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SARDAR PATEL UNIVERSITY
M. Sc. -Integrated Biotechnology – Eight Semester Examination
Tuesday, 29th March 2016
Time: 02:30 pm to 05:30 pm
PS08CIGGB1: Applied Environmental Biotechnology

Total Marks –70

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

- In oxidation pond/facultative pond which function is carried out by algae.
a. Increase pH b. Fixation of N₂ c. Phosphorus deposition d. None of these e. All of these
- 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
- 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
- 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
- _____ Biological marker is used in dairy industry to detect fecal contamination.
a. Carprosterol b. Coprostanol c. Coprosterrin d. Coprophenol
- In _____ settling process particles remain in fixed position respect to each other.
a. Zone settling b. Discrete settling c. Flocculent settling d. Compression
- 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
- The C:N ration of organic materials tends to _____ during composting process.
a. Increase b. Remain constant c. Decrease d. Fluctuate with stages

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

- Define biofuel. Write disadvantages of biofuel.
- Which biological markers are used in dairy industry?
- What levels are decided by EPA for pollution monitoring?
- What are the disadvantages of anaerobic digestion process?
- Write advantages and types of biofertilizers.
- What are the impacts of dairy industrial effluent?
- Explain genotoxicity/cytotoxicity rating used for monitoring of pollution with suitable example.
- What is bio-fouling? How bio-fouling can be controlled?
- Explain microbial syntrophic relationship of anaerobic digestion.

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- Q.3 A. Explain standard physiological parameters 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.4 A. What is the composition of organic part of sludge? Write a note on biology of activated sludge process. [06]
- B. What are the disadvantages of attached growth system? Write a detailed note on trickling filter technology process. [06]
- OR**
- B. What are the key features of UASB? Write a note on significant design consideration of UASB process. [06]
- Q.5 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. Write a detailed note on analytical methods which are used to check strength of water pollution [06]
- Q.6 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]

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