

(A)
36

SARDAR PATEL UNIVERSITY
M. Sc. -Integrated Biotechnology – Eight Semester Examination
Tuesday, 29th March 2016
Time: 02:30 pm to 05:30 pm
PS08CIGEB1: Applied Environmental Biotechnology

Total Marks – 70

Q.1

Mark the right answer of following questions.

[08]

1. In _____ settling process particles remain in fixed position respect to each other.
a. Zone settling b. Discrete settling c. Flocculent settling d. Compression
2. _____ Biological marker is used in dairy industry to detect fecal contamination.
a. Carprosterol b. Coprostanol c. Coprosterrin d. Coprophenol
3. From the following which compounds are used in vegetable tanning?
I) Pyrogallol II) Scleroprotein III) Chromium IV) Pyrogallic acid V) Polyphenolic compound
a. I & II are correct c. I & IV are correct
b. I, II & III are correct d. I, IV & V are correct
4. Why anaerobic digestion/biomethanation process has strong buffering capacity?
a. Due to bicarbonates production c. Due to ammonia production
b. Due to VFA production d. All of these
5. The C:N ration of organic materials tends to _____ during composting process.
a. Increase b. Remain constant c. Decrease d. Fluctuate with stages
6. In oxidation pond/facultative pond which function is carried out by algae.
a. Increase pH b. Fixation of N₂ c. Phosphrous deposition d. None of these e. All of these
7. Determine bsCOD of ASP, when the flow rate is 50m³, MLSS concentration is 250g/m³, Volume of the reactor is 150m³ and F/M ratio is 5.
a. 150g/m³ b. 3750g/m³ c. 416.66g/m³ d. None of these
8. In _____ bioassay, Acetylcholine esterase is categorized as reliable marker to detect pesticide pollution.
a. Bacterial b. Algal c. Bioluminescent d. Molecular e. None of these

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

[14]

1. Enlist the important parameters of ASP with their calculation formula.
2. Explain microbial syntrophic relationship of anaerobic digestion.
3. What levels are decided by EPA for pollution monitoring?
4. Which biological markers are used in dairy industry?
5. Write advantages and disadvantages of trickling filters.
6. Explain genotoxicity/cytotoxicity rating used for monitoring of pollution with suitable example.
7. Write advantages and types of biofertilizers.
8. Mention the stages of biofilm formation.
9. What are the impacts of dairy industrial effluent?

- Q.3 A. What is the composition of organic part of sludge? Write a note on biology of activated sludge process. [06]
- B. What are the advantages of Rotating Biological Contactors? Describe basic design and biology of RBC. [06]

OR

- B. What are the key features of UASB? Write a note on significant design consideration of UASB process. [06]

- Q.4 A. Discuss the impacts and treatment processes of tannery industrial effluent. [06]
- B. What is Kraft pulping? Outline effluent treatment processes of paper and pulp industry. [06]

OR

- B. Write the examples of groups of commercial dyes. Summarize various wastewater treatment processes used in dye industry. [06]

- Q.5 A. Draw a diagram of microbial stages of composting process. Discuss the process and significant factors of vermicomposting. [06]
- B. Write a brief note on factors affecting anaerobic digestion process. [06]

OR

- B. Write the pathway of methanogenesis from CO_2 to CH_4 in brief. Outline the microbiology of anaerobic digestion/biomethanation process. [06]

- Q.6 A. Outline the general physicochemical treatment processes of preliminary and primary treatment processes in brief. [06]
- B. Write short notes on: 1) Nature and sources of water pollutants [06]
2) Detection methods for pathogenic microbes of sewage

OR

- B. Explain cell biology and biosensor based methods used for environmental pollution monitoring. [06]

-----x-----