KUMARAGURU
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Register Number: ……..

B.TECH DEGREE EXAMINATIONS: MAY 2015

(Regulation 2009)

Sixth Semester

BIOTECHNOLOGY

BTY207: Environmental Biotechnology

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. _____ found abundantly in O-Horizon of soil.
   a) *Pseudomonos* b) *Bacillus*
   c) *Ralstonia* d) *Acenetobacter*
2. Which among the following enzyme is a precursor in biodegradation?
   a) oxygenase b) Reducatase
   c) Polymerase d) Hydrolase
3. Which of the following can be used to degrade BTEX?
   a) *Pseudomonos* b) *Ralstonia*
   c) *Bacillus* d) *Acenetobacter*
4. Maximum deposition of DDT will occur in
   a) Phytoplanktons b) Crab
   c) Fish d) Kingfisher
5. Minamata disease is due to pollution of
   a) Industrial waste mercury into fishing water b) Oil spill in water
   c) Organic waste into drinking water d) Arsenic into the atmosphere
6. Most abundant water pollutant is
   a) Industrial wastes b) Pesticides
   c) Ammonia d) Detergents
7. _____ is present in excess in Tanning industry?
   a) Mercury b) Lead
   c) Chromium d) Nickel

8. Which of the environmental pollutions can cause birth defects?

a) Smog b) SO_2

c) CO d) Radioisotopes

9. Lichens indicate pollution by

a) Ozone b) NO_3

c) SO_2 d) CO

10. Which of the following microorganisms leach metals out of rock ores and can accumulate silver?

a) *Pseudomonas* b) *Thiobacillus*

c) *Zoogloea* d) *Aspergillus*

PART B (10 x 2 = 20 Marks)

11. Write about soil microbial communities.
12. List out the factors required for the growth of soil microbes.
13. What are the end products of biodegradation of xenobiotics?
14. Define biomagnifications.
15. List the chemical attributes of waste water.
16. Differentiate aerobic vs anaerobic processes in waste water treatment.
17. Classify solid wastes.
18. What are hazardous wastes?
19. Classify Bioremediation with examples.
20. What do you mean by biomonitoring?

PART C (5 x 14 = 70 Marks)

21. a) Explain in detail the biogeochemical role of soil microorganisms, give examples and draw diagrams.

(OR)

b) (i) How do soil microbes interact with each other? (10)

(ii) How do soil microbes adapt themselves in the environment? (4)

22. a) List out the factors causing recalcitrance and describe microbial pathways for biodegradation of hydrocarbons.

(OR)

b) (i) With the help of microbial pathways, describe biodegradation of polychlorinated aromatics, pesticides (9)

(ii) With the help of microbial pathways, explain the biodegradation of pesticides. (5)

23. a) Elucidate the design and modelling of activated sludge process

(OR)

b) (i) How is nutrient removal as part of tertiary treatment done in ETPs (6)

(ii) How is wastewater disposal and reuse, handled in industry? (8)

24. a) Elaborately write the production process, origin and characteristics of waste, waste minimization and treatment options for Leather industry.

(OR)

b) Elaborately write the production process, origin and characteristics of waste, waste minimization and treatment options for dye industries.

25. a) (i) Detail the process of biofertilizars production and application. (7)

(ii) Describe the process of biopesticides production. (7)

(OR)

b) (i) How does environmental biotechnology help in Bioleaching? (8)

(ii) Use appropriate examples and essay the use of genetically engineered microorganisms in bioremediation. (6)

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