



**PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF NATURAL AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGY, CHEMISTRY AND PHYSICS

QUALIFICATION: BACHELOR OF SCIENCE HONOURS	
QUALIFICATION CODE: 08BOSH	LEVEL: 8
COURSE CODE: EBM811S	COURSE NAME: ENVIRONMENTAL BIOLOGY AND AQUATIC ECOSYSTEM MANAGEMENT
SESSION: JUNE 2023	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION PAPER	
EXAMINER (S):	Dr. Edosa Omoregie
MODERATOR:	Dr. Naftal Gabriel

INSTRUCTIONS
1. Answer all questions 2. Write clearly and neatly 3. Number your answers clearly

PERMISSIBLE MATERIAL

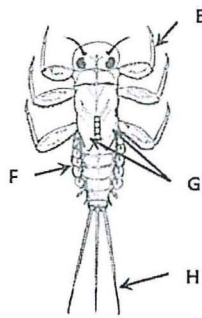
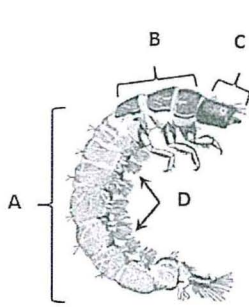
Scientific Calculator

THIS EXAMINATION PAPER CONSISTS OF 3 PAGES
(Including this front page)

Question 1

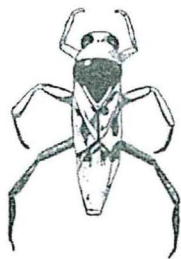
[20]

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: _____

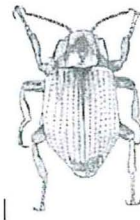
b). Identify the Order, common names and pollution status of the 4 aquatic macroinvertebrates in the diagram below: (12)



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 physical and biological properties, discuss the erosional and depositional ecological habitat types of the river system. (10)
- 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. (10)

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) As a manager in a government agency responsible for the conservation and management of protected wetlands, briefly review the various criteria for the designation of wetlands of international importance based on the Ramsar Convention Guidelines. (10)
- b) Critically review the environmental impacts of global warming on the physical, chemical and biodiversity of the aquatic environment. (10)

Question 5

[20]

- a) What is remote sensing? Briefly explain the application and benefits of geographic information systems in natural resource management. (10)
- b) What is cultural eutrophication? Discuss the effect of cultural eutrophication on the aquatic ecosystem. (10)