[57/A-7] SEAT No._____ No. of Printed Pages: 02

(57/) A-7

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eighth Semester Examination

Tuesday, 19th March 2019

Time: 02:00 pm to 05:00 pm

PS08CIGIB1: Applied Environmental Biotechnology

Total Marks – 70

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

1. 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
2. _____ solid waste makes up the smallest portion of all the solid waste produced.
   a. Agricultural **b.** Industrial **c.** Mining **d.** Municipal **e.** Domestic
3. In waste to energy process, gasification is used for _____.
   a. Production of biofuel **c.** Production of syngas or synthetic gases.
   b. Production of bio-hydrogen fuel **d.** To condense waste in to liquid fuel.
4. 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_2 **e.** I_2 & H_2S
5. What is the intermediate zone composed of in aerobic-anaerobic pond treatment process?
   a. Algae **b.** Aerobic bacteria **c.** Photoautotrophs **d.** Facultative bacteria
6. In a trickling filter _____.
   a. Filtration process is used **c.** It is an example of suspended growth system
   b. Biological action is used **d.** Neither (a) nor (b)
7. From the following, which coagulant is widely used in the industry?
   a. Alum **b.** Ferric sulfate **c.** Lime stone **d.** Coal **e.** Activated carbon
8. In which sludge settling process, concentration of particles increases from top to bottom?
   a. Discrete settling **c.** Hindered settling
   b. Flocculent settling **d.** Compression

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

1. Write characteristics of methanogens.
2. Write advantages and disadvantages of attached growth system.
3. Write objectives of wastewater treatment processes.
4. What is composting? Explain different types of composting process.
5. Explain hierarchy of solid waste management.
6. What are the adverse effects of untreated dye industrial wastewater?
7. What are the adverse effects of untreated dairy industrial wastewater?
8. Define pollution. Classify environmental pollutants with their appropriate sources.
9. Write formula of F/M ratio, SVI, HRT and SRT.

(P.T.O.)

Q.3	A.	Give a detailed account on water pollution measurement methods.	[06]
	B.	Write short notes on: A) Classification of wastewater treatment technologies. B) Primary wastewater treatment processes.	[06]
		OR	
	B.	Illustrate cell biological and general assays used in monitoring of environmental pollution.	[06]
Q.4	A.	Describe role of each group of bacteria of anaerobic wastewater treatment process with suitable examples.	[06]
	B.	Summarize biological activity of different zones of facultative pond treatment process.	[06]
		OR	
	B.	Draw well labelled diagram and explain biology of activated sludge process.	[06]
Q.5	A.	Explain advantages, physicochemical characteristics and decomposition stages of composting process.	[06]
	B.	Write a note on factors affecting anaerobic digestion process.	[06]
		OR	
	B.	Describe various processes used for production of biofuel by utilization of wastes.	[06]
Q.6	A.	How water usage can be minimized at dairy industry? Describe dairy industrial wastewater treatment processes.	[06]
	B.	Explain primary, secondary and tertiary treatment processes of paper-pulp industry ETP.	[06]
		OR	
	B.	What are the main steps of tannery industry? Explain various treatment processes of tannery ETP.	[06]

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