KUMARAGURU
college of technology
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Register Number: …….

B.TECH DEGREE EXAMINATIONS: APRIL/ MAY 2016

(Regulation 2013)

Sixth Semester

BIOTECHNOLOGY

U13BTE301 **:** Environmental Biotechnology

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Which one of the following is not an actinomycete member present in the soil?
   a) Nocardia b) Streptomyces
   c) Micromonospora d) all are representative members
2. Conversion of ammonium to nitrate is called ----------
3. A compound with high octanol - water partition coefficient is likely to be present as
   a) soil contaminant b) groundwater contaminant
   c) contaminant in bottom sediments of aquatic environments d) a and b are equally likely
4. Atrazine is an example of ---------- class of pesticides.
5. Which one of the following is not a coliform?
   a) Escherichia b) Enterobacter
   c) Streptococcus d) Citrobacter
6. Shredding coarse solids and returning them to the flow is called ----------
7. The spent liquor after the digester cooking of the wood chips is called
   a) Green liquor b) Black liquor
   c) Grey liquor d) White liquor
8. Toxic potassium cyanide is found in wastewater from ---------- manufacturing
9. The process that precedes only chrome tanning (and not vegetable tanning is)
   a) Pickling b) Bating
   c) Lime splitting d) Degreasing
10. The contaminated liquid emanating from a landfill is called ----------

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Elucidate the term endosymbiosis.
12. Define the term lithotroph.
13. List some applications of Polychlorinated Biphenyls.
14. What is octanol : water partition coefficient and why is it important in biodegradation?
15. What occurs during acidogenesis and methanogenesis stages in anaerobic stabilization of organic matter?
16. Define HRT and SRT.
17. How is dry milk manufacturing done?
18. State the characteristic features of hazardous wastes.
19. Write the advantages of biopesticides over chemical pesticides.
20. List out the examples for superbugs used in bioremediation.

PART C (5 x 14 = 70 Marks)

(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Explain the concepts of S min, cometabolism versus energy metabolism, and electron donor versus electron acceptor in relation to the biodegradation of organic compounds.

22. (a) (i) How do microorganisms adapt themselves to changing environmental conditions (7)

(ii) Explain the different adaptation mechanisms in detail. (7)

(OR)

(b) Describe the different steps involved in nitrogen cycle in detail.

23. (a) How can rotating biological contactor be applied effectively for wastewater treatment? What are the different models available? (10+4)

(OR)

(b) (i) When is anaerobic treatment more suitable than aerobic treatment? (4)

(ii) Explain the bioreactor types that can be used for anaerobic treatment of wastewater. (10)

24. (a) Explain the process flow chart, origin of waste, characteristics, recovery options and wastewater treatment methods available for dye industries.

(OR)

(b) Explain the process flow chart, origin of waste, characteristics, recovery options and wastewater treatment methods available for pulp industries.

25. (a) (i) Describe the various factors that threaten biodiversity. (7)

(ii) Elaborate on the different strategies to be adopted for biodiversity conservation. (7)

(OR)

(b) (i) Define bioleaching. (2)

(ii) Discuss in detail on the extraction of ores using microbes. (12)

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