

(A-95, 96 & 97)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination

Tuesday, 21st April 2015

Time: 02:30 pm to 05:30 pm

PS08CIGGB1/ PS08CIGIB1/ PS08CIGEB1: Applied Environmental Biotechnology

Total Marks – 70

Q.1 Mark the right answer of following questions. [08]

1. What is the SVI of 1500ml sample of activated sludge having 600ml sludge settling time of 30minutes?
 - a. 400 ml g⁻¹
 - b. 2500 ml g⁻¹
 - c. 900 ml g⁻¹
 - d. 600 ml g⁻¹
2. During severe cold, biological activity of ASP and clarifier is reduced, what of the following might help?
 - a. Decrease MLSS
 - b. Increase MLSS
 - c. Increase DO
 - d. Add NH₃
3. BOD is an important measurement of _____.
 - a. The biological activity of water and wastewater
 - b. Oxygen content of wastewater
 - c. An organism's natural level of oxygen requirement
 - d. The oxygen using potential of water and wastewater
4. Municipal and industrial discharge pipes are examples of _____.
 - a. Non-point sources of pollution
 - b. Part of drainage system
 - c. Point sources of pollution
 - d. Irrigation
5. From the following which one is not the example of second generation fuel?
 - a. Lignocellulosic ethanol
 - b. Mixed alcohol
 - c. gasoline
 - d. Sugar alcohol
6. Which chemical is often used to remove fats in dairy industry?
 - a. HCl
 - b. H₂SO₄
 - c. NaOH
 - d. HNO₃
7. What is the main role of sulfate reducing bacteria in textile effluent treatment processes?
 - a. Produce Azo reductase enzyme
 - b. Decolonization of dye
 - c. Produce lignin peroxidase enzyme
 - d. Dye degradation
8. Vermicompost is biofertilizers which is rich in _____.
 - a. Phosphorus
 - b. Calcium
 - c. Nitrogen
 - d. All of these

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) [14]

1. Write the advantages and disadvantages of attached growth system.
2. Mention any four differences of BOD and COD. Write the limitations of BOD.
3. Outline the examples of pollutants produce from the different processes of tannery industry.
4. Write the classification and characteristics of *Methanogens*.
5. Write the advantages of composting.
6. Enlist the important parameters of ASP with their calculation formula.

7. What are the limitations of primary and secondary wastewater treatment processes in dye industry? [06]
8. Discuss the objectives and examples of preliminary wastewater treatment processes. [06]
9. What are the objectives of solid waste management program? What do you understand by waste reduction? [06]
- Q.3**
- A. Define environmental pollution. Write a note on water pollution. [06]
- B. Write the composition and types of sewage. Write a detailed note on measurement methods organic matter of sewage. [06]
- OR*
- B. Discuss the general and cell biological assays used in environmental monitoring. [06]
- Q.4**
- A. What is Anaerobic digestion? Write a brief note on the biology of anaerobic digestion. [06]
- B. What are the objectives of ASP? Summarize the biology of activated sludge process. [06]
- OR*
- B. Describe the biology and write the considerable synergistic metabolic relationship of facultative pond treatment process. [06]
- Q.5**
- A. What are the impacts of tannery industrial effluent? Illustrate the effluent treatment processes of tannery industry. [06]
- B. Summarize the advanced and secondary effluent treatment processes of paper pulp industry. [06]
- OR*
- B. Which chemicals are used to minimize the load of pollution in dairy industry? Discuss various dairy industrial wastewater treatment processes. [06]
- Q.6**
- A. Which processes are used to produce fuel from wastes? Mention the advantages of Biofertilizers and Biofuel. [06]
- B. Write a brief note on the factors affecting anaerobic digestion. [06]
- OR*
- B. Which factors influencing culturing of earthworms? Give a brief note on process of vermicomposting. [06]