SEAT No._____ No. of Printed Pages: 02

(56)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eighth Semester Examination

Tuesday, 19th March 2019

Time: 02:00 pm to 05:00 pm

PS08CIGEB1: Applied Environmental Biotechnology

Total Marks – 70

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

1. From the following, which coagulant is widely used in the industry?
   a. Alum b. Ferric sulfate c. Lime stone d. Coal e. Activated carbon
2. What is the intermediate zone composed of in aerobic-anaerobic pond treatment process?
   a. Algae b. Aerobic bacteria c. Photoautotrophs d. Facultative bacteria
3. In a trickling filter _____.
   a. Filtration process is used
   b. It is suspended growth system
   c. Biological action is used
   d. Neither (a) or (c)
4. Which is the major constituents of waste produced from textile, paper-pulp, tanning and dairy industries?
   a. Radioactive b. Natural organic pollutants c. Inorganic pollutants d. All of these
5. _____ solid waste makes up the smallest portion of all the solid waste produced.
   a. Agricultural b. Industrial c. Mining d. Municipal e. Domestic
6. In which sludge settling process, concentration of particles increases from top to bottom?
   a. Discrete settling
   b. Flocculent settling
   c. Hindered settling
   d. Compression
7. Which one is commonly used for pulp bleaching in the paper industry?
   a. Mild H_2SO_4 b. Glucose isomerase c. H_2O_2 d. ClO e. I_2 & H_2S
8. In waste to energy process, gasification is used for _____.
   a. Production of biofuel
   b. Production of bio-hydrogen fuel
   c. Production of syngas or synthetic gases.
   d. To condense waste in to liquid fuel.

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

1. Define pollution. Classify environmental pollutants with their appropriate sources.
2. Which factors influencing vermicomposting process?
3. What are the effects of untreated dairy industrial wastewater?
4. Which different types of pollutants produced by tannery industrial processes.
5. Write advantages and limitations of biofuel.
6. Write formula of F/M ratio, SVI, HRT and SRT.
7. Enlist objectives of wastewater treatment processes.
8. Write advantages and disadvantages of attached growth system.
9. Explain mechanical and air drive of rotating biological contactors.

(P.T.O.)

Q.3 A. Write a detailed note on water pollution measurement methods. [06]

B. Give an account on general and cell biological assays used in monitoring of environmental pollution. [06]

OR

B. Write short notes on: A) Classification of wastewater treatment technologies. [06]
B) Primary wastewater treatment processes.

Q.4 A. Explain role of each group of bacteria of anaerobic wastewater treatment process with suitable examples. [06]

B. Describe biology and draw well labelled diagram of activated sludge process. [06]

OR

B. Summarize biological activity of different zones of facultative pond treatment process. [06]

Q.5 A. Discuss advantages, physicochemical characteristics and decomposition stages of composting process. [06]

B. Describe various processes used for production of biofuel by utilization of wastes. [06]

OR

B. Write a detailed note on vermicomposting process. [06]

Q.6 A. How water usage can be minimized at dairy industry? Describe dairy industrial wastewater treatment processes. [06]

B. What are the main steps of tannery industry? Explain various treatment processes of tannery ETP. [06]

OR

B. Explain primary, secondary and tertiary treatment processes of paper-pulp industry ETP. [06]