2. Anaerobic treatment of sewage.
4. Write in detail about various biotechnological approaches towards hazardous waste management.
5. Discuss the importance of recombinant proteins in human health care.
6. Describe in detail about biopolymer production with relevant examples.
7. Explain the downstream processing of penicillin with the help of a flow chart.
8. List the specific enzymes used in the dissolution of blood clots and also give its large scale production.