

KENYA CERTIFICATE OF BASIC EDUCATION**SENIOR SCHOOL ASSESSMENT****AUGUST ASSIGNMENT 2026****GRADE 10 – MARINE TECHNOLOGY**

Time: 2 Hours

**LEARNER'S DETAILS**

Name: _____ School: _____

Assessment Number: _____ Date: _____

School Code: _____ Signature: _____

INSTRUCTIONS TO CANDIDATES

1. Write your details as required above
2. This paper consists of two sections: A and B.
3. Answer all questions in section A and section B.
4. Answer the questions in English.
5. All answers **MUST** be written in the spaces provided in the paper.
6. Do NOT remove any page from this question paper.

FOR OFFICIAL USE ONLY

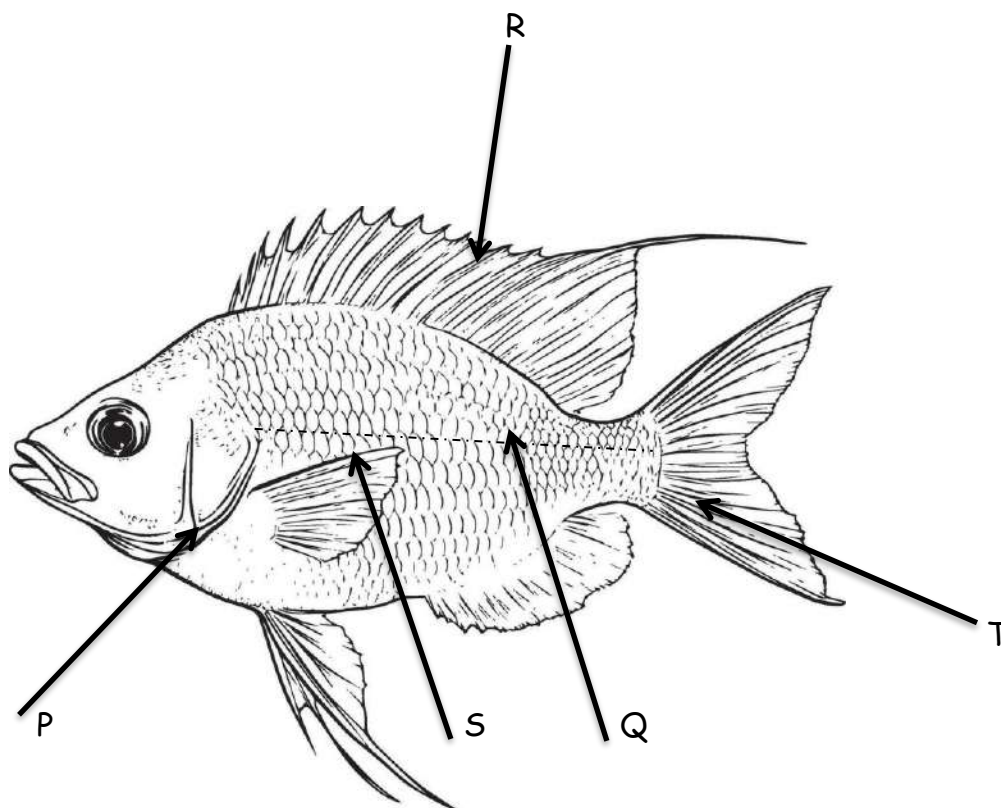
SECTION	SECTION A	SECTION B	% SCORE	EE1	EE2	ME1	ME2	AE1	AE2	BE1	BE2
SCORE RANGE	30 MARKS	50 MARKS		90-100	75-89	58-74	41-57	31-40	21-30	11-20	1-10
POINTS				8 POINTS	7 POINTS	6 POINTS	5 POINTS	4 POINTS	3 POINTS	2 POINTS	1 POINT
LEARNER'S TOTAL SCORE											

SECTION A (30 MARKS)Answer **ALL** questions in this section.

1. The following are Kenyan aquatic ecosystems. Name the ecosystem and state one physical or chemical characteristic.

Image Reference	Name of Ecosystem	One Characteristic
	(a) _____	(b) Salt-tolerant vegetation
	(c) _____	(d) High biodiversity
	(e) Estuary	(f) _____

2. Four learners from **Kisumu Day Senior School** are observing a Tilapia. They identified parts P, Q, R, and S.



Identify these parts

(a) P: _____

(b) Q: _____

(c) R: _____

(d) S: _____

(e) State the function of **Part T**:

3. Match the professional in Column A with their primary role or description in Column B. (5 Marks)

Column A (Career)

Column B (Role/Description)

(a) Aquaculturist

(i) Studies chemical composition of seawater.

(b) Marine Biologist

(ii) Manages fish processing factories in Homa Bay.

(c) Fish Quality Assurance Officer

(iii) Designs and manages fish cage systems.

(d) Oceanographer

(iv) Researches coral reef conservation in Diani.

(e) Fisheries Extension Officer

(v) Educates farmers on pond management in Sagana.

4. Stating whether the following statements are **TRUE** or **FALSE** (5 Marks):

(a) High salinity is a biological characteristic of marine water. [_____]

(b) **Cartilaginous fish, like sharks, possess an operculum to cover their gills.** [_____]

(c) Aquaculture includes the farming of both fish and aquatic plants. [_____]

(d) **The swim bladder helps bony fish maintain buoyancy at different depths.** [_____]

(e) Lake Victoria is the largest marine water body in Kenya. [_____]

5. (a) **Define** the term "Capture Fisheries." (2 marks)

(b) **Distinguish** between *Extensive* and *Intensive* aquaculture systems. (4 marks)

Extensive aquaculture	Intensive aquaculture

(c) **List** four safety equipments required in a fishing vessel operating in the Indian Ocean. (4 marks)

(i) _____

(ii) _____

(iii) _____

(iv) _____

SECTION B (50 MARKS)

6. Mr. Kamau, a teacher at **Mombasa Senior School**, wants to construct a fish pond. He has three descriptions from his students:

Ali: "The soil should have high clay content to hold water."

Jane: "The land should be gently sloping to allow water to flow by gravity."

Kendi: "We need to clear all vegetation and dig the area to a specific depth."

(a) **Identify** which student is describing "Topography." (1 mark) _____

(b) **Explain** why Ali's description of "Clay soil" is critical for an earthen pond. (4 marks)

- i. _____
- ii. _____
- iii. _____
- iv. _____

(c) **Outline** four steps involved in the construction of an earthen lined pond. (4 marks)

- i. _____
- ii. _____
- iii. _____
- iv. _____

(d) **Compare** a "Fish Pond" and a "Fish Cage" production system. (6 marks)

Fish Pond	Fish Cage

7. During a visit to a landing site in **Malindi**, learners compared a **Tuna fish** and a **ray fish**.

(a) **Identify** the type of skeleton found in a Ray fish. (1 mark) _____

(b) **Stating** two external differences between the two fish. (4 marks)

Tuna	Rays

(c) **Explain** the function of the *Lateral Line* found in both species. (3 marks)

- i. _____
- ii. _____
- iii. _____

(d) **Name** the internal organ used by bony fish for breathing. (2 marks)

8. A fishing boat from **Shimoni** experienced engine failure and began to capsize.



(a) **Identify** the safety gear worn by the person in the image. (1 mark)

(b) **Describe** the survival technique shown in the image and explain its purpose. (4 marks)

SURVIVAL TECHNIQUE

PURPOSE

- i.

- ii.

(c) **Mention** three common causes of accidents in fishing vessels in Kenya. (3 marks)

- i.

- ii.

- iii.

(d) What is the first-aid treatment for *Sea Sickness*? (2 marks)

9. A group of investors in **Naivasha** are choosing between a *Raceway* and a *Fish Tank* for intensive Tilapia production.



A



B

(a) **Identify** which system is labeled **A** in the image. (1 mark)

(b) **Explain** two economic benefits of aquaculture to the Kenyan economy. (4 marks)

- i.

- ii.

(c) **Outline** three challenges facing aquaculture development in Kenya today. (6 marks)

i. _____

ii. _____

iii. _____

(d) Calculate the volume of a rectangular fish tank that is 5m long, 3m wide, and 2m deep. (4 marks)

MARINE TECHNOLOGY GRADE 10 MARKING SCHEME

SECTION A (30 MARKS)

Question 1: Aquatic Ecosystems

Image Reference	Name of Ecosystem	One Characteristic
(a)	Mangrove Forest	Salt-tolerant vegetation
(c)	Coral Reef	High biodiversity
(e)	Estuary	Mixture of fresh and salt water
(f)	Brackish Water	Moderate salinity

Question 2: External Parts of a Fish

(a) P: **Operculum**

(b) Q: **Lateral Line**

(c) R: **Dorsal Fin**

(d) S: **Pectoral Fin**

(e) Function of Part T:

The caudal fin helps the fish move forward and provides propulsion during swimming.

Question 3: Matching Careers

Career	Answer
(a) Aquaculturist	(iii) Designs and manages fish cage systems
(b) Marine Biologist	(iv) Researches coral reef conservation in Diani
(c) Fish Quality Assurance Officer	(ii) Manages fish processing factories in Homa Bay
(d) Oceanographer	(i) Studies chemical composition of seawater
(e) Fisheries Extension Officer	(v) Educates farmers on pond management in Sagana

Question 4: True or False

(a) **False**

(b) **False**

(c) **True**

(d) **True**

(e) **False**

Question 5

(a) Definition of Capture Fisheries

Capture fisheries is the harvesting of fish and other aquatic organisms from natural water bodies such as oceans, lakes, rivers, and dams.

(b) Difference between Extensive and Intensive Aquaculture

Extensive Aquaculture	Intensive Aquaculture
Uses large water areas	Uses smaller controlled units
Low stocking density	High stocking density
Relies on natural food	Uses formulated feeds
Low management input	High management input

(c) Safety Equipment Used in Fishing Vessels

- (i) Life jackets
- (ii) Fire extinguisher
- (iii) First aid kit
- (iv) VHF radio

SECTION B (50 MARKS)

Question 6: Fish Pond Construction

(a)

Jane

(b) Importance of Clay Soil

- i. Clay soil prevents water seepage.
- ii. It retains water for a long period.
- iii. It reduces pond maintenance costs.
- iv. It helps maintain the required water level.

(c) Steps in Constructing an Earthen Pond

- i. Site clearing
- ii. Excavation of the pond area

- iii. Building dykes/embankments
- iv. Installing inlet and outlet structures

(d) Fish Pond versus Fish Cage

Fish Pond	Fish Cage
Constructed on land	Installed in natural water bodies
Water is relatively static	Water flows naturally
Easier to control predators	Harder to control predators
Easier management	Requires stronger structures

Question 7: Fish Anatomy

(a)

Cartilaginous skeleton

(b) External Differences

Tuna	Ray
Streamlined body	Flattened body
Large tail fin	Wing-like pectoral fins

(c) Function of the Lateral Line

- i. Detects water vibrations.
- ii. Detects pressure changes in water.
- iii. Helps fish locate prey and avoid predators.

(d)

Gills

Question 8: Safety and Survival

(a)

Life Jacket

(b)

Survival Technique

H.E.L.P (Heat Escape Lessening Posture)

Purpose

- i. Reduces body heat loss.
- ii. Prevents hypothermia in cold water.

(c) Causes of Accidents in Fishing Vessels

- i. Engine failure
- ii. Bad weather and storms
- iii. Overloading

(d) First Aid Treatment for Sea Sickness

- Move the victim to fresh air.
- Let the victim look at the horizon.
- Keep the victim hydrated.
- Administer anti-seasickness medication if available.

Question 9: Aquaculture Systems

(a)

Raceway

(b) Economic Benefits of Aquaculture

- i. Creates employment opportunities.
- ii. Improves food security by providing fish protein.

(c) Challenges Facing Aquaculture in Kenya

- i. High cost of fish feeds.
- ii. Lack of quality fingerlings.
- iii. Climate change and environmental pollution.

(d) Volume of Fish Tank

Formula:

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Depth}$$

$$V = 5 \times 3 \times 2$$

$$\text{Volume} = 30 \text{ m}^3$$

Answer: 30 cubic metres (30 m³)