Neap

Trial Examination 2022

VCE Environmental Science Units 3&4

Written Examination

Question and Answer Booklet

Reading time: 15 minutes
Writing time: 2 hours

Student's Name: _____

Teacher's Name: _____

Structure of booklet

Section	*Number of questions*	*Number of questions to be answered*	*Number of marks*
A	30	30	30
B	8	8	90
			Total 120

Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers and one scientific calculator.

Students are NOT permitted to bring into the examination room: blank sheets of paper and/or correction fluid/tape.

Materials supplied

Question and answer booklet of 26 pages

Answer sheet for multiple-choice questions

Instructions

Write your **name** and your **teacher's name** in the space provided above on this page, and on the answer sheet for multiple-choice questions.

Unless otherwise indicated, the diagrams in this booklet are **not** drawn to scale.

All written responses must be in English.

At the end of the examination

Place the answer sheet for multiple-choice questions inside the front cover of this booklet.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A – MULTIPLE-CHOICE QUESTIONS

Instructions for Section A

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1; an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Use the following information to answer Questions 1 and 2.

The variety of species on Earth is measured by counting the number of different species and the number of individuals within each species.

Question 1

The statement above is describing

A. species richness.

B. species diversity.

C. ecosystem diversity.

D. biodiversity.

Question 2

Which one of the following affects the numerical value described above?

A. climate change only

B. genetic drift only

C. natural selection only

D. climate change, genetic drift and natural selection

Question 3

A population of eastern lowland gorillas is found in Virunga National Park, a mountainous region of the Democratic Republic of the Congo in Central Africa. The population is protected by rangers and anti-poaching laws. Their habitat is surrounded by volcanoes to the west, militia-controlled land to the north and Lake Kivu to the south.

The greatest immediate threat to the genetic diversity of the population is

A. inbreeding.

B. mutations.

C. increased natural selection due to increased threats.

D. genetic drift.

Question 4

Which one of the following is an example of a provisioning ecosystem service?

A. riparian vegetation along the Werribee River reducing runoff from surrounding farmland

B. mountain ash (*Eucalyptus regnans*) sequestering carbon in the Otway ranges

C. riparian vegetation along the Werribee River increasing shade and reducing evaporative water loss from low sections of the river

D. mountain ash (*Eucalyptus regnans*) providing shade to hikers in the Otway ranges

Use the following information to answer Questions 5–7.

An Environmental Science student is monitoring a population of Australian fairy terns (*Sternula nereis*) in the Lakes Entrance area as part of their field study. The Australian fairy tern is a small species of bird that inhabits ocean beaches between the high-tide mark and dune vegetation. It is found along the southern coast of Australia and along northern New Zealand. This bird is a key species found in the Gippsland Lakes Ramsar site and is listed as Vulnerable by the International Union for Conservation of Nature (IUCN).

Question 5

Which one of the following Commonwealth Government legislation acts protects the Australian fairy tern from harm?

A. *Environment Protection and Biodiversity Conservation Act 1999* (Australia)

B. *Flora and Fauna Guarantee Act* (Vic)

C. Convention on International Trade in Endangered Species (CITES)

D. Gippsland Lakes Ramsar Site Management Plan

Question 6

Which one of the following sampling techniques is the **most** appropriate for the student to use in their field study?

A. transect sampling

B. quadrat sampling

C. mark-recapture

D. collection method

Question 7

The student hypothesises that, during their monitoring period, the beaches in Lakes Entrance that did not allow dogs to roam off-lead would have significantly higher populations of Australian fairy terns than the beaches that did allow dogs to be off their leads.

The independent variable in this field study is the

A. number of Australian fairy terns.

B. number of other bird species found in the area.

C. time of day in which the student took recordings.

D. number of off-lead dogs sighted.

Question 8

The El Niño–Southern Oscillation refers to a climatic pattern that

A. keeps biodiversity stable in Australia as its cycle occurs only every three to eight years.

B. can alter the biodiversity in Australia as it may lead to a drought lasting three to eight years.

C. keeps biodiversity stable in Australia as the climatic changes are only felt by species in South and Central America.

D. can alter the biodiversity in Australia as it may severely increase volcanic activity in Victoria.

Question 9

Australian peregrine falcon (*Falco peregrinus macropus*) populations have only recently begun to recover after the pesticide dichlorodiphenyltrichloroethane (DDT) was banned in the late 1980s. The dramatic reduction of this species was caused by a decrease in chick survival rates, which resulted from the thin eggshells produced by mother falcons with DDT in their reproductive tissue.

This threat to the survival of the Australian peregrine falcon was due to

A. ingestion of DDT by the falcon.

B. bioaccumulation of DDT in the falcon's tissues.

C. excretion of DDT by the falcon.

D. absorption of DDT in the falcon's feathers.

Question 10

Translocation is

A. the connection of patches of remnant vegetation that allows movement of animal species between each area.

B. the storage of an endangered species' genetic material in a 'bank'.

C. the breeding of an endangered species in a zoo or aquarium.

D. the reintroduction of an endangered species to an area from which they have previously become extinct.

Question 11

A seismic testing project was approved for the exploration of offshore oil and gas in the Bass Strait. This project was approved despite there being some likelihood that whale and dolphin species may be present in the region during testing. This likelihood is due to some uncertainties regarding their migration timeframes.

Which of the following statements about the project is **not** correct?

A. Maintenance of the ecological integrity of Bass Strait will not be possible during the lifespan of the project.

B. The precautionary principal was applied when approving this project.

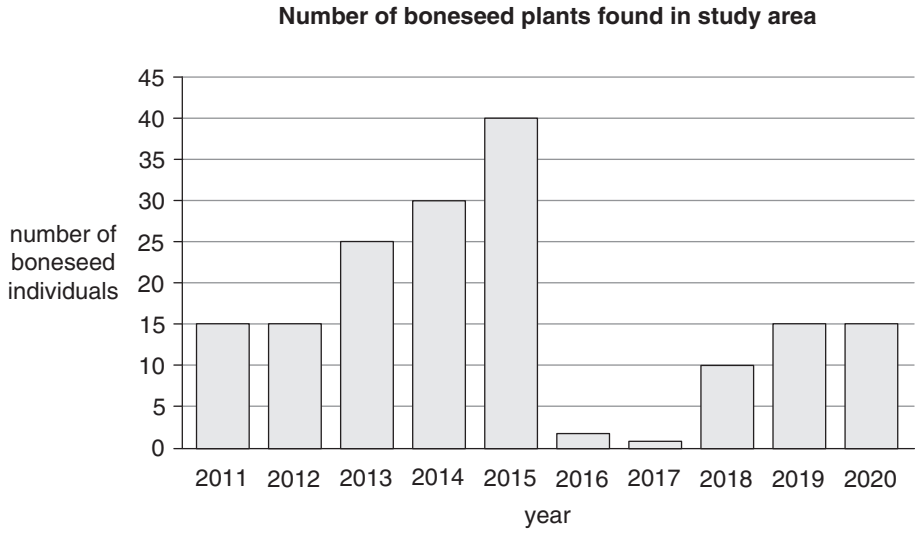
C. It is likely that intragenerational equity was considered when approving this project.

D. It is likely that the biosphere will be negatively impacted by this project.

Use the following information to answer Questions 12 and 13.

Boneseed (*Chrysanthemoides monilifera*) is a woody shrub that is classified as a weed in Victoria. This weed competes with native plants when it invades the understory of bushland along the south-eastern coast of Australia. Boneseed produces abundant seeds. Once dispersed, seeds can stay viable for up to 10 years. One management strategy that is implemented by the Surf Coast Shire is the physical removal of individual plants.

The following graph shows the number of individual boneseed plants found in an area in the Anglesea heathland over a 10-year period.



Question 12

What was the percentage decrease in boneseed plants between the years 2015 and 2016?

A. 95%

B. 19%

C. 20%

D. 105%

Question 13

Consider the following statements regarding the field study in the Anglesea heathland.

I The increase in the number of boneseed plants between 2017 and 2018 may be due to the germination of seeds dispersed in 2015.

II Native species numbers may have increased in the area between 2015 and 2016.

III The ecological integrity of this site decreased between 2015 and 2017.

Which of the statements above are correct?

A. I only

B. I and II only

C. I, II, and III

D. II and III only

Use the following information to answer Questions 14 and 15.

A mouse plague severely affected farms across Victoria, New South Wales and southern Queensland in 2021. Both crop and livestock farms experienced damage and losses to crops and fodder (food for livestock). Agriculture specialists are researching the use of the chemical bromadiolone as a control method. Currently, this chemical is not approved for agricultural use as is highly toxic to birds and other wildlife species. Bioaccumulation in the tissue of predatory birds has also been well documented.

Question 14

It can be argued that there are four main challenges to upholding sustainability.

Which one of the following challenges is being directly intensified by the mouse plague?

A. water

B. energy

C. food

D. population

Question 15

Which of the Earth's systems will be **least** affected by the introduction of bromadiolone as a control method?

A. atmosphere

B. biosphere

C. hydrosphere

D. lithosphere

Question 16

Which one of the following greenhouse gases is most commonly released during a volcanic eruption?

A. methane

B. sulphur dioxide

C. carbon dioxide

D. hydrogen sulphide

Question 17

A family wants to install solar panels on the roof of their home. Once the solar panels are installed, they will collect 5.0 kW of power on a sunny day.

If the energy efficiency of the solar panels is 20%, what is the output from the solar panels to the home?

A. 0.5 kW

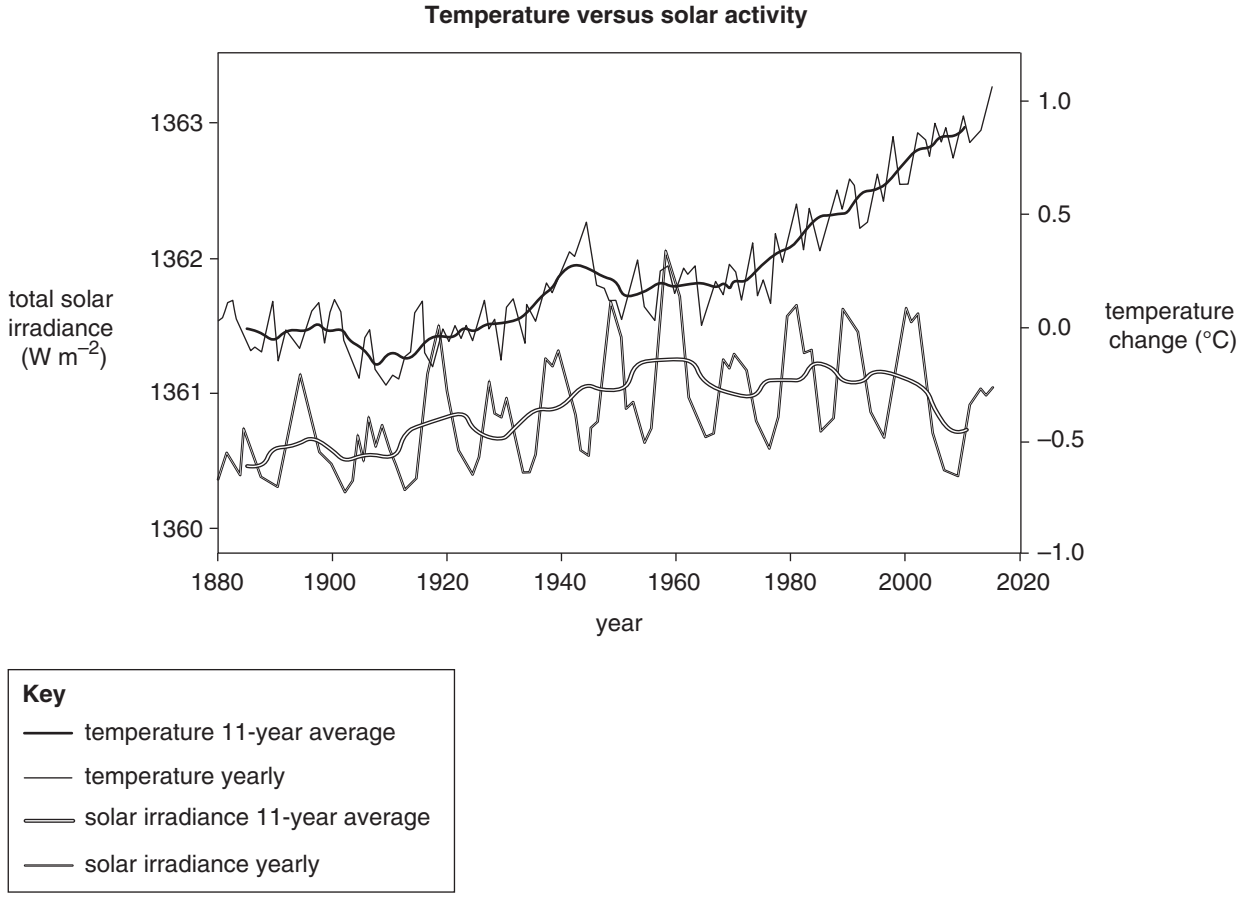
B. 1 kW

C. 4 kW

D. 10 kW

Use the following information to answer Questions 18 and 19.

The following graph shows a comparison of the solar energy hitting the earth and the trend in global temperature.



Source: Adapted from skepticalscience.com. Accessed December 2021. https://skepticalscience.com/graphics.php?g=5. Licensed under CC BY 3.0 International, https://creativecommons.org/licenses/by/3.0/deed.en.

Question 18

From the data above, it can be concluded that

A. solar activity does not directly affect global temperature.

B. solar activity does affect global temperature.

C. global temperature affects solar activity.

D. global temperature is on an overall downward trend.

Question 19

Which one of the following natural occurrences is **not** affected by fluctuations in solar activity?

A. wind

B. volcanic activity

C. the water cycle

D. cloud cover

Question 20

Which one of the following statements about the natural greenhouse effect is correct?

A. The gas that contributes the most to the natural greenhouse effect is carbon dioxide.

B. The gas that contributes the most to the natural greenhouse effect is methane.

C. Volcanic activity is a natural activity that contributes to the natural greenhouse effect.

D. Industrial agriculture is a human activity that contributes to the natural greenhouse effect.

Question 21

Which one of the following human activities has the greatest effect on the global warming potential of Earth?

A. manufacturing fertilisers in Canada

B. burning the Amazon rainforest in Brazil

C. industrial meat production in the United States of America

D. mining brown coal in Australia

Use the following information to answer Questions 22 and 23.

Climate scientists use a range of methods to study changes in the atmosphere. Historical data of atmospheric carbon dioxide (CO_2) levels over the last three global glacial cycles (from 800 000 years ago until approximately 100 000 years ago) was analysed. Over this time, carbon dioxide (CO_2) levels fluctuated anywhere between about 170 parts per million (ppm) to 300 ppm from year to year. The current level of atmospheric CO_2 is 412 ppm.

Question 22

The historical data of atmospheric carbon dioxide levels was likely collected via

A. tree-ring samples.

B. ocean samples.

C. ice core samples.

D. sedimentary rock samples.

Question 23

What is the main reason for the fluctuation in atmospheric CO_2 levels from 800 000 to 100 000 years ago?

A. burning fossil fuels

B. melting glaciers

C. mass extinction of marine species during the Permian–Triassic extinction event

D. volcanic activity

Question 24

Vanuatu is a Pacific Island nation facing severe climate change impacts. These impacts include the:

- loss of land for food production due to rising sea levels
- increasing intensity of tropical cyclones
- loss of key marine species due to warming oceans, leading to a decrease in ocean-based tourism.

As a result of these impacts, the Government of Vanuatu has adopted several adaptation strategies.

Which of the following is **not** an appropriate adaptation strategy to help build resilience against the increased severity of tropical cyclones?

A. enhancing the technology that warns the public of an incoming cyclone

B. enhancing coastal infrastructure such as seawalls

C. researching alternate, higher altitude sites for subsidence farms

D. actively promoting land-based tourism activities such as hiking

Question 25

Which of the following is a disadvantage of hydro-electric power compared to other renewable sources of energy?

A. Hydro-electric power is more energy efficient than solar energy.

B. Hydro-electric power disrupts more natural water flow than tidal power.

C. Hydro-electric power poses a greater danger to bird life than wind turbines.

D. Hydro-electric power is more readily available to homeowners than solar energy.

Use the following information to answer Questions 26 and 27.

In volume, China burns almost as much coal at the rest of the world put together. Over the past five years, they have closed 5500 coal mines in an attempt to keep up with global emissions targets.

Question 26

Which one of the following describes a biological rehabilitation strategy that the Chinese government may implement to restore the land of the closed coal mines?

A. covering the crater or pit with rock and soil

B. demolishing the buildings and infrastructure that once processed the coal

C. dredging polluted mud and sludge from water storage areas

D. revegetating the land with native plant species

Question 27

Recently, China has seen a reduction of electricity produced via hydro-electric dams due to lack of rain. As a result, the price of coal nearly doubled.

This is an example of

A. the implementation of the user pays principle.

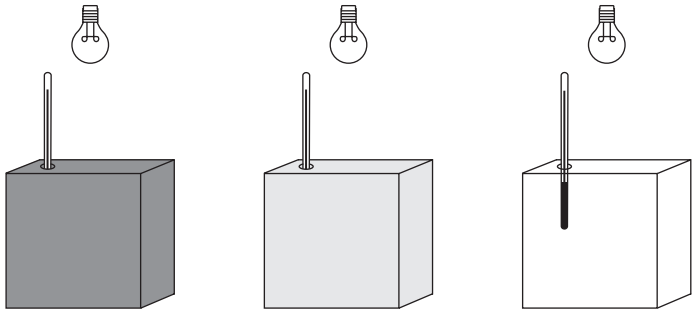
B. the implementation of the precautionary principle.

C. the creation of a new regulatory framework.

D. a step in the formation of an environmental impact assessment.

Use the following information to answer Questions 28–30.

An experiment was conducted by an Environmental Science student. Three closed boxes – one black, one white and one clear – were exposed to light for the same amount of time. The lights were all switched on at the same time. The temperature inside the boxes was measured every minute for one hour using a thermometer that was inserted through a hole cut into the lids of the boxes. The experimental set-up is shown in the diagram below.



Question 28

What natural occurrence is being modelled and tested in this experiment?

A. the enhanced greenhouse effect

B. the albedo effect

C. carbon sequestration

D. the water cycle

Question 29

Which one of the following should be a controlled variable in this experiment?

A. the distance of the lights from each box

B. the colour of the boxes

C. the temperature

D. the location of the laboratory within the school

Question 30

The measurement uncertainty of the thermometers used for the experiment was ±0.5°C.

What sort of errors can occur from this uncertainty?

A. personal errors

B. random errors

C. systematic errors

D. temperature errors

SECTION B

Instructions for Section B

Answer **all** questions in the spaces provided.

Unless otherwise indicated, the diagrams in this book are **not** drawn to scale.

Question 1 (15 marks)

The eastern barred bandicoot (*Perameles gunnii*) is a small, nocturnal marsupial that once occupied the grasslands and grassy woodlands of the western volcanic planes of Victoria. Their population once stretched as far west as South Australia. The Tasmanian form and mainland form of this bandicoot are considered to be different subspecies.

Since European settlement, 99% of the Victorian grassland ecosystem has been lost due to agriculture, industry, and urban development. Predation by foxes and cats has also affected population numbers. The mainland subspecies is now considered to be extinct in the wild. Populations have been captively bred and reintroduced into the wild in three predator-free, fenced sites in Victoria.

The eastern barred bandicoot is protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Australia) and the *Flora and Fauna Guarantee Act* (Vic).

a. Explain why the eastern barred bandicoot is still considered to be extinct in the wild, despite populations being reintroduced at three different sites across Victoria. 2 marks

b. Habitat destruction and predation are threats to the eastern barred bandicoot.

Discuss **one** other threat this species faces. 3 marks

c. Compare and contrast the benefits of being protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Australia) and the *Flora and Fauna Guarantee Act* (Vic). 3 marks

d. Captive breeding and reintroduction into the wild have been used to increase population numbers.

Describe **one** other conservation technique that could be implemented to protect the eastern barred bandicoot from extinction. 3 marks

e. Mt Rothwell is a protected, 400-hectare area of grassland and open grassy woodland that is free of introduced predators. The nature reserve contains one population of the eastern barred bandicoot as well as other threatened Victorian species including the southern brush-tailed rock-wallaby (*Petrogale penicillata*) and the eastern quoll (*Dasyurus viverrinus*). It also has an interpretation centre where school groups and members of the public can learn about threatened species.

i. Identify the type of value system that is behind the creation of nature reserves like Mt Rothwell. 1 mark

ii. Justify your answer to **part e.i.** 1 mark

iii. Define the terms ‘anthropocentric’ and ‘ecocentric’. 2 marks

Anthropocentric _____

_____

_____

Ecocentric _____

_____

_____

Question 2 (10 marks)

A local birdwatching group was surveying and comparing the diversity of two sites as part of a state government initiative to build community interest in biodiversity. Both sites are listed as protected under the Ramsar Convention on Wetlands of International Importance as they have been classified as important for conserving biodiversity.

The Simpson's Index of species diversity (D) is commonly used by environmental scientists in the quantification of species diversity and was used during this field study. The index (D) can be calculated using the following formula.

$$D = 1 - \frac{\sum\left[\ddot{u}_i\left(\ _i - \ \right)\right]}{N(N-1)}$$

Note: $\sum$ refers to the 'sum of'

n_i refers to the total number of organisms of each individual species

N refers to the total number of organisms of all species

This formula should produce a value between 0 and 1. A higher index value (that is, a number closer to 1) indicates higher species diversity.

The birdwatching group collected data every day over a two-week period. The results from the survey at site A were recorded in the table below.

Species recorded at site A	$\mathbf{n_i}$	$\mathbf{n_i - 1}$	$\mathbf{n_i(n_i - 1)}$
brolga	1	$1 - 1 = 0$	$1 \times 0 = 0$
orange-bellied parrot	1	$1 - 1 = 0$	$1 \times 0 = 0$
red-necked avocet	7	$7 - 1 = 6$	$7 \times 6 = 42$
chestnut teal	10	$10 - 1 = 9$	$10 \times 9 = 90$
silver gull	23	$23 - 1 = 22$	$23 \times 22 = 506$
straw-necked ibis	25	$25 - 1 = 24$	$25 \times 24 = 600$
black-faced cuckoo-shrike	8	$8 - 1 = 7$	$8 \times 7 = 56$
N =	75		$\mathbf{\sum\left[n_i\left(n_i - 1\right)\right] = 1294}$
N(N – 1)	$75 \times 74 = 5550$		

Therefore $D = 1 - \frac{\sum\left[n_i\left(n_i - 1\right)\right]}{N(N-1)}$

$D = 1 - \frac{1294}{5550}$

$D = 1 - 0.233$

$D = 0.767$

The Simpson's Index for site A is 0.767.

a. Use the figures in the table below and the spaces provided to calculate the Simpson's Index for Site B. 3 marks

Species recorded at site B	$\mathbf{n_i}$	$\mathbf{n_i - 1}$	$\mathbf{n_i(n_i - 1)}$
brolga	0		
orange-bellied parrot	0		
red-necked avocet	6		
chestnut teal	25		
silver gull	30		
straw-necked ibis	12		
black-faced cuckoo-shrike	15		
N =			$\sum\left[\mathbf{n_i}\left(\mathbf{n_i - 1}\right)\right]=$
N(N – 1)			

Therefore $D = 1 - \dfrac{\sum\left[n_i\left(n_i - 1\right)\right]}{N(N-1)}$

$D = 1 - $ ————————

$D = 1 - $ ☐

The Simpson's Index for site B is ☐

b. Using the information provided and the Simpson's Index for each site, compare the species diversity of the two sites. 2 marks

c. This data for the study was collected by birdwatchers using direct observation.

i. Explain **one** limitation of this method of collecting data. 2 marks

ii. Suggest a sampling method that may provide more accurate data. 1 mark

d. Name and explain **one** anthropogenic reason why it is important to conserve the biodiversity of birds. 2 marks

Question 3 (7 marks)

Toolangi State Forest, located in Victoria's central highlands, is an area of temperate rainforest. The forest is dominated by mountain ash (*Eucalyptus regnans*), a species that is said to sequester huge amounts of carbon from the atmosphere. The forest is a significant habitat for the Leadbeater's possum. The possum is endemic to this region of the world and is listed as critically endangered on the IUCN Red List. A wide range of other rare and threatened species also inhabit the area.

A recent federal court ruling has found that logging companies in this area should be exempt from the law designed to protect threatened species. This means that logging will resume in the forest, despite the environmental and cultural significance it holds.

a. Evaluate whether this court ruling meets the sustainability principle of intergenerational equity. 3 marks

b. Name the federal legislation that is designed to protect the Toolangi State Forest's threatened species. 1 mark

c. Define the precautionary principle and explain how this court ruling does **not** meet the precautionary principle. 3 marks

Question 4 (10 marks)

Approximately 99% of Costa Rica's energy is produced by renewable sources. The country is able to sell excess electricity to neighbouring central American countries, including Nicaragua, Honduras and Guatemala. Hydro-electric power generates 67% of Costa Rica's electricity, with wind and geothermal energy generating 17% and 13% respectively.

a. Describe **one** environmental impact of using hydro-electric power to provide electricity to the residents of Costa Rica. 2 marks

b. Describe the steps involved in converting the source of the energy in hydro-electric power to electricity. For each step, name the conversions involved. 4 marks

c. Compare the relative efficiency of the distribution of energy to residents in Costa Rica with residents in neighbouring countries. 3 marks

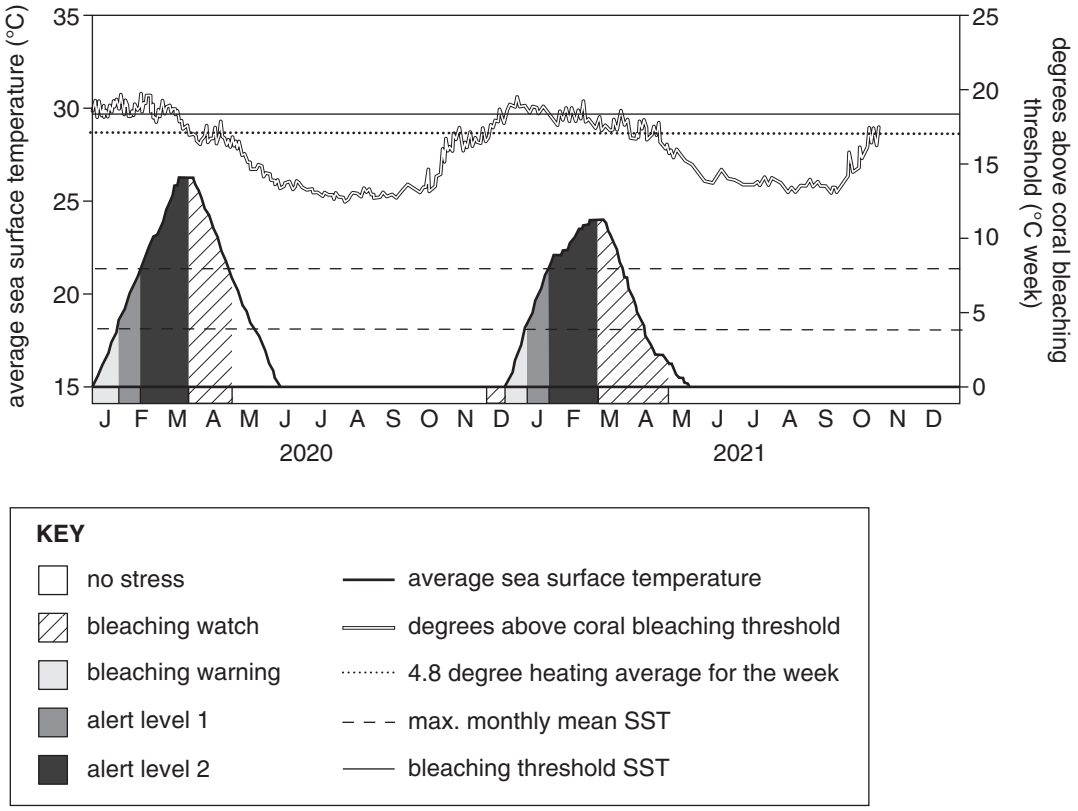
d. The 1% of energy consumption in Costa Rica that is not renewable is used to power vehicles that require fossil fuels in the transportation sector.

Suggest a renewable energy source that could be used to power these vehicles. 1 mark

Question 5 (8 marks)

The following graph shows the degree of coral bleaching and average surface temperature of the far northern section of the Great Barrier Reef over a two-year period. The degree of bleaching ranges from 'no stress', where there is no risk of bleaching, to 'alert level 2', which is the highest amount of bleaching.

Coral bleaching in the far northern Great Barrier Reef



Source: Adapted from the NOAA Satellite and Information Service website. Accessed December 2021. https://coralreefwatch.noaa.gov/product/vs/timeseries/great_barrier_reef.php#gbr_central.

a. Describe the relationship between the degree of coral bleaching and time of the year. 2 marks

b. Using data from the graph above, explain the conclusion that can be drawn regarding coral bleaching and sea temperature. 2 marks

c. Suggest **one** anthropocentric and **one** environmental impact of the bleaching events. 2 marks

Anthropocentric _____

_____

Environmental _____

_____

d. Outline why the average monthly sea surface temperature fluctuates throughout the year. 2 marks

_____

_____

_____

_____

Question 6 (16 marks)

A large-scale mining company is looking to discontinue one of its coal mines due to the exhaustion of the coal within the mine. Over its lifetime, the open pit mine has had 3.5 million tonnes of coal removed and sold each year. The company is seeking approval from the state government to continue mining in the area by excavating a new open pit mine 20 km north of the current site.

a. Describe a mechanical process that may be implemented as part of the rehabilitation of the current mine once it closes. 2 marks

b. Discuss **one** impact on the carbon cycle that will occur if the new mine is approved. 3 marks

c. Various stakeholders have expressed interest in the proposed mining project.

i. State **one** stakeholder that may be **for** the excavation and opening of a new mine. In your answer, suggest a reason why they may hold this opinion. 2 marks

ii. State **one** stakeholder that may be **against** the excavation and opening of a new mine. In your answer, suggest a reason why they may hold this opinion. 2 marks

d. Describe **one** harmful impact on the biosphere that may occur if the new mining project is approved. 2 marks

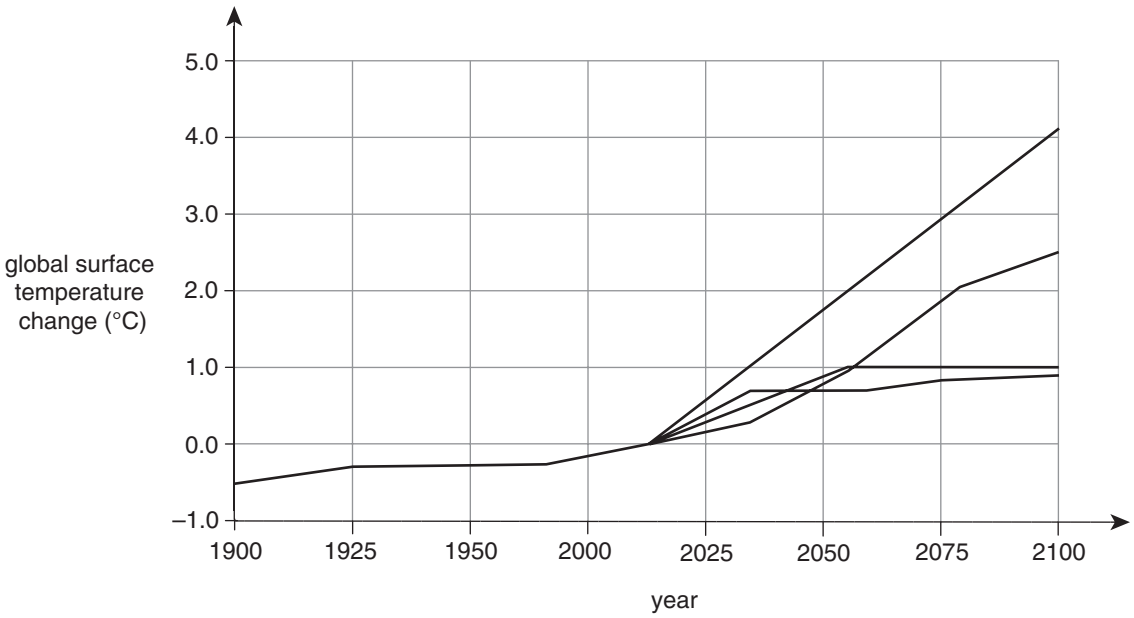
e. Another company is competing for approval from the government for use of the land 20 km north of the current mining site. This company is attempting to gain approval to build a large-scale industrial cattle farm on the land.

Which project should be approved? Justify your answer by discussing the global warming potential, social ethics and environmental impacts of each project. 5 marks

Question 7 (10 marks)

Four climate scientists were completing a report regarding global surface temperature to present to the local council of a bayside suburb of Melbourne. Using past climate data and climate modelling tools, the scientists each predicted a set of global temperatures leading up to 2100. The graph below shows the global surface temperature change in 1900 and the four predictions for the global surface temperature change in 2100.

Global surface temperature change from 1900 until 2100 (predicted)



a. Based on the data shown in the graph, explain how global surface temperatures will change over the years leading up to 2100. 2 marks

b. Calculate the approximate difference between the global surface temperature change in 1900 and the maximum predicted global surface temperature change in 2100. 1 mark

c. Explain how the enhanced greenhouse effect affects the predictions shown in the graph above. 3 marks

d. Identify and outline **one** impact that increased global temperatures will have on the environment. 2 marks

e. Describe **one** adaptation action that could be used by the Australian Government to combat the impact indentified in **part d.** 2 marks

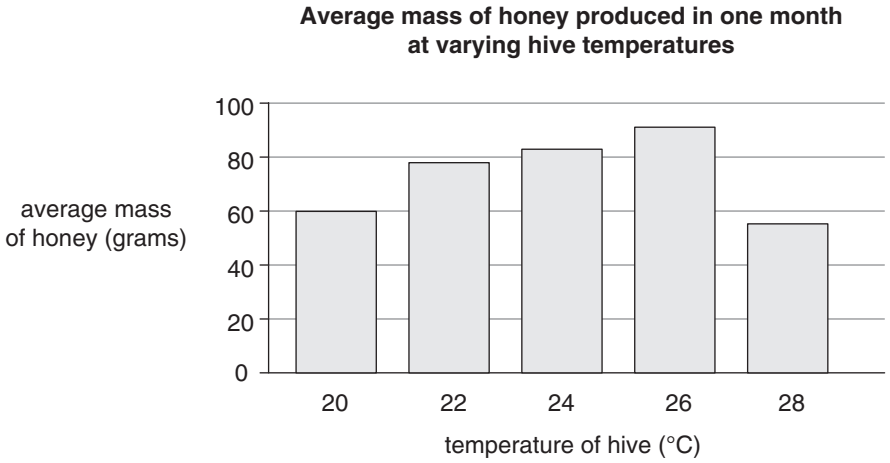
Question 8 (14 marks)

A species of social native Australian bee, *Austroplebeia australis*, is found near a school in Queensland. These bees are important for the pollination of macadamia crops, which are the major income for that region.

The stingless bees produce honey in hives, both naturally and when farmed. Native bee honey is stored in small 'pots' near the edges of their hives. When farmed in optimal conditions, these bees produce approximately 1 kg of honey per year.

Environmental Science students at the school wanted to test whether predicted global temperature rises are likely to affect the activity of the bees. A local bee farmer volunteered to allow the students to set up an experiment on his farm. The students measured the honey output of five hives subjected to various temperature changes to determine whether temperature affected bee activity.

The honey was collected over a period of one month in September, during which the average daily temperature was 24°C. The average mass of honey for each temperature was calculated and the results are shown in the graph below.



a. State the independent and dependent variables in this experiment. 2 marks

Independent _____

_____

Dependent _____

_____

b. Write an appropriate hypothesis for this experiment. 2 marks

_____

_____

_____

_____

c. State **one** safety precaution and **one** ethical consideration that should be considered as part of the method for this experiment. 2 marks

Safety precaution _____

_____

Ethical consideration _____

_____

d. Discuss the validity of this experiment. 3 marks

_____

_____

_____

_____

_____

_____

e. Based on the data shown in the graph, write a conclusion for this experiment. 2 marks

_____

_____

_____

_____

f. Based on the information provided, describe the implications that this experiment has on the future of food security. 3 marks

_____

_____

_____

_____

_____

_____

END OF QUESTION AND ANSWER BOOKLET

Neap

Trial Examination 2022

VCE Environmental Science Units 3&4

Written Examination

Multiple-choice Answer Sheet

Student's Name: _____

Teacher's Name: _____

Instructions

Use a **pencil** for **all** entries. If you make a mistake, **erase** the incorrect answer – **do not** cross it out. Marks will **not** be deducted for incorrect answers.
No mark will be given if more than **one** answer is completed for any question.

All answers must be completed like this example: **A** B C D

Use pencil only

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D
11	A	B	C	D
12	A	B	C	D
13	A	B	C	D
14	A	B	C	D
15	A	B	C	D

16	A	B	C	D
17	A	B	C	D
18	A	B	C	D
19	A	B	C	D
20	A	B	C	D
21	A	B	C	D
22	A	B	C	D
23	A	B	C	D
24	A	B	C	D
25	A	B	C	D
26	A	B	C	D
27	A	B	C	D
28	A	B	C	D
29	A	B	C	D
30	A	B	C	D