



**PAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES**

**DEPARTMENT OF NATURAL AND APPLIED SCIENCES**

<b>QUALIFICATION: BACHELOR OF SCIENCE HONOURS</b>	
<b>QUALIFICATION CODE: 08BOSH</b>	<b>LEVEL: 8</b>
<b>COURSE CODE: EBM811S</b>	<b>COURSE NAME: ENVIRONMENTAL BIOLOGY AND AQUATIC ECOSYSTEM MANAGEMENT</b>
<b>SESSION: JUNE 2022</b>	<b>PAPER: THEORY</b>
<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER (S):</b>	<b>Dr. Edosa Omoregie</b>
<b>MODERATOR:</b>	<b>Dr. Naftal Gabriel</b>

<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer all questions</li><li>2. Write clearly and neatly</li><li>3. Number your answers clearly</li></ol>

**PERMISSIBLE MATERIAL**

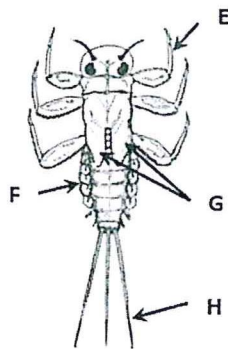
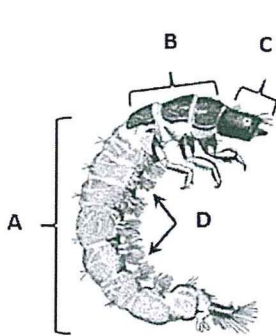
Scientific Calculator

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

**Question 1**

**[20]**

a). What are the parts labelled as A, B, C, D, E, F, G and H the parts the two aquatic macroinvertebrates shown in the diagrams below? (4)



- A: \_\_\_\_\_
- B: \_\_\_\_\_
- C: \_\_\_\_\_
- D: \_\_\_\_\_
- E: \_\_\_\_\_
- F: \_\_\_\_\_
- G: \_\_\_\_\_
- H: \_\_\_\_\_

b). Identify the order, common names and pollution status of the 4 aquatic macroinvertebrates in the diagram below: (12)



A



B



C



D

Specimen	A	B	C	D
Order				
Common name				
Pollution status				

c). The level of biochemical oxygen demand (BOD) in an aquatic system is used in determining the water quality (pollution status) of the system. Using the table below, state the water quality of the various BOD levels indicated. (4)

BOD (mg/l)	Water Quality
2 or below	
3 – 5	
6 – 9	
Above 100	

**Question 2**

**[20]**

- a) With reference to suitable examples, discuss the various factors affecting biodiversity of fringing communities of the aquatic ecosystem. (8)
- b) With the aid of graphic illustration and suitable examples, discuss the effects of the introduction of raw sewage on the biology and chemistry of a river system. (12)

**Question 3**

**[20]**

- a) Critically review the environmental effects of acid mine drainage on the chemistry and biodiversity of the river system. (10)
- b) With reference to solid removal, mineralization of organic materials and deactivation of pathogens, discuss the treatment of wastewater and organic sewage. (10)

**Question 4**

**[20]**

- a) What is remote sensing? Briefly explain the application and benefits of geographic information system in natural resource management. (10)
- b) As a manager in a government protected wetland establishment, discuss any five (5) of the principles and their management strategies involved in the restoration of a protected wetland. (10)

**Question 5**

**[20]**

- a) Briefly explain the various sources of carbon dioxide in the atmosphere. (10)
- b) Critically review the environmental impacts of global warming on the physical, chemical and biodiversity of aquatic environment. (10)