(A/20)

SC-1

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Seventh Semester Examination

Monday, 18th April 2016

Time: 02:30 pm to 05:30 pm

PS07CIGEB1: Environmental Chemistry

Total Marks – 70

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

1. The most abundant green house gas in the earth's atmosphere is _____.
   a. Carbon dioxide **b.** Methane **c.** Nitrous oxide **d.** Water vapor
2. Nitrogen oxide and hydrocarbons released by automobiles interact to form _____.
   a. Sulfur dioxide **b.** Carbon monoxide **c.** Peroxyacetyl nitrate **d.** Nitrous oxide
3. The effects of water pollution on an ecosystem _____.
   a. Are always immediate **c.** Can become worse due to biomagnification
   b. Are concentrate in one area **d.** Result mostly from point source location
4. What is an example of non-point source pollution?
   a. Leaking tank **c.** Runoff from several steel factories
   b. Unlined land fill **d.** Waste water from mine
5. Which disorder is caused by organophosphates and carbamates?
   a. Neuromuscular blockage **b.** Liver toxicity **c.** Leukemia **d.** Kidney damage
6. From the following which one in not correct mechanism of soil erosion?
   a. Detachment of soil particles **c.** Translocation of soil particles
   b. Infiltration of water pollutants **d.** Destabilization of the soil particles
7. Why sulfate reducing bacteria are nuisance in methane/biogas production?
   a. It utilizes acetate, lactate & pyruvate **c.** It utilizes H_2 as electron donor
   b. It utilizes methanol as C source **d.** All of these
8. $6CO_2 + 12H_2O$ + Radiant energy $\rightarrow C_6H_{12}O_6 + 6H_2O + 6O_2$: this chemical process occurs in which of the following?
   a. Consumer **b.** Decomposers **c.** Producers **d.** Abiotic process

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

1. Explain different process of soil pollution.
2. Write general phosphorus transformation processes.
3. What are the impacts of acid rain?
4. Draw hydrological cycle. Write examples of reservoirs for water pollutants.
5. Define photochemical smog. Write the examples of air pollutants monitoring techniques.
6. Write the examples of humic and non-humic substances of soil.
7. Give the examples of biological and radioactive pollutants.
8. Draw a flow chart of formation of humus in soil.
9. Explain methanogenesis and methane oxidation.

Q.3	**A.**	Define green house effect. Describe the role of GHGs in global warming and write the impacts of GHE.	**[06]**
	B.	Give examples of various air pollutants with appropriate sources. What are the impacts of air pollutants on environment and human?	**[06]**
		OR	
	B.	Explain the process of O_3 formation. Discuss the destruction and impacts of O_3 depletion.	**[06]**
Q.4	**A.**	What are the types of water pollution? Outline physical and chemical properties of water.	**[06]**
	B.	Define eutrophication. Explain different types of reactions in various water bodies.	**[06]**
		OR	
	B.	What is oxygen demanding pollutant? Summarize the sources and adverse effects of metals and organic pollutants.	**[06]**
Q.5	**A.**	How soil formation is taking place? Discuss physiochemical properties of soil.	**[06]**
	B.	Define soil erosion. Explain the mechanism, factors affecting and impacts of soil erosion.	**[06]**
		OR	
	B.	Write a note on physiochemical treatment processes for contaminated soil.	**[06]**
Q.6	**A.**	Write a note on biological nitrification and denitrification processes.	**[06]**
	B.	Explain carbon respiration, organic polymers, and carbohydrate based polymer of carbon cycle.	**[06]**
		OR	
	B.	Describe biological sulfur oxidation and reduction.	**[06]**

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