



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2016/2017**

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR  
THE DEGREE OF BACHELOR OF SCIENCE IN FISHERIES AND  
AQUACULTURE AND BACHELOR OF SCIENCE IN AQUATIC  
RESOURCE CONSERVATION & DEVELOPMENT  
WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**AFN 204: PLANKTON COMMUNITIES**

Date: 16<sup>th</sup> June, 2017

Time: 8.30 - 11.30am

---

**INSTRUCTIONS:**

- Answer ALL Questions in section A and any other THREE in section B.



**Section A: Answer ALL questions from this section (40 marks)**

---

1. a) Outline the THREE major characteristics of toxins responsible for shell fish poisoning (3 marks)  
b) Highlight the main genetic difference between mature dinoflagellates and mature diatoms (1 mark)

---

2. a) State the THREE major roles played by plankton in the ecosystem (3 marks)  
b) Define the term ichthyoplankton (1 mark)
3. Briefly describe the "Bloom and Bust" (Boom and Bust) lifestyle in the ecology of diatoms (4 marks)
4. Highlight any TWO distinguishing features between pennate diatoms and centric diatoms (4 marks)
5. a) Outline the THREE major types of vertical migration in zooplankton (3 marks)  
b) Explain how zooplankton exploit vertical migration to their metabolic advantage (1 mark)
6. Briefly explain how sexual reproduction takes place in rotifers (4 marks)
7. a). Highlight any TWO major limitations associated with measuring productivity using the light and dark bottle method (2 marks)  
b) Outline the TWO major factors affecting primary productivity in aquatic ecosystems (2 marks)
8. Briefly explain how the following factors affect accuracy in sampling fish eggs and larvae
  - a. Gear design (2 marks)
  - b. Avoidance (2 marks)
9. a) Briefly describe the THREE main methods used in estimating zooplankton biomass in collected water samples (3 marks)  
b) Highlight the main difference between Dinoflagellate zygotes and those of animals and plants (1 mark)

---

10. Explain the main distinguishing characteristics of the following phases in fish larval development:
  - a. Yolk-Sac stage (2 marks)
  - b. Flexion stage (2 marks)

**Section B: Answer any THREE questions from this section (30marks)**

---

11. Discuss classification of zooplankton on the basis of size, and developmental stage  
(10marks)
12. Describe the major distinctive features that are commonly used in identification and description of fish eggs  
(10 marks)
13. Discuss the major types of Dinoflagellate related illnesses in human beings  
(10 marks)
14. Explain processes involved in the fixation and preservation of freshly collected zooplankton samples (10 marks)
15. Discuss the major gear deployment techniques used in sampling of ichthyoplankton  
(10 marks)