
 <p>جامعة دمياط Damietta University</p>	<p>Damietta University Faculty of Science Environmental Sciences Department</p>	 <p>كلية العلوم جامعة دمياط</p>	<p>September 2023/2024 Date: 13/6/2024 Time: 2 hours</p>
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" Final Exam in Soil and Water pollution (310 ENV)" for 3rd. year Environmental Sciences and Environmental Sciences /Chemistry programs students

Examiners: Dr/Mervat Abd El-Magied El-Sonbati & Dr/Rasha Mohamed Abo Samra

Answer all the following questions: Total Mark: 70 (Part I, 35 Marks)

Question [1]: Write the scientific term for the following: [18 marks]

1. The branch of the science dealing with the characteristics of fresh water.
2. Any concentration of a toxin, such as pesticides, in the tissues of tolerant organisms at successively higher levels in a food chain.
3. Unenriched, clear water that supports small populations of aquatic organisms.
4. The area of land drained by a river system.
5. Measures the total amount of water diverted from a source.
6. The collection of water as droplets on a cold surface.
7. Place when saltwater moves into freshwater aquifers due to excessive consumption.
8. Occurs when the demand for water exceeds the supply.
9. Is water falling back to the ground as snow, rain, sleet, or hail.
10. Loss of water vapor by plants.
11. When water is consumed faster than it is replenished.
12. The study of water.
13. When soil is fully saturated, water will flow over the surface, a process called?
14. A process where waste heat is recycled for domestic and/or industrial heating purposes.
15. Water pollution that alters a plant's surrounding pH level.
16. The gradual accumulation of substances, such as pesticides, heavy metal or other chemicals, in a living organism.
17. Pollution that arrive in the environment (surface or underground water) from different non identifiable sources.
18. Is the science of the ocean and its physical and chemical characteristics.

Question [2]: [17 marks]

- a) Write on eutrophication, definition, sources, effects and solutions. [7 marks]
- b) Discuss five reasons for the death of the fish in a water body. [5 marks]
- c) Illustrate the effects of sediment pollution. [5 marks]

Part II

Question 1

Choose the correct answer: (9 marks)

1- In, a gray eluvial horizon that has a color of quartz overlies black subsoil.

- a) Oxisols b) Vertisols c) Spodosols d) Ultisols

2-are highly weathered soils of tropical regions.

- a) Oxisols b) Vertisols c) Spodosols d) Ultisols

3- The type of soil texture that not able to form a ribbon is

- a) Loamy sand b) Sandy loam c) Clay loam d) Loam

4-is the third most common element in the earth's crust and more available at low pH

- a) Iron b) Aluminum c) Manganese d) Potassium

5- In silty clay soil, the percentage of silt ranges from

- a) 40-60 b) 40-70 c) 40-80 d) 40-90

6- Sodium can cause.....of soil structure.

- a) Flocculating b) Deflocculating

7- Saturated Hydraulic Conductivity is measured in.....

- a) $\mu\text{m}/\text{sec}$ b) cm/sec c) mm/sec d) m/sec

8- Usually the base saturation is 100 percent when the pH is above

- a) 5.5 b) 6.5 c) 7.5 d) 8.5

9- Alkali soil has an exchangeable sodium percentage (ESP) greater than

- a) 13 b) 14 c) 15 d) 16

Question 2 (26 marks)

a) Complete the following sentences:

1- Base saturation is the fraction of thebinding sites occupied by bases.

2- Anions can lead to groundwater contamination because it can easily.....

3-is added to acid soils to raise the pH.

4- If the soil can form a ribbon ≤ 2.5 and the feel of it is very smooth, the type of soil is

5- When irrigating saline soils with water that has a low salt content, it may be necessary to addto the water so that it will infiltrate the soil.

6- point is the moisture level at which the soil can no longer provide moisture for growth of most agronomic plants.

7- In poorly drained soils,crops cannot be grown unless artificially drained

8-is a rare textural class that is not easy to find in nature.

9- Zinc move through the soil to plant roots by a process called..... while nitrate move through the soil to plant roots by a process called.....

b) A soil sample was tested and found to contain 12 milliequivalents of sodium (Na), 18 milliequivalents of calcium (Ca), 15 milliequivalents of potassium (k) and 6 milliequivalents of magnesium (Mg) per 100 grams of oven-dried soil. Calculate the sodium adsorption ratio (SAR) of this soil.

c) A soil sample was found to have 20 milliequivalents (meq) of exchangeable sodium (Na) and a cation exchange capacity (CEC) of 50 meq/100g soil. Calculate the exchangeable sodium percentage (ESP) of this soil.

Best wishes

Dr. Rasha Abou Samra