



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2016/2017

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

MAIN CAMPUS

AFN 201: PRINCIPLES OF AQUACULTURE

Date: 21st November, 2016

Time: 8.30 - 11.30am

INSTRUCTIONS:

- Answer ALL Questions in Section A and any other THREE in Section B.
- Illustrate answers with labeled diagrams whenever appropriate



Section A: Answer ALL questions from this section

(40 marks)

1. Outline any FOUR ways in which aquaculture is considered more superior compared to capture fisheries (4 marks)
2. Outline any FOUR qualities which make tilapia a more suitable fish species for culture in Kenya (4 marks)
3. (a) Outline the purpose of the following structures and processes in fish culture units
 - (i) Free board in pond (1 mark)
 - (ii) Flow through system in raceways (1 mark)
 - (iii) Biofilters in RAS (1 mark)
 - (iv) Monk in fish ponds (1 mark)
4. Outline any FOUR roles of liming a fish pond (4 marks)
5. (a) State the role of Gonadotropin Releasing Hormone (GnRH) in fish reproduction (1 mark)
(b) Explain THREE ways of obtaining an all-male population of tilapia for culture (3 marks)
6. Outline any FOUR management practises taken by fish farmers in intensive fish farms to prevent fish diseases (4 marks)
7. (a) Outline any FOUR desirable qualities of formulated fish feeds (4 marks)
8. Outline any FOUR procedures undertaken in a fish pond after harvesting in preparation for restocking in the next production cycle. (4 marks)
9. Name any FOUR animal characteristics that favour the process of domestication (4 marks)
10. Distinguish between extensive and intensive fish culture (4 marks)

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

11. (a) Explain the remedial actions to be taken by a fish farmer in case of the following changes in water quality parameters of a semi-intensive fish pond (8marks)
- (i) Nitrite levels=2.5mg/L
 - (ii) Sechii depth = 50cm
 - (iii) Total alkalinity = 20mg/L CaCO_3
 - (iv) Dissolved Oxygen = 3.5mg/L
- (b) With the aid of a diagram, explain how dissolved oxygen (D.O) varies during a 24-hour cycle (7 marks)
12. Discuss any FIVE factors affecting demand and supply of farmed fish and fish products (15 marks)
13. (a) Using a diagram, explain the interaction of factors leading to disease development in farmed fish according to Sniezko (1973) (9 marks)
- (b) Outline any six symptoms and signs of diseased farmed fish (6 marks)
14. (a) Explain the meaning and significance of Feed Conversion Ratio (FCR)(3 marks)
- (b) Outline the causes of poor FCR in fish fed with commercially prepared feed stuff (5 marks)
- (c) Suppose a fish farmer wants to formulate feeds for grow out fish using Pearson Square Method. The farmer has three ingredients namely: rice bran of 12.5% crude protein, soy bean meal crude protein 44.4%, wheat bran crude protein of 14.0% . Calculate the amount of each ingredient he needs to mix to come up with 1000kg fish feed of 32% crude protein (7 marks)