NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF NATURAL AND APPLIED SCIENCES

QUALIFICATION: BACHELOR OF SCIENCE	
QUALIFICATION CODE: 07BOSC	**LEVEL:** 7
COURSE NAME: MARINE BIOLOGY 3B	**COURSE CODE:** MAB702S
SESSION: JANUARY 2020	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY / SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER (S):	**Prof. Edosa Omoregie**
MODERATOR:	**Dr. Johannes Iitembu**

INSTRUCTIONS
1. Answer all questions in Sections A and B 2. Answer any three (3) questions in Section C 3. Write clearly and neatly 4. Number your answers correctly

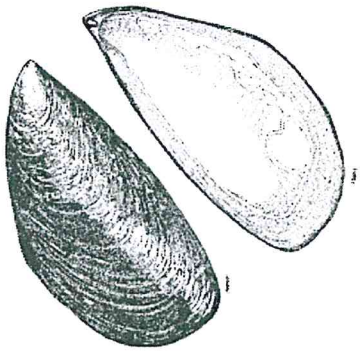
PERMISSIBLE MATERIAL

Scientific Calculator

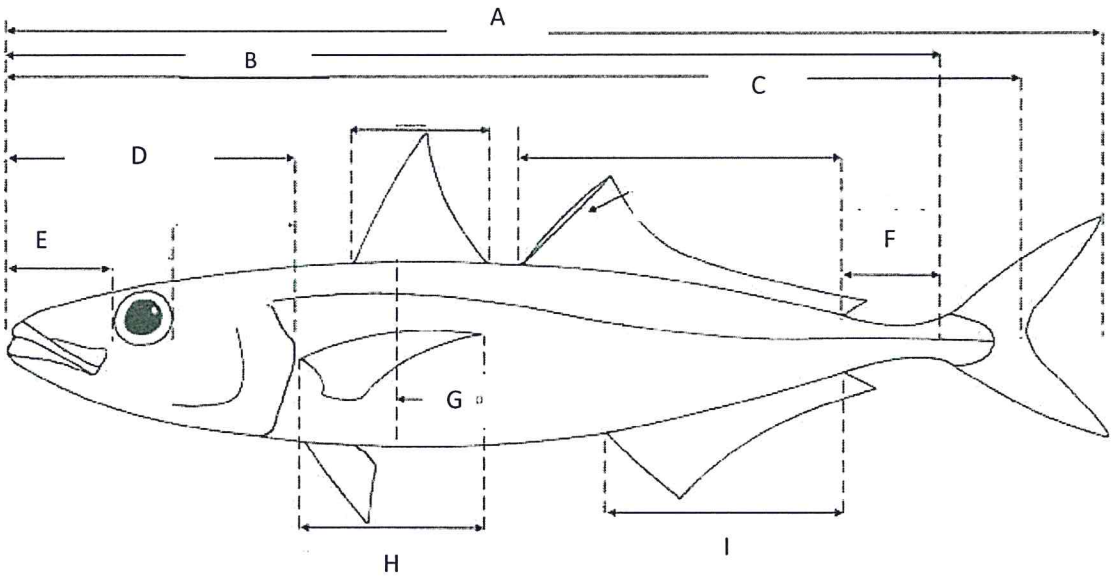
THIS EXAMINATION QUESTION PAPER CONSISTS OF 5 PAGES
(Including this front page)

SECTION A (MULTIPLE CHOICE QUESTIONS): ANSWER ALL QUESTIONS **[25]**

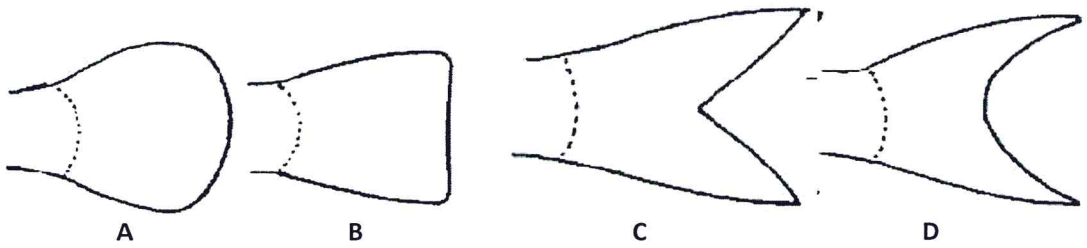
1. The diagram below is an illustration of the black mussel. State the Genus, Class and Phylum the organism below to? Explain the major reason for placing the organism under the Class you have stated? (4)



2. Identify the morphometry indices indicated as A, B, C, D, E, F, G, H and I in the fish diagram shown below. (9)



3. Identify the types of caudal fins shown in the diagram below? (4)



4. Which of the following is a true description of the intertidal zones? (1)
   a. The zone between highest high tide level and lowest high tide level
   b. The zone between lowest high tide level and highest low tide level
   c. The zone between lowest high tide level and lowest low tide level
   d. The zone between highest high tide level and lowest low tide level
   e. The zone between the highest level of the splash zone and the lowest high tide level.

5. Which of the following products is obtained from *Laminaria*? (1)
   a. Spirulina
   b. Carrageenan
   c. Agar - agar
   d. Idodine
   e. Chlorellin

6. A great white shark will be part of which of the following marine lifestyle? (1)
   a. Plankton
   b. Epifauna
   c. Benthos
   d. Nekton
   e. Infauna

7. The filamentous locomotory structures of the dinoflagellates are referred to as? (1)
   a. Cilia
   b. Antennae
   c. Pleopods
   d. Flagella
   e. Pseudopodia

8. The zone of the ocean where there is enough light for primary productivity is the? (1)
   a. Aphotic zone
   b. Benthic zone
   c. Euphotic zone
   d. Hadal zone
   e. Abyssal zone

9. Under which group of zooplankton will the fish larva be classified? (1)
   a. Holoplankton
   b. Meroplankton
   c. Microplankton
   d. Nanoplankton
   e. Phytoplankton

10. What is the estimated percentage of coral reefs on the sea surface? (1)
   a. More than 20%
   b. Between 1 and 10%
   c. Between 10 and 20%
   d. Less than 1%
   e. Above 50%

11. Which of the following vertical profile of the marine benthic environment will the sponges be the most dominate species in the ecological communities? (1)
   a. 0 - 100 m
   b. 100 - 500 m
   c. 500 - 1000 m
   d. 1000 – 2000 m
   e. 2000 – 7000 m

SECTION B (SHORT EXPLANATION QUESTIONS): ANSWER ALL QUESTIONS [30]

12. a). Explain the following terms as applied in Marine Biology. (6)
   i. Conformers
   ii. Euryhaline
   iii. Anadromous

   b). Explain the impact of zooplankton grazing on the biological productivity of the marine ecosystem. (4)

13. a). Explain the term 'upwelling' and its effects on the productivity of the marine ecosystem. (6)

   b). Explain how eutrophication lead to reduction in biological productivity within the marine ecosystem. (4)

14. a). What does the following abbreviations refer to in fisheries management: (4)
   i. CPUE
   ii. TAE
   iii. TAC
   iv. MPAs

b). Explain the two main goals of ecosystem-based fisheries management. (4)

c). Give the mathematical expression of the MSY model. (2)

SECTION C (DISCUSSION QUESTIONS) ANSWER ANY THREE QUESTIONS [45]

15. With suitable examples, discuss the various environmental challenges faced by intertidal communities highlighting the survival strategies employed by the organisms in coping with these challenges. (15)

16. With reference to water column stability, light and nutrients discuss the seasonal pattern of plankton abundance in the marine environment. (15)

17. a). With the aid of suitable illustrative diagrams, discuss the 'counter-current heat exchange' mechanism in marine tunas. (9)

b). With reference to survival strategies, discuss how estuarine animals have adapted to coping with salinity variations within the estuarine environment. (6)

18. Discuss the major impacts of global warming and acidification on the ocean physicochemical parameters and explain how these impacts will affect the biology, habitat and behaviour of major fish stocks. (15)