



FIRST-TERM EXAM  
JAN 2026



Program: Biological Oceanography  
Dynamic Oceanography (305 B.O.)

المستوي الثالث/ برنامج علوم البحار البيولوجية  
علوم بحار ديناميكية

Department: Zoology      Mark: 90      Time: 2 Hours      Date: 17/1/2026

Answer the Following Questions:

Question One: (25 Marks/5 each)

**A- Identify and explain the following terms in detail:**

- a) Sinking velocity      b) Humus      c) Macroorganic matter  
d) diffusive flux      e) Percolates in marine environment

Question Two: (20 Marks)

**A-** Describe the processes that influence the movement and transformation of DOC as it moves through the sediment/soil. (10 marks)

**B-** Explain how variations in seawater density drive the formation of density currents in the deep ocean. In your answer, describe the factors that increase or decrease seawater density. (10 marks)

Question Three: (25 Marks)

**A-** Discuss the Bioluminescent Shunt Hypothesis and its implications for the marine carbon cycle. (10 marks)

**B-** Describe the biological carbon pump and explain the role of particulate organic carbon (POC) within this system. (15 marks)

Question Four: (20 Marks)

**A-** What are the main physical processes responsible for the formation of oceanic waves, and how do surface ocean currents influence regional and global climate patterns? (10 marks)

**B-** Identify and explain the main processes that remove dissolved organic carbon (DOC) from the ocean water column. Which processes are considered the major sinks of DOC? (10 marks)

انتهت الاسئلة

*With Best Wishes*

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