



(107)

SARDAR PATEL UNIVERSITY
M. Sc. -Integrated Biotechnology – Eight Semester Examination
Tuesday, 10th April 2018
Time: 02:00pm to 05:00pm
PS08CIGGB1: Applied Environmental Biotechnology

Total Marks – 70

- Q.1 Mark the right answer of following questions. [08]**
1. _____ represents the bacterial density that is most likely to be present in water.
 a. IMViC test b. Coliform index c. MPN d. COD e. BOD
 2. _____ compound produces toxic organochlorine compounds in dairy industry wastewater.
 a. Phosphoric acid b. Peroxy acetic acid c. Sanitizer d. Nitric acid
 3. What is the order of waste management hierarchy from most to least favored?
 a. Prevention-Disposal-Reuse-Recycle c. Prevention-Recycle-Reuse-Disposal
 b. Prevention-Reuse -Recycle -Disposal d. Prevention- Reuse- Disposal-Recycle
 4. In ETP of paper pulp industry, _____ component does not require recycling of activated sludge system.
 a. Aerated lagoon b. Fluidized bed reactor c. MBBR d. Both b & c
 5. Find out effective volume (m^3) of UASB tank using given data: flow rate is $25m^3$, organic loading is $0.5g/m^3$ & influent COD concentration is $5g/m^3$.
 a. $2.5m^3$ b. $250m^3$ c. $0.1m^3$ d. $0.004m^3$ e. $25m^3$
 6. _____ is the amount of oxygen required to oxidize only organic matter in sewage.
 a. Turbidity b. COD c. BOD d. DO e. TOC
 7. _____ range of ammonia concentration not having any harmful effect on anaerobic digestion.
 a. 1500-3000mg/l c. 500-1000mg/l
 b. 1000-2000mg/l d. 200-500mg/l
 8. Find out hydraulic retention time of activated sludge tank using given data: Volume of the tank is $3550m^3$, flow rate is $50m^3$ and dilution rate is 10.
 a. 0.004h b. 71h c. 7.1h d. 710h e. None of these

- Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) [14]**
1. Write appropriate examples of nature of pollutants.
 2. Mention various designs of septic tank absorption field/system.
 3. Give advantages of vermi-composting process.
 4. Write advantages of attached growth treatment process.
 5. Differentiate genotoxicity and metabolic rating used for measurement of pollution.
 6. Explain solid waste management inverted hierarchy.
 7. What are the limitations of primary and secondary treatment processes?
 8. Write classification of biological wastewater treatment process.
 9. Which different pollutants are produce during various stages of tanning process?

(P.T.O.)

- Q.3 A. Summarize the role of cell bioassay methods used for measurement of environmental pollution. [06]
- B. What are the objectives of wastewater treatment? Describe the process of different components of preliminary and primary treatment processes (any five). [06]

OR

- B. Differentiate point & non-point source water pollution. Write a note on water pollution. [06]

- Q.4 A. Give an account on operational parameters and pathogen removal techniques of activated sludge process. [06]
- B. Write advantages, key features, components and design considering parameters of UASB. [06]

OR

- B. What is anaerobic decomposition? Explain microbiology of anaerobic wastewater treatment process. [06]

- Q.5 A. Differentiate single and two stage anaerobic digestion. Write a note on factors controlling anaerobic digestion process. [06]
- B. Give a detailed note on process, preventive measures and factors affecting vermicomposting process. [06]

OR

- B. Write short notes on: A) Advantages & disadvantages of biofuel [06]
B) Solid waste management

- Q.6 A. Discuss the role of various components/processes of dairy wastewater treatment plant. [06]
- B. Explain primary, secondary and tertiary treatment processes of paper pulp industry ETP. [06]

OR

- B. Describe primary, H₂S removal and chrome recovery processes of tannery wastewater treatment process. [06]

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