SAMPLE ASSESSMENT TASKS

MARINE AND MARITIME STUDIES
GENERAL YEAR 11

Sample assessment task

Marine and Maritime Studies – General Year 11

Task 3 – Unit 1

Assessment type: Extended response

Conditions
Period allowed for completion of the task – three weeks; a combination of in-class and out-of-class time

Task weighting: 2.5% of the school mark for this pair of units
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Marine resource management research (25 marks)

Background
Commercial fishing is an important contributor to the Western Australian economy. It provides direct employment for about 5 000 people, plus many more in associated industries. As well, an estimated one-third of the WA population fish recreationally. For continued commercial and recreational fishing, stocks need to be harvested sustainably. To maintain fish stocks and ensure the health of their ecosystems, management is required.

What you need to do
Select one of the major Western Australian fisheries (see below) to research the following questions around its management. If there is another fishery not listed that you would like to research, you may discuss this with your teacher.

Focus questions

Introduction (3 marks)
1. What are the common and scientific names of the marine organism/fish you have chosen?
2. Give the bioregion where the fishery is located and, on a map of Western Australia, show the area/s where the fishery is located?

Strategies, recommendations and actions (15 marks)
3. What are the strategies, recommendations and suggested actions aimed at managing the fishery? Use the following to guide your discussion of the fishery's management:
    *   habitat conservation and rehabilitation priorities
    *   long-term sustainability of the fishery – identify any natural, human and introduced threats to its long-term survival and actions taken to minimise these effects
    *   selected dates or regional closure times, and identify the purpose for these times
    *   recreational and commercial- catch quotas and specifications including minimum and maximum sizes and the return of breeding stock
    *   any other issues associated with sustainability of the fishery.

Conclusion (5 marks)
4. Provide a concluding statement, with at least **three (3)** points, that summarises the current sustainability of the fishery. The statement needs to provide evidence to support your conclusion as to whether the fishery is sustainable or not.

Present your information logically using appropriate scientific language.   **(2 marks)**

The major Western Australian commercial fisheries include:
- the West Coast Rock lobster
- Abalone
- the Exmouth Gulf Prawn
- the Shark Bay Prawn, and
- the Shark Bay Scallop.

Other fisheries can be found on the Western Australian Department of Fisheries website (http://www.fisheries.wa.gov.au/Pages/Home.aspx).

The annual *The State of the Fisheries and Aquatic Resources Report* available through the Western Australian Department of Fisheries website can be a useful resource.

Marking key for sample assessment task 3 — Unit 1

Description	Marks available
Introduction	**/3**
• common and scientific names of the chosen species identified	1
• bioregion and area/s identified on a map of WA	2
Strategies, recommendations and actions	**/15**
• habitat conservation and rehabilitation priorities discussed	1–3
• natural, human and introduced threats to the long-term sustainability of the fishery discussed	1–5
• dates or regional closure times identified	1
• purpose for above times described	1–2
• recreational and commercial catch quotas and specifications and/or breeding-stock returns outlined	1–2
• issues about sustainability of the marine resource discussed	1–2
Conclusion	**/5**
• concluding paragraph/s clearly indicate at least three points, with supporting evidence, which justify the statement	1–5
Layout and structure	**/2**
• logically organised with appropriate headings and sub-headings	1
• ideas clearly expressed with appropriate use of scientific language	1
Total	**/25**

Sample assessment task

Marine and Maritime Studies – General Year 11

Task 4 — Unit 1

Assessment type: Science inquiry/Investigation

Conditions
Period allowed for completion of the task: one week for planning and setting up of experiment followed by up to two weeks to monitor progress of reaction

One class lesson to finalise report

Task weighting: 7% of the school mark for this pair of units
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Investigating the corrosion of steel **(39 marks)**

In this task, you will research, prepare and conduct an investigation to assess the effect of salt on the corrosion of steel. Tests should be carried out to determine whether a relationship exists between the concentration of salt in water and the rate of corrosion of steel. You will be required to prepare a scientific report to summarise and explain your findings.

The steps involved
Phase 1 – Research and planning (individual, followed by group refinement)
Phase 2 – Carrying out of experiment (group work)
Phase 3 – Data processing and analysis (individual, followed by group refinement)
Phase 4 – Evaluation (individual, followed by group refinement)

What you need to do

Research and planning

(a)   Initially working on your own, research background information about corrosion. Use the research questions on the *Investigating the corrosion of steel* worksheet to assist with your research. You need to show this to your teacher before the next step.

(b)   Working in your group, discuss your individual research and refine your ideas through group discussion. Each member of the group will need to submit the revised answers to the research questions.

(c)   Initially working on your own, complete the planning questions on the *Investigating the corrosion of steel* worksheet. You will be given 20 minutes of class time to do this. You need to show this to your teacher before the next step.

(d)   Working in your group, discuss your individual planning and refine your ideas through group discussion. Each member of the group will need to submit the revised answers to the planning questions.

Carrying out of experiment

Once your plan has been checked by the teacher, collect the equipment you need and carry out the experimental work.

Processing the data and Evaluation

(a)   Initially working on your own, complete the data processing and analysis and evaluation questions on the *Investigating the corrosion of steel* worksheet. You will be given class time to do this. You need to show this to your teacher before the next step.

(b)   Working in your group, discuss your individual data processing and analysis and evaluation and refine your ideas through group discussion. Each member of the group will need to submit the revised answers to the data processing and analysis and evaluation questions.

What you need to submit

At the end of the investigation you need to submit your *Investigating the corrosion of steel* worksheet.

Investigating the corrosion of steel
Research sheet

Student's name: _____

1. What is steel? (1 mark)

Individual ideas

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_____

_____

Any refinements after group discussion

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2. What is corrosion? (1 mark)

Individual ideas

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Any refinements after group discussion

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3. What conditions are necessary for corrosion to occur? (1 mark)

Individual ideas

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Any refinements after group discussion

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4.   What is the name given to the type of corrosion that occurs in steel?   (1 mark)

Individual ideas

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Any refinements after group discussion

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5.   Write a word equation for the chemical reaction that causes corrosion in steel.   (1 mark)

Individual ideas

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Any refinements after group discussion

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6.   Describe the appearance of this type of corrosion.   (1 mark)

Individual ideas

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Any refinements after group discussion

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Investigating the corrosion of steel

Planning

1. What is the aim of your investigation? (1 mark)

Individual ideas

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Any refinements after group discussion

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2. Write a hypothesis for the experiment. (1 mark)

Individual ideas

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Any refinements after group discussion

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3. What is the independent variable (i.e. variable to be varied) in the investigation? (1 mark)

Individual ideas

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Any refinements after group discussion

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4. What is the dependent variable (i.e. variable to be measured) in the investigation? (1 mark)

Individual ideas

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Any refinements after group discussion

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5. What variables need to be controlled in the investigation? (1 mark)

Individual ideas

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Any refinements after group discussion

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6. Plan and describe your experimental procedure. Consider how you will ensure that the conditions needed for corrosion will be maintained for the length of the experiment. Describe the steps in the experiment, how the dependent variable will be measured, and, if you think appropriate, prepare a table to record the results. Provide an equipment order to your teacher. Be specific about the equipment required; include quantities and any special instructions, e.g. '4 x 15 mL test tubes', not just 'test tubes'. (2 marks)

Equipment list

Individual ideas	Any refinements after group discussion

Method (4 marks)

Individual ideas

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Any refinements after group discussion

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Results (2 marks)

Present your results in the way you think most suitable, such as a written description of observations or a table.

Data processing and analysis

Are there any patterns or trends in your data? (2 marks)

Individual ideas

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Any refinements after group discussion

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Using science concepts, explain the patterns, trends or relationships you have identified in your data. (2 marks)

Individual ideas

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Any refinements after group discussion

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Evaluation

Do the data support the hypothesis? Explain. (2 marks)

Individual ideas

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Any refinements after group discussion

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State a conclusion related to the aim and hypothesis. (1 mark)

Individual ideas

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Any refinements after group discussion

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Identify any sources of experimental error. Suggest how the experimental design may have been improved to reduce any errors. If you think no changes are needed, explain why not. (2 marks)

Individual ideas

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Any refinements after group discussion

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How confident are you with your conclusions? How much uncertainty/error is associated with your data? (2 marks)

Individual ideas

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Any refinements after group discussion

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[Data Analysis and Evaluation questions adapted from: Hackling, M. W. (2005). *Working scientifically: Implementing and assessing open investigation work in science* (Rev. ed.). (Appendices 2 & 3: Planning and report worksheet for science investigations). Perth: Department of Education and Training, pp. 27–38.]

Marking key for sample assessment task 4 — Unit 1

Description	Marks available
Research	**/8**
• individual research questions (marks as allocated on planning sheet) • refined research questions from group discussion	6 2
Planning	**/13**
• individual planning questions (marks as allocated on planning sheet) • refined planning questions from group discussion	11 2
Carrying out of experiment	**/5**
• safely conducted • use of repeat trials • data recorded in a meaningful and clear way • equipment cleaned and returned appropriately	1 1 2 1
Sighting of individual processing and data analysis, and evaluation before group refinement	**/2**
Data processing and analysis	**/4**
• recognition of trend – salt increases rate of corrosion • concepts relating to salt solution carrying current to facilitate corrosion used to explain increased rate of corrosion in salt solutions	2 2
Evaluation	**/7**
• makes a valid statement relating hypothesis to results • states a conclusion related to aim and hypothesis • identifies possible limitations in the experimental design • suggests possible improvements or justifies lack of need for changes to experimental design • statement about confidence in conclusion with supporting reasons	2 1 1 1 2
Total	**/39**

Sample assessment task

Marine and Maritime Studies – General Year 11

Task 10

Assessment type: Test

Conditions
Time for the task: 50 minutes

Task weighting: 4% of the school mark for this pair of units

TEST

Oceanography

Recommended time: 50 minutes

Structure of the test:

Section	Suggested working time	Number of questions	Marks
ONE Multiple-choice	15 minutes	10	10
TWO Short response	35 minutes	4	30
		Total	**40**

PLEASE DO NOT OPEN THE TEST UNTIL INSTRUCTED TO DO SO

Section One: Multiple-choice questions

Choose the correct answer from the choices offered.

1. The land mass extending from a continent and usually resulting in a relatively shallow region of sea is known as

    (a) a benthic zone.
    (b) a continental shelf.
    (c) an abyssal zone.
    (d) a sediment zone.

2. Which one of the following ocean zones generally shows the greatest variation in salinity?

    (a) inter-tidal
    (b) continental shelf
    (c) pelagic
    (d) deep sea

3. Which one of the following is **not** a sub-division of the pelagic ocean zone?

    (a) epipelagic
    (b) mesopelagic
    (c) demersalpelagic
    (d) hadopelagic

4. In which one of the following ocean areas do the majority of marine animal species live?

    (a) inter-tidal zone
    (b) photic pelagic zone
    (c) deep sea zone
    (d) benthic

5. Organisms that live on, in, or near the seabed are known as

    (a) benthic.
    (b) abyssal.
    (c) pelagic.
    (d) littoral.

6. Nektons are marine organisms that

    (a) are sessile.
    (b) are able to move independently of water currents.
    (c) burrow in the ocean floor.
    (d) attach to rocks in the ocean.

7. Which one of the following is **not** a typical environmental feature to which organisms living in the inter-tidal zone need to be adapted?

    (a) daily changes in water availability
    (b) rough waves
    (c) relatively large temperature variations
    (d) large daily variations in exposure to ultra-violet (UV) light

8. Which one of the following is **not** an environmental feature to which deep sea organisms need to be adapted?

    (a) low temperatures
    (b) high pressures
    (c) low oxygen levels
    (d) darkness

9. Which one of the following is **not** thought to be a reason some deep sea organisms have evolved bioluminescence?

    (a) headlights to help it see
    (b) to increase its visibility
    (c) lures to attract curious prey
    (d) unique light patterns for attracting mates

10. A food web consists of a system of interconnected

    (a) animal species.
    (b) plant species.
    (c) herbivores and carnivores.
    (d) food chains.

Section Two: Short answer 30 Marks

This section has **four (4)** questions. Attempt **all** questions from this section.

Write your answers in the space provided.

Question 1

Read the information in the box to answer the questions that follow.

> A mangrove is a land plant able to live in salt water. In Western Australia, mangroves are common along the coastline from the Kimberley, Dampier and Exmouth and as far south as the Leschenault Inlet in Bunbury.
>
> Mangroves live in a low-oxygen and high-salt environment. Wind, waves and large tidal variations make it hard for mangrove seedlings to survive. Bacteria live in the mud surrounding the mangroves, breaking down dead plant and animal matter and producing sulfur dioxide gas.
>
> Barramundi spawn near mangrove habitats and their larvae eat small plankton such as copepods found between mangrove roots. Other organisms that live in the mangroves include mud crabs, prawns, oysters, archerfish and estuarine crocodiles.

(a) For the organisms listed in the table below, use the correct term from the following list to classify the organism.   (6 marks)

protozoa   platyhelminth   echinoderm
angiosperm   nematode   arthropod
porifera   annelid   chordate
cnidaria   mollusc

Organism	Classification
mangrove	
copepod	
mud crab	
oyster	
archerfish	
estuarine crocodile	

(b) Identify **two (2)** ways in which mangrove plants have adapted to deal with their high-salt environment. (2 marks)

Adaptation 1	
Adaptation 2	

Question 2 (7 marks)

Below is a list of body features/adaptations for a range of marine organisms.

1. firm attachments to rocks
2. minimal or no gas cavities in their body
3. schooling
4. ability to regrow body parts
5. swimbladder
6. sea snails with a trap door
7. flattened body shape

Each feature is typically associated with organisms in a particular ocean zone or environment. Place these features in the appropriate ocean zone/environment in the table below. Numbers may be used when placing them in their zone.

Inter-tidal	Continental shelf benthic	Pelagic	Deep sea

Question 3 (8 marks)

Complete the table below by classifying the Western Australian marine organisms into their phylum from the list of phyla provided and indicate whether the organism is further classified as planktonic, nektonic or benthic.

protozoa	platyhelminth	echinoderm
angiosperm	nematode	arthropod
porifera	annelid	chordate
cnidaria	mollusc	

Organism	Phylum	Planktonic/nektonic/benthic
 Image 1: Flatback turtle		
 Image 2: Turban snail		
 Image 3: Sea star		
 Image 4: Jelly fish		

Question 4

Read the information in the box to answer the questions that follow.

Geographe Bay, off Bunbury in southwest WA, has seagrass meadows which provide a habitat for the Australian herring. Young herring eat small crustaceans and adults eat small fish, including sardines, juvenile fish and small crustaceans living in the seagrass.

Herring school in large numbers as a defence mechanism against their predators, which include salmon and seal. As well, they hover over the seagrass meadows to give additional protection. Below is a table showing some of the organisms that inhabit a seagrass meadow in Geographe Bay and the organisms they eat.

Organism	This organism eats:
Australian herring	anchovies, sardines, juvenile garfish, shrimp
anchovies	phytoplankton
sardines	mollusc larvae, phytoplankton
shrimp	phytoplankton
mollusc larvae	seagrass
juvenile garfish	seagrass, phytoplankton, shrimp
Australian salmon	Australian herring, shrimp
seal	Australian herring
great white shark	seal

(a) Using the information from the table and the blank A4 sheet provided by your teacher, construct a food web showing the links between all organisms living on the seagrass meadow.

(3 marks)

(b) In the space below, draw one complete food chain containing Australian herring.   (1 mark)

(c) In the food web, what could be considered as a producer?   (1 mark)

_____

(d) What effect would the death of the seagrass have on the Australian herring? Explain your answer.   (2 marks)

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ACKNOWLEDGEMENTS

Marking key for sample assessment task 10

Section One: Multiple-choice

Description	Marks
One mark per question	0–10
Total	/10

Question	Answer
1	B
2	A
3	C
4	D
5	A
6	B
7	D
8	C
9	B
10	D

Section Two: Short answer

Question 1

(a) For the organisms listed in the table below, use the correct term from the following list to classify the organism. (6 marks)

protozoa   platyhelminth   echinoderm
angiosperm   nematode   arthropod
porifera   annelid   chordate
cnidaria   mollusc

Organism	Classification
mangrove	angiosperm
copepod	arthropod
mud crab	arthropod
oyster	mollusc
archerfish	chordate
estuarine crocodile	chordate

Description	Marks
One mark for each organism as in above table	0–6
Total	/6

(b) Identify two (2) ways in which mangrove plants have adapted to deal with their high-salt environment. (2 marks)

Description	Marks
Accept any two suitable adaptations. Possible examples include the following: • special salt-excreting glands on leaves • the exclusion of salt from entering roots with water uptake • ridding salt with old leaves, bark and wood • restrict the opening of their stomata to conserve its fresh water • thick waxy leaf coating or dense hairs to reduce transpiration and so conserve fresh water	1–2
Total	/2

Question 2 (7 marks)

Below is a list of body features/adaptations for a range of marine organisms.
1. firm attachments to rocks
2. minimal or no gas cavities in their body
3. schooling
4. ability to regrow body parts
5. swimbladder
6. sea snails with a trap door
7. flattened body shape

Each feature is typically associated with organisms in a particular ocean zone or environment. Place these features in the appropriate ocean zone/environment in the table below. Numbers may be used when placing them in their zone.

Inter-tidal	Continental shelf benthic	Pelagic	Deep sea
1, 4, 6	7	3, 5	2

Description	Marks
One mark for each adaptation as in above table	0–7
Total	/7

Question 3 (8 marks)

Complete the table below by classifying the Western Australian marine organisms into their phylum from the list of phyla provided and indicate whether the organism is further classified as planktonic, nektonic or benthic.

protozoa	platyhelminth	echinoderm
angiosperm	nematode	arthropod
porifera	annelid	chordate
cnidaria	mollusc	

Organism	Phylum	Planktonic/nektonic/benthic
Flatback turtle	chordate	nektonic
Turban snail	mollusc	benthic
Sea star	echinoderm	benthic
Jelly fish	cnidaria	planktonic

Description	Marks
One mark for each cell as in above table	0–8
Total	**/8**

Question 4

Read the information in the box to answer the questions that follow.

> Geographe Bay, off Bunbury in southwest WA, has seagrass meadows which provide a habitat for the Australian herring. Young herring eat small crustaceans and adults eat small fish, including sardines, juvenile fish and small crustaceans living in the seagrass.
> Herring school in large numbers as a defence mechanism against their predators, which include salmon and seal. As well, they hover over the seagrass meadows to give additional protection. Below is a table showing some of the organisms that inhabit a seagrass meadow in Geographe Bay and the organisms they eat.

Organism	This organism eats:
Australian herring	anchovies, sardines, juvenile garfish, shrimp
anchovies	phytoplankton
sardines	mollusc larvae, phytoplankton
shrimp	phytoplankton
mollusc larvae	seagrass
juvenile garfish	seagrass, phytoplankton, shrimp
Australian salmon	Australian herring, shrimp
seal	Australian herring
Great White shark	seal

(a) Using the information from the table and the blank A4 sheet provided by your teacher, construct a food web showing the links between all organisms living on the seagrass meadow.

(3 marks)

Description	Marks
all given links between organisms are shown (see food web next page)	1
arrows drawn in correct direction	1
organisms at the same trophic level are placed on approximately the same horizontal line of the web	1
Total	**/3**
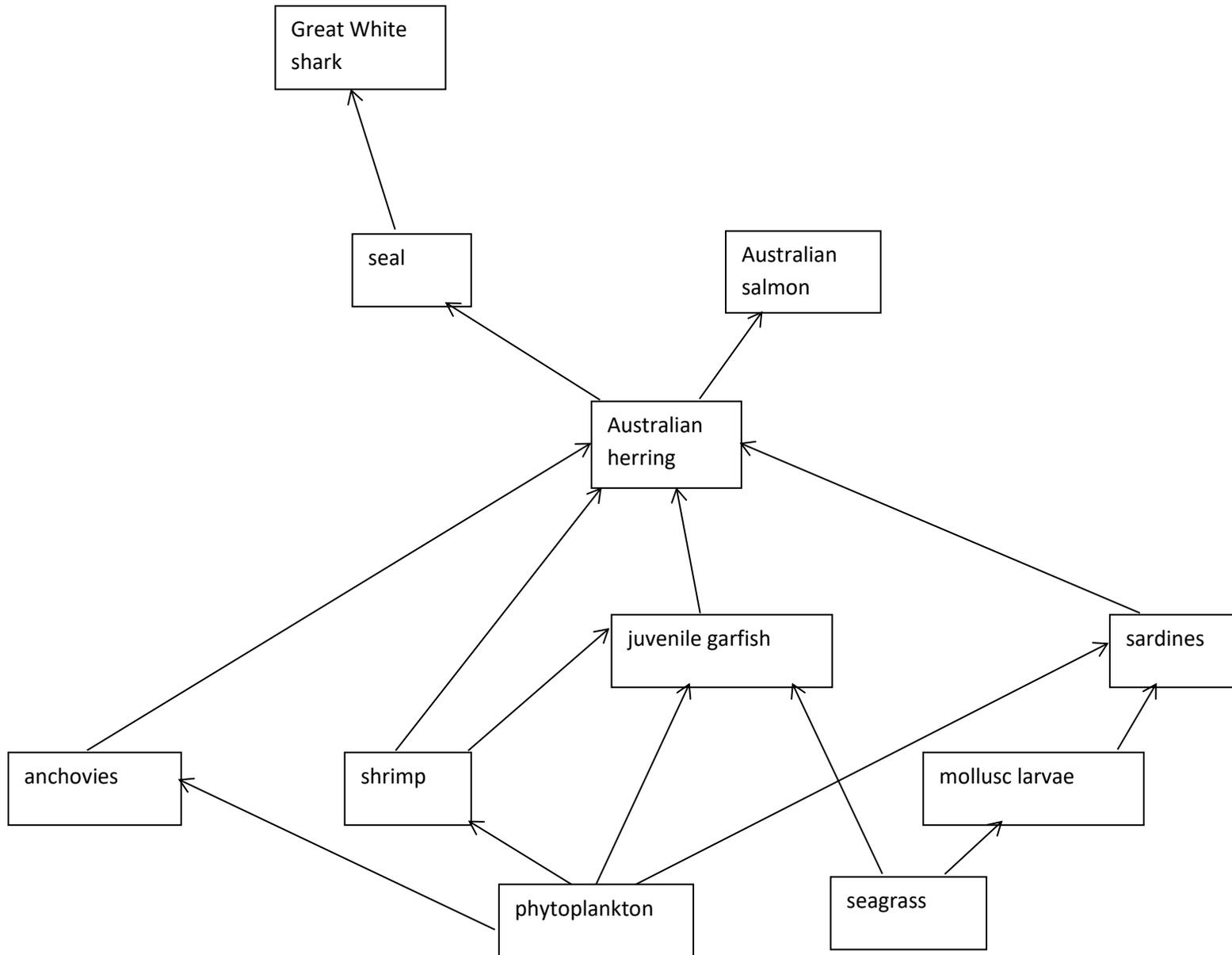
(b) In the space below, draw one complete food chain containing Australian herring. (1 mark)

Description	Marks
Food chain needs to start with a producer (phytoplankton or seagrass), include the Australian herring and end with a predator (e.g. Australian salmon or shark). For example, one of the following: phytoplankton → shrimp → Australian herring → Australian salmon phytoplankton → juvenile garfish → Australian herring → Australian salmon seagrass → mollusc larvae → sardines → Australian herring → seal → shark seagrass → juvenile garfish → Australian herring → seal → shark	1
Total	**/1**

(c) In the food web, what could be considered as a producer? (1 mark)

Description	Marks
Seagrass or phytoplankton	1
Total	**/1**

(d) What effect would the death of the seagrass have on the Australian herring? Explain your answer. (2 marks)

Description	Marks
The herring population would decline in number	1
Populations of garfish and sardines (as a result of fewer mollusc larvae) would be reduced and this would have a flow-on effect on the herring population by reducing its food supply	1
Total	**/2**

Sample assessment task

Marine and Maritime Studies – General Year 11

Task 14 — Unit 2 Sailing context

Assessment type: Practical

Conditions
Period allowed for completion of the task: two weeks; combination of in-class and out-of-class time.

Task weighting: 5% of the school mark for this pair of units
_____

Knot board **(30 marks)**
An important skill for a sailor is the ability to tie a variety of knots. Some knots are developed for very specific purposes.
In this task, you will research seven knots, neatly display them on a board with labels and provide background information about each knot.

What you need to do

Research notes
For each of the knots listed below, you will need to:
1. identify the origin of each knot and outline its use, and (14 marks)
2. acknowledge the source of information by providing a bibliography (2 marks)

Knots to be researched:
• clove hitch
• round turn and two half-hitches
• bowline
• figure of eight
• sheet bend
• reef knot
• stopper

Design and construction of the knot board
1. Prepare a suitable board to display your knots to maximise visual impact (consider the need for contrasting rope and board colours). (3 marks)
2. Tie each knot, ensuring they are appropriately set with their ends correctly whipped and/or spliced to prevent fraying. (7 marks)
3. Invisibly mount each knot on your board. (2 marks)
4. Label each knot. (2 marks)

What needs to be submitted?
Research notes and knot board with labels

Marking key for sample assessment task 14 — Unit 2

Description	Marks
Origin of knot (one mark each knot)	7
Use of knot (one mark each knot)	7
Display board clear and arranged for effective visual display of knots	1–3
Knot tied correctly (one mark each knot)	7
Uses invisible forms of mounting each knot	1–2
Each knot labelled clearly	1–2
Bibliography	1–2
Total	**/30**