

1908/104
FISH CULTURE AND
NUTRITION
Oct./Nov. 2022
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN FISHERIES SCIENCE AND TECHNOLOGY

MODULE I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Non-programmable scientific calculator.

This paper consists of TWO sections; A and B.

Answer ALL the questions in section A and any FOUR questions from section B in the answer booklet provided.

Each question in section A carries 4 marks while each question in section B carries 15 marks.

Maximum marks for each part of a question are as shown.

Candidates should answer the questions in English.

This paper consists of 4 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A (40 marks)

Answer ALL the questions in this section.

1. (a) Define aquaculture. (2 marks)
(b) Distinguish between cold water aquaculture fish species and warm water aquaculture fish species, giving an example in each case. (2 marks)
2. (a) Name two fish culture units other than fish pond. (2 marks)
(b) State the role of each of the following parts of a fish pond:
 - (i) pond dyke; (1 mark)
 - (ii) core trench. (1 mark)
3. (a) Name four farm tools required in construction of an earthen fish pond. (2 marks)
(b) State the reason for screening:
 - (i) pond inlet; (1 mark)
 - (ii) pond outlet. (1 mark)
4. Distinguish between supplementary feeds and complete feeds as used in aquaculture. (4 marks)
5. (a) Define 'Feed Conversion Ratio (FCR)', giving its significance in fish husbandry. (2 marks)
(b) Explain the significance of regulating the amount of feed applied in a fish pond. (2 marks)
6. Explain the importance of liming in fish pond management. (4 marks)
7. Explain the reasons for preferring mono-sex culture practice in tilapia fish production. (4 marks)
8. Explain integrated aquaculture outlining its benefits. (4 marks)
9. (a) List two fish culture units based in the sea or lake. (1 mark)
(b) State three general challenges of sea-based fish culture. (3 marks)

10. Explain the justification for sourcing fish seeds from designated fish hatcheries even when small fish are readily available in natural water bodies. (4 marks)

SECTION B (60 marks)

Answer any FOUR questions from this section.

11. (a) List any four disease causing agents in cultured fish. (4 marks)
- (b) Explain fish farm management practices aimed at controlling diseases and pests. (11 marks)
12. (a) Outline the steps of constructing earthen fish pond. (6 marks)
- (b) Explain how each of the following factors influence the siting of earthen fish farm:
- (i) water supply; (5 marks)
- (ii) infrastructure; (4 marks)
13. (a) Use a cross-sectional diagram to describe the structure of a typical earthen fish pond identifying the dyke, bottom slope, shallow end, deep end and free board. (6 marks)
- (b) Calculate the amount of water in litres required to fill a liner pond of 60 m by 40 m with an overage depth of 1 m and free board of 15 cm. (4 marks)
- (c) Determine the cost in Ksh to fill the pond given a unit cost of Ksh 36 per cubic metre of water. (2 marks)
- (d) Estimate the number of tilapia fingerlings to be stocked in the pond assuming stocking density of 3 fish per cubic metre and fingerling mortality of 10%. (3 marks)
14. (a) Explain feed formulation as used in fish culture. (3 marks)
- (b) State five factors considered in the choice of ingredients while formulating a supplementary feed for fish. (5 marks)
- (c) Using Pearson Square method, calculate the amount of wheat bran and blood meal required to formulate 1000 kg feed of 26% crude protein. The crude protein in wheat bran and blood meal is 17.1% and 63.15% respectively. (7 marks)

15. Describe each of the following feeding methods used in culture of tilapia:

- (a) hand-feeding; (5 marks)
- (b) automatic feeder; (5 marks)
- (c) demand feeder. (5 marks)

16. Discuss the following systems of aquaculture:

- (a) extensive system; (7 marks)
- (b) intensive system. (8 marks)

THIS IS THE LAST PRINTED PAGE.