

SCHOOL	AGRICULTURE AND FISHERIES SCIENCE		
DEPARTMENT	FISHERIES AND OCEAN SCIENCES		
SUBJECT	ICHTHYOLOGY I		
SUBJECT CODE	F3511OI		
DATE	June 2026		
DURATION	3 HOURS	MARKS	100

FIRST OPPORTUNITY EXAMINATION**Examiner: Mr L. Kandjengo****Internal Moderator: Prof T. Nhiwatiwa**

This paper consists of THREE [3] pages including the cover page

Instructions

Answer ALL questions in Sections A, B, and C

Answer ONLY TWO (2) questions in Section D

Use diagrams where appropriate

Clearly label all answers.

SECTION A: MULTIPLE CHOICE QUESTIONS (1 MARK EACH)

1. The lateral line system primarily detects:
 - a) Light
 - b) Sound
 - c) Water vibrations
 - d) Temperature
2. Which class of fish has a cartilaginous skeleton?
 - a) Osteichthyes
 - b) Agnatha
 - c) Chondrichthyes
 - d) Placodermii
3. The main function of the caudal fin is:
 - a) Balance
 - b) Steering
 - c) Propulsion
 - d) Jumping
4. Which structure is responsible for buoyancy in most bony fish?
 - a) Caudal fin
 - b) Swim bladder
 - c) Adipose fin
 - d) Lateral line
5. Meristic characters refer to:
 - a) Measurable traits
 - b) Countable features
 - c) Behavioural traits
 - d) Genetic traits
6. Which of the following fish groups lacks jaws?
 - a) Teleosts
 - b) Agnatha
 - c) Lungfishes
 - d) Rays
7. Placoid scales are characteristic of:
 - a) Bony fish
 - b) Sharks
 - c) Coelacanth
 - d) Dolphins
8. The operculum covers:
 - a) Fins
 - b) Gill pores
 - c) Gills
 - d) Lateral line

9. Which body shape is adapted for fast swimming?
- a) Compressiform
 - b) Depressiform
 - c) Fusiform
 - d) Taeniform
10. A species is best defined under the biological concept as:
- a) A group with similar morphology
 - b) A group with genetic similarity
 - c) Interbreeding populations
 - d) A group from a common ancestor

SECTION B: TRUE OR FALSE (1 MARK EACH)

11. Dolphins are fish.
12. Ostracoderms were filter feeders.
13. Jaws developed from the third gill arch.
14. Linnaeus is known as the father of ichthyology.
15. Monkfish is a compressed fish.
16. Cichlids have sections of spine and soft rays on their dorsal fins.
17. Schooling is the act of training juvenile fish to avoid predators.
18. *Merluccius capensis* has a forked tail.
19. *Cyprinus carpio carpio* is commonly caught along the coast of Namibia.
20. Kingklip is an belongs to the Clariidae family.

SECTION C: SHORT ANSWER QUESTIONS (10 MARKS)

21. Fish External Anatomy: Describe the external anatomy of a typical fish. Include labelled diagram and functions.
22. Discuss the classification of fish into three main classes with features that identify them.
23. Discuss the following the relevance of the following taxonomic tools and how they may be used in fish identification: morphometric, meristic, anatomical and molecular characters.

24. Identify the Order or family of five fish in *Figure 1* below and provide an example of each.

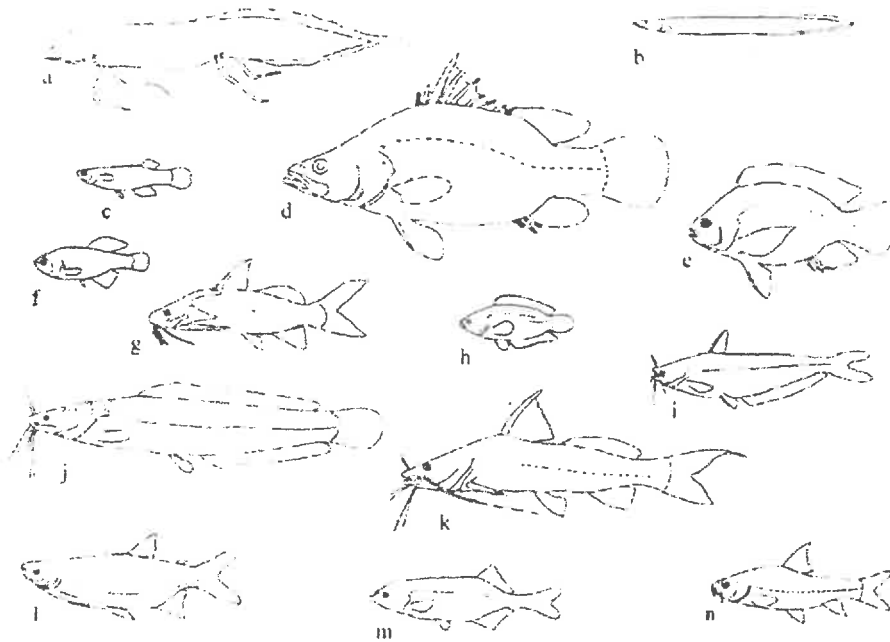


Figure 1: Representative fish families (after van Oijen 1995).

SECTION D: ANSWER ONLY TWO QUESTIONS (20 MARKS EACH)

25. Critically discuss how fish morphology reflects ecological adaptation, with reference to body shape, fins, scales and feeding structures.

26. Using sharks as a case study, critically discuss why some fish groups are more vulnerable to overexploitation than others, and evaluate appropriate conservation responses.

27. Discuss the importance of systematics and taxonomy in fisheries science, with emphasis on species identification, biodiversity assessment, stock management and conservation planning.

TOTAL = 100