



FIRST-TERM EXAM
JAN 2025



Program: Biological Oceanography
Marine Biogeochemistry (401 B.O.)

المستوي الرابع / برنامج علوم البحار البيولوجية
بيوجيوكيمياء بحرية

Department: Zoology

Mark: 60

Time: 1 Hour

Date: 23/12/2025

Answer the Following Questions: (الامتحان في صفحتين)

Question One: (15 Marks/ 1.5 each)

A- Complete the following statements with the suitable scientific word:

1. Humic substances (HS) are a type of organic matter that can be found in dissolved, particulate, or form.
2. Proteins related to cellular detoxification help protect aquatic organisms against compounds through mechanisms like resistance.
3. The presence of organic matter, particularly humic substances, typically reduces the of organic microcontaminants.
4. According to superficial electrical properties, colloids are considered or
5. represent one of the major chemical classes of the marine biomass and, consequently, an important source of OM in aquatic environment.
6. In sediments, proteins account for 7–25% of and an estimated 30–90% of total
7. Soluble proteins in seawater can be hydrolyzed by enzymes into smaller molecules.

Question Two: (15 Marks)

A- How does ultraviolet (UV) radiation influence the toxicity of microcontaminants in the presence of dissolved organic matter? (7.5 marks)

B- Provide a comprehensive identification of sediment resuspension and what are its environmental impacts? (7.5 marks)

Question Three: (10 Marks)

- What are the characteristics and roles of non-humic substances (NHS) in aquatic ecosystems, and how do they contribute to organic matter cycling and energy transfer within these systems?

Question Four: (20 Marks)

A- Indicate whether the following sentences are true or false and correct the false ones:

1. Lignin is more recalcitrant than other plant compounds. ()
2. Reactive oxygen species can increase due to the presence of organic matter, affecting the decomposition of both natural and anthropogenic compounds. ()
3. Sterols are hydrophobic compounds that are relatively resistant to microbial degradation. ()
4. Fucose, ribose, mannose and galactose are good indicators of bacteria. ()
5. Peptide bonds are formed through a process called hydrolysis, which breaks down proteins into amino acids. ()
6. Non-polar lipids are hydrophilic and soluble in water. ()
7. Proteins account for approximately 50% of organic matter (OM) and about 80% of organic nitrogen in marine organisms. ()
8. The formation of peptide bonds requires energy derived from ATP in living organisms. ()
9. The application of proteomics in environmental science has decreased in recent years due to its complexity and lack of relevance. ()
10. Lipids can act as molecular biomarkers due to their heterogeneous nature and chemical stability in sediments. ()

انتهت الاسئلة

With Best Wishes

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