



**PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION: BACHELOR OF SCIENCE	
QUALIFICATION CODE: 07BOSC	LEVEL: 7
COURSE CODE: MAB701S	COURSE NAME: MARINE BIOLOGY 3A
SESSION: JUNE 2022	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER (S):	Dr. Edosa Omoregie
MODERATOR:	Dr. Johannes litembu

INSTRUCTIONS	
<ol style="list-style-type: none">1. Answer all questions in Sections A and Section B.2. Write clearly and neatly.3. Number your answers clearly.	

PERMISSIBLE MATERIAL

Scientific Calculator

THIS QUESTION PAPER CONSIST OF 3 PAGES
(Including this front page)

SECTION A

Answer all questions

Total marks [55]

1. List the two ions that occur in the highest concentrations in seawater (2)
2. With reference to the life cycle and suitable examples, differentiate holoplankton and meroplankton. (4)
3. How many ATP molecules are utilized and produced during the process of glycolysis of one molecule of glucose? (2)
4. With the aid of an appropriate schematic diagram and reference to the photic and aphotic zone, briefly explain the concept of compensation depth in the pelagic zone of the marine environment. (5)
5. Why are certain angiosperms referred to as halophytes? (2)
6. Name any four macronutrients and two micronutrients in the marine ecosystem? (3)
7. What is the most common form of silicon in seawater? (2)
8. What are Phycocolloids? Name any two Phycocolloids and their economic importance (4)
9. Using the Henrys' gas law equation, calculate the molar concentration of nitrogen gas in seawater under 1.5 atmospheric pressure? Given: K_H of nitrogen gas in water = 1639.34 mm Hg / (mol/L). (4)
10. Name the major group of the microbial community responsible for aerobic ammonium oxidation in the marine ecosystem. (2)
11. What is the scientific name of the largest bacterium discovered off the Namibia marine waters? (2)
12. In a tabular form, outline the main differences between marine Coccolithophores and Silicoflagellates? (4)
13. What is the function of the protonephridia in marine flatworms? (2)
14. What class of the Chrysochyta do the diatoms belong to? (2)
15. Name the four classes of marine Platyhelminthes. (2)
16. Highlight any two characteristics of marine cephalopods. (2)

17. In a tabular form, outline the main structural differences between marine diatoms and marine dinoflagellates. (4)
18. What is the main function of the chromatophores in marine fish? (2)
19. Why are marine sponges referred to as filter feeders? (2)
20. Briefly describe the main features of the Scyphozoans. (3)

SECTION B

Answer all questions

Total marks [45]

21. With reference to oxidation state, type of microorganisms involved and chemical equations, describe the processes of nitrogen fixation and nitrification in the marine environment. (15)
22. Using suitable illustrations, discuss the different types of reproduction in a name marine macroalgae. (15)
23. Using suitable illustrations, discuss the counter-current gas exchange mechanism in marine fish. (15)