

External assessment 2022

Multiple choice question book

# Marine Science

## Paper 1

### General instruction

- Work in this book will not be marked.



Queensland  
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## Section 1

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### QUESTION 1

A phytoplankton bloom and a reduction of seagrass cover are observed near a fish farm. The most likely cause is

- (A) antibiotic use.
- (B) nutrient discharge.
- (C) organic deposition.
- (D) chemical treatment.

### QUESTION 2

During an environmental disaster in international waters, non-governmental organisations are best positioned to provide a

- (A) diplomatic response.
- (B) political response.
- (C) rapid response.
- (D) legal response.

### QUESTION 3

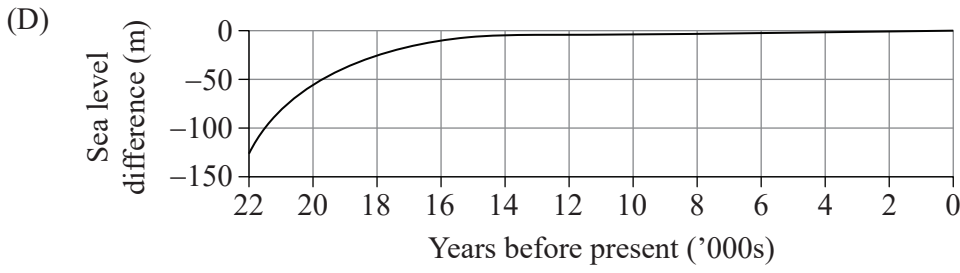
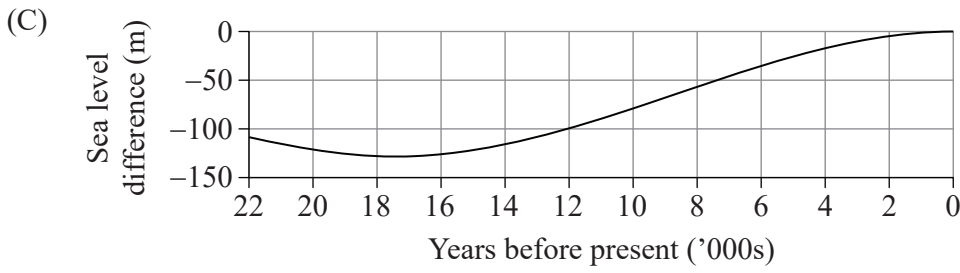
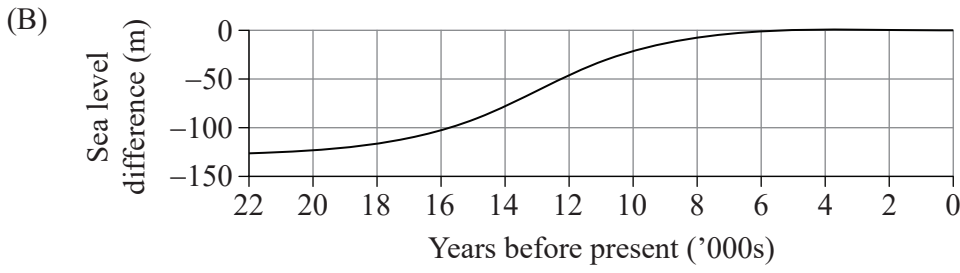
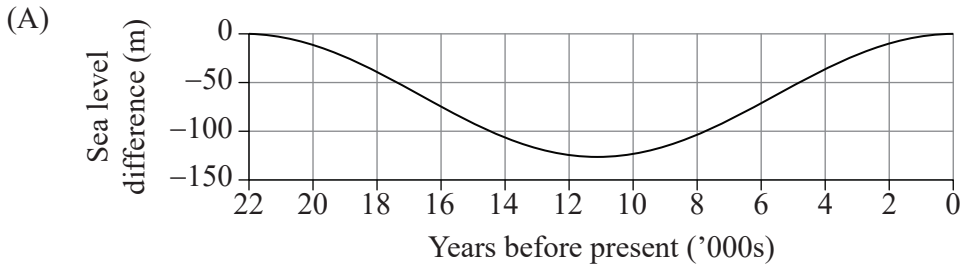
An aquaculture operation is proposed for a large body of water in a major fishing zone that is beside a mangrove estuary.

Which form of carrying capacity would have the greatest impact on potential yield?

- (A) social
- (B) physical
- (C) ecological
- (D) production

### QUESTION 4

Which graph best represents sea level difference on the Great Barrier Reef over the last 22 000 years?



### QUESTION 5

It is hypothesised that elevated levels of dissolved inorganic nitrogen initiate crown-of-thorns starfish outbreaks by

- (A) increasing coral recruitment.
- (B) decreasing zooxanthellae loss.
- (C) decreasing zooplankton growth.
- (D) increasing phytoplankton biomass.

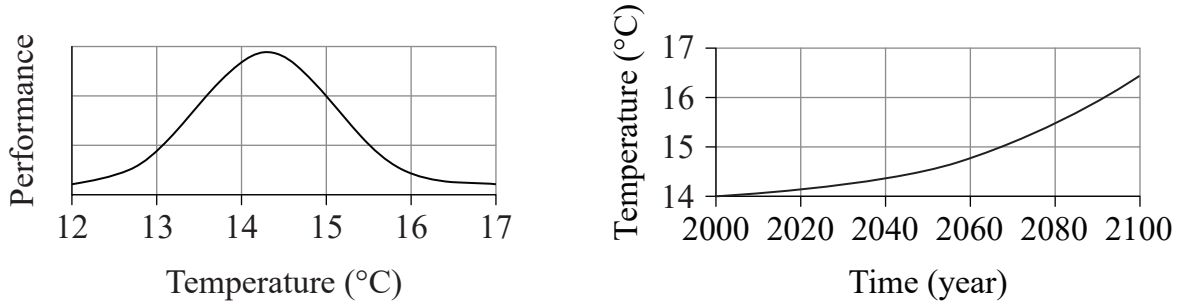
### QUESTION 6

Which measure best complements vessel monitoring systems to track fishing quotas?

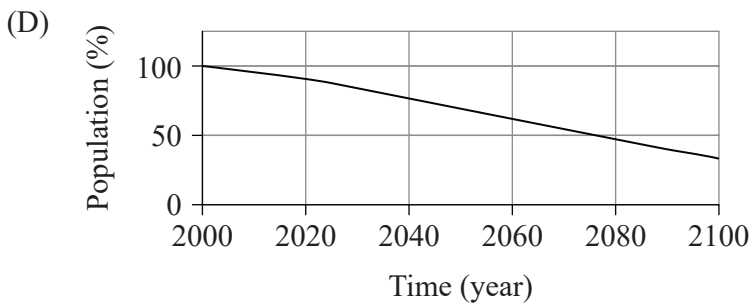
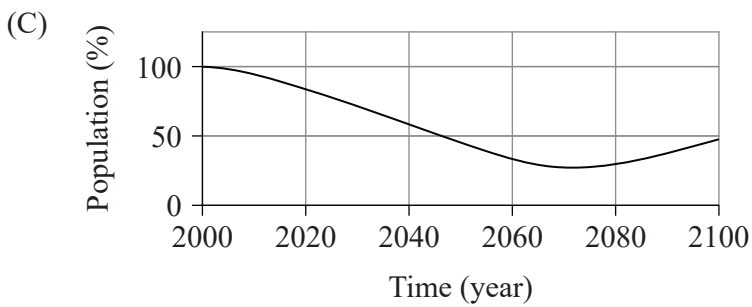
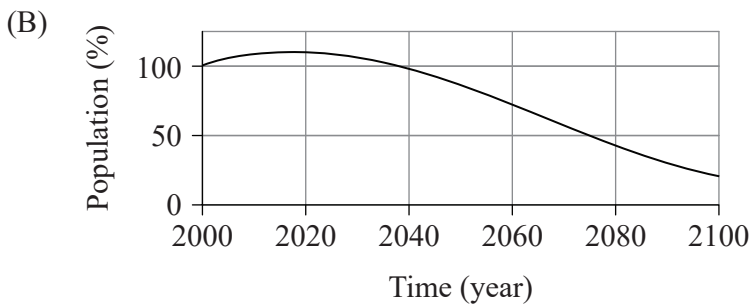
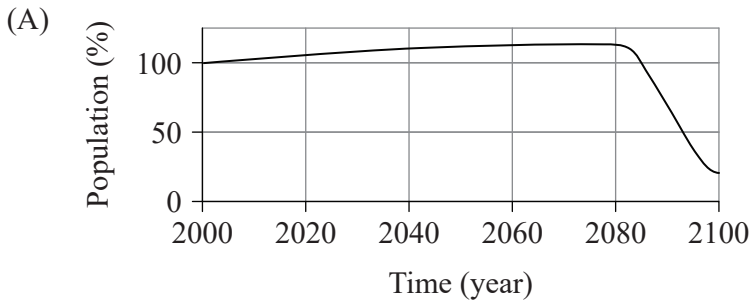
- (A) observer programs
- (B) product traceability
- (C) electronic catch reporting
- (D) catch documentation schemes

### QUESTION 7

The graphs show the thermal performance curve for a fish species and the projected water temperature for a habitat where the fish are found.



Select the graph that best describes the projected change in the fish population from its initial value in 2000.



### QUESTION 8

What is the biggest limiting factor on the geographic distribution of coral?

- (A) salinity
- (B) temperature
- (C) light availability
- (D) dissolved oxygen

### QUESTION 9

Which map best represents the distribution of Australia's coral reefs?



### QUESTION 10

Thermal habitat preferences are derived from a species' satellite data and real-time bycatch occurrences. When the species bycatch limit is reached in a season, it triggers the closure of a section of the associated fishery. This closure is an example of

- (A) dynamic spatial zoning.
- (B) controlling target catch.
- (C) the precautionary principle.
- (D) monitoring effort allocation.

### QUESTION 11

Increasing levels of atmospheric CO<sub>2</sub> will result in increased concentrations of which two ion species in surface ocean waters?

- (A) calcium and carbonate
- (B) hydrogen and carbonate
- (C) calcium and bicarbonate
- (D) hydrogen and bicarbonate

### QUESTION 12

A diver performing a reef health check observes large numbers of herbivorous fish. This observation suggests that the reef will have high levels of

- (A) coral diversity.
- (B) algal cover.
- (C) bleaching.
- (D) rugosity.

### QUESTION 13

Artisanal subsistence fisheries target fish species that are

- (A) seasonal spawners.
- (B) found in deep seas.
- (C) located close to shore.
- (D) high in monetary value.

### QUESTION 14

‘Wild-caught fish are the most important single source of high quality animal protein globally.’

What is the main consequence of this statement for the targeted fish species stock?

- (A) average fish size decreases
- (B) quotas become enforceable
- (C) reproductive rate increases
- (D) stock spatial distribution changes

### QUESTION 15

Over geological time, atmospheric carbon dioxide concentrations are stabilised between weathering, volcanism and which other process?

- (A) deposition
- (B) subduction
- (C) precipitation
- (D) sequestration



### QUESTION 16

What is the function of the cnidocil in the process of coral feeding?

- (A) paralyzing prey
- (B) penetrating skin
- (C) injecting venom
- (D) triggering discharge

### QUESTION 17

Ocean acidification accelerates reef erosion rates through

- (A) lowered density of corals.
- (B) reduced mechanical erosion.
- (C) increased crustose coralline algae.
- (D) decreased susceptibility of calcifiers to grazers.

### QUESTION 18

Overfishing will increase human exposure to pollutants in edible seafood by

- (A) shifting the location of the supply source.
- (B) altering the overall food web composition.
- (C) increasing bioaccumulation in younger prey species.
- (D) enhancing the persistence of industrial chemicals in ecosystems.

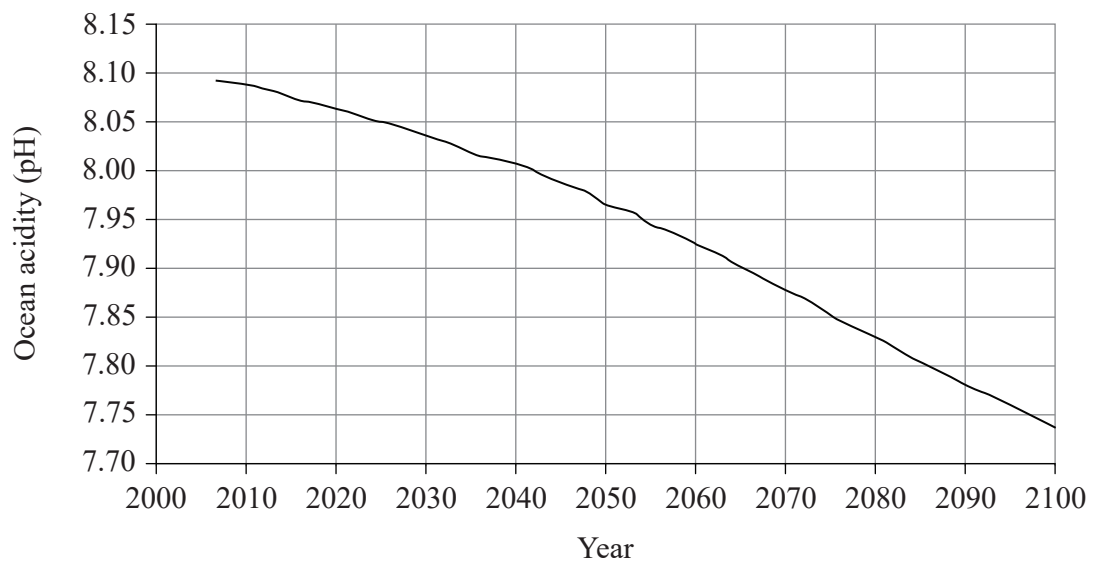
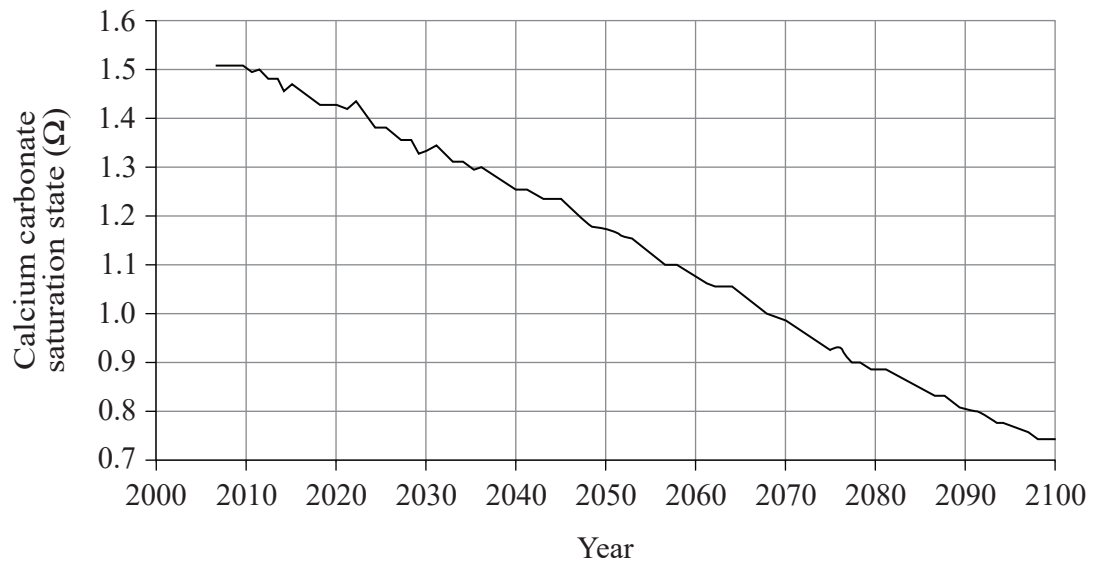
### QUESTION 19

When collecting fisheries data, the Lincoln index is used to measure

- (A) resilience.
- (B) biodiversity.
- (C) sustainability.
- (D) population size.

## QUESTION 20

The graphs show the surface conditions in the Southern Ocean from an Earth system model.



When dissolution of calcium carbonate starts to occur, the pH is closest to

- (A) 7.75
- (B) 7.85
- (C) 7.95
- (D) 8.05

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## References

### Question 9

Figures derived from Vernon J, Stafford-Smicht M, DeVantier L & Turak E 2015, 'Overview of Distribution Patterns of Zooxanthellate Scleractinia', *Frontiers in Marine Science*, vol. 1, no. 81, <https://doi:10.3389/fmars.2014.00081>. Used under the Creative Commons Attribution License (CC BY).



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