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[A-92]

No. of Printed Pages: 02

Sardar Patel University
M. Sc. Int. Biotechnology, Eighth Semester Examination
Tuesday, 5th April, 2016
02:30 p.m. – 05:30 p.m.
***PS08CIGEB4*: Biodegradation and Bioremediation**

Note:
1. Figures to the right indicate marks.
2. Draw neat and labeled diagram, wherever necessary.

Q-1 Attempt the followings **[08 X 01 =08]**

1. It is always desirable to treat high organic content waste by
(a) Aerobic treatment (b) Anaerobic treatment
(c) Both a & b (d) None

2. Oxidation reaction occurs in _____.
(a) Aerobic condition (b) Anaerobic condition
(c) Anoxic condition (d) All

3. Beta oxidation of aliphatic organic molecule requires
(a) Alpha & beta carbon substitution (b) free alpha carbon
(c) Both alpha & beta free carbons (d) free beta carbon

4. Removal of methyl moiety from pesticide is referred as
(a) Hydrolysis (b) Dealkylation
(c) Hydroxylation (d) Dehalogenation

5. Genetic engineered _____ strain is used for biodegradation of 4-ethylbenzoate contaminants.
(a) *Pseudomonas putida* (b) *Aspergillus niger*
(c) *Bacillus subtilis* (d) *Bacillus denitrificans*

6. Bioscrubber used for waste gas purification has _____ stationary.
(a) Water phase (b) Microorganisms
(c) Organic phase (d) All

7. Which of the following are nonionic surfactants, (zwitterionic),
(a) SDS (b) Triton X-100 (c) Lecithin (d) All

8. _____ of following can be used as biofilter media.
(a) Compost (b) Peat (c) Perlite (d) All of these

Q-2 Answer the following questions (Any seven). **[07 X 02 = 14]**

i. Describe characteristics of aerobic bacteria for degradation of organics.

ii. Explain briefly degradation of S alkyl and ketone compounds.

iii. Give an account on gentisate pathway for non heterocyclic aromatic compounds.

iv. What is epioxidation reactions?

P.T.O.

v. Discuss the disadvantages of bioremediation technique.

vi. Enlist the method involved in *Ex-situ* bioremediation strategy.

vii. State the strategies used for bioremediation of both soil & water.

viii. Write the role of low molecular weight biosurfactants in bioremediation?

ix. Define: Biotricking filters ? Give its importance.

Q-3 (A) Describe principles of bacterial degradation. [06]

(B) Which are environmental factors that can affect rate of biodegradation? [06]

OR

(B) Explain degradation of aromatic organic compound under aerobic conditions. [06]

Q-4 (A) Write a note on oxidative dealkylation. [06]

(B) Depict on Halogen reactions. [06]

OR

(B) Elaborate on degradation of wood by insects. [06]

Q5 (A) How can Bioaugmentation be useful for improvement of bioremediation? [06]

(B) Mention and explain any two methods used for in-situ Bioremediation. [06]

OR

(B) Briefly explain Bioreactors used for the treatment of wastewater and slurries. [06]

Q6 (A) Explain the mechanisms of Biofiltration. [06]

(B) What are the criteria for the choice of an optimal Biofilter medium? [06]

OR

(B) Summarize the role of microbial ecology of Biofiltration. [06]

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