



# **GEOGRAPHY**

## **ATAR course examination 2019**

### **Marking key**

Marking keys are an explicit statement about what the examining panel expect of candidates when they respond to particular examination items. They help ensure a consistent interpretation of the criteria that guide the awarding of marks.

## Section One: Multiple-choice

20% (20 Marks)

Question	Answer
1	b
2	c
3	a
4	c
5	d
6	a
7	b
8	c
9	b
10	a
11	d
12	a
13	b
14	d
15	c
16	b
17	a
18	d
19	c
20	d

## Section Two: Short response

40% (40 Marks)

## Question 21

(3 marks)

- (a) Identify
- one**
- site feature of the built-up area of Maslin Beach located at AR 7098.

(1 mark)

Description	Marks
Correctly identifies one site feature (e.g. elevation, natural drainage, natural vegetation, slope, soil)	1
<b>Total</b>	<b>1</b>
<p>Marker information: Site should be identified by referring to the physical characteristics of a place. Site characteristics should be identified accurately, using appropriate geographical terminology. Features referred to should be for the site of the built-up area indicated, not areas two or three grid squares away. Surrounding natural vegetation does provide evidence of vegetation type before clearing.</p> <p>Answers could include:</p> <ul style="list-style-type: none"> <li>• topography – height 20–60 metres, sloping downhill from SE to NW, relatively uniform (a single height within this range is acceptable)</li> <li>• landforms – coastal plain, gentle rise from coast to inland</li> <li>• vegetation – limited evidence of original vegetation</li> <li>• soils – probably sandy soils associated with the coastal features.</li> </ul> <p>Accept other relevant answers.</p>	

- (b) Describe
- one**
- situation feature of the built-up area of Maslin Beach located at AR 7098.

(2 marks)

Description	Marks
Correctly describes any situation feature (e.g. latitude and longitude, distance and direction from other places or features, location in relation to major transport routes)	2
Correctly identifies any situation feature (e.g. distance or direction from other places or features, location in relation to major transport routes)	1
<b>Total</b>	<b>2</b>
<p>Marker information: Situation can be described by referring to the location of a place in relation to its surroundings or its proximity to (distance and direction from) other places or features. Situation characteristics should be described accurately, using appropriate geographical terminology.</p> <p>Answers could include:</p> <ul style="list-style-type: none"> <li>• distance and direction from other settlements or major features, e.g. approximately 6 km WSW of McLaren Vale town site, 3 km south of Seaford Rise, 1–1.5 km SSE of Ochre Point, east of coastline within 1 km</li> <li>• latitude and longitude, e.g. 35° 13' S 138° 28' E (answer can also include 35° 14' S and/or 138° 29' E)</li> <li>• identifies major transport routes, e.g. west of Old Coast Road, south east of Gulf Parade.</li> </ul> <p>Accept other relevant answers.</p>	

## Question 22

(2 marks)

Calculate how long (in minutes and seconds) a car travelling at an average speed of 72 kilometres per hour will take to go from the intersection of Victor Harbor Road and Main Road (GR 745012), south along Main Road to Willunga. Show your method of calculation and your answer.

Description	Marks
Correctly shows calculations to determine their answer. (Answer may be correct or incorrect depending on whether candidates determined correct distance between the two features – this mark is for correct and logical method of calculation demonstrated)	1
Correct answer is provided due to correct determination of distance and application of formula	1
<b>Total</b>	<b>2</b>
<p>Marker information:            The distance between the intersection and the southern border of the map is 12 cm, which represents 6 km in the real world. Candidates need to add the additional 3 km to Willunga, as indicated in the map margin, giving a total of 9 km.</p> <p>The cross multiplication method is a common way to calculate the answer:</p> $\frac{\text{Speed (72 km/hr)}}{\text{Time (60 mins)}} \times \frac{\text{Distance (9 km)}}{\text{Time (? minutes)}} = 60 \times 9/72$ $= 7.5$ $= 7 \text{ minutes } 30 \text{ seconds}$ <p>Another method is:</p> $\text{Time} = \frac{\text{Distance}}{\text{Speed}} \times 60$ $= \frac{9}{72} \times 60$ $= 7.5$ $= 7 \text{ minutes } 30 \text{ seconds}$	
<p>Note: Accept 0.5 km variation in distance, resulting in acceptable answers ranging from 7 minutes 5 seconds to 7 minutes 55 seconds.</p>	

## Question 23

(5 marks)

- (a) Locate and describe **one** example of land use change that has occurred in the area covered by **Source 2** between 2001 and 2017. (3 marks)

Description	Mark
Correctly locates an example of land use change by using GR/AR or latitude/longitude or referencing identifiable transport or other map features	1
Correctly describes the type of land use change with reference to land use before (2001) and after (2017)	2
Makes a general statement about changes in land use with no specific location given	1
<b>Subtotal</b>	<b>2</b>
<b>Total</b>	<b>3</b>
Answers could include: <ul style="list-style-type: none"> <li>• expansion of sand works north of Maslin Beach Road GR 710995 in an area of cleared land</li> <li>• expansion of residential area south of Pedler Creek GR 710003 and north of Pedler Creek GR 710010 in a sparsely vegetated area</li> <li>• restoration of rubbish dump GR 730018 into an area of light vegetation</li> <li>• creation of commercial/light industrial area at GR 714035 in an area of cleared land.</li> </ul>	
Accept other relevant answers.	

- (b) Describe how the land use change identified in part (a) has been influenced by the natural and/or cultural features in this area. (2 marks)

Description	Marks
Correctly describes how the land use change has been influenced by the natural and/or cultural features by clearly linking the change to the relevant features immediately adjacent to the area of change identified	2
Makes a general statement about the cause of the land use change without clearly describing the influence of a natural or cultural feature	1
<b>Total</b>	<b>2</b>
Answers could include: <ul style="list-style-type: none"> <li>• sand works – on cleared vacant land, adjacent to existing sand works, resource present</li> <li>• residential – adjacent to existing residential area, adjacent/accessible to major roads (Main South Road and Commercial Road). Preservation of existing wetlands and aesthetic location beside Pedler Creek</li> <li>• rubbish dump restoration – proximity to expanding urban development, environmental restoration</li> <li>• commercial establishment – relatively flat land, access to transport, workforce and customers.</li> </ul>	
Accept other relevant answers.	

## Question 24

(6 marks)

With specific reference to **Source 5**, explain **two** of the changes that result from the negative impacts of human behaviour/activities on ecosystems and climate.

Description	Mark
For each of the <b>two</b> identified changes (2 x 3)	
Correctly explains one of the changes that result from the negative impacts of human behaviour/activities on ecosystems and/or climate. Clearly demonstrates cause and effect or the relationship between the negative impacts and the changes. Specifically refers to the source to support the explanation	3
Describes one of the changes that result from the negative impacts of human behaviour/activities on ecosystems and/or climate. Demonstrates a simple cause and effect or relationship between the negative impacts and the changes. Makes a general reference to the source	2
States one of the changes that result from the negative impacts of human behaviour/activities on ecosystems and/or climate. Limited reference to the source	1
<b>Subtotal</b>	<b>3</b>
<b>Total</b>	<b>6</b>
<p>Marker information:</p> <p>Candidates should explain two of the following:</p> <ul style="list-style-type: none"> <li>• direct and indirect impacts of climate change</li> <li>• loss of ecosystem services</li> <li>• degradation of ecosystems causes further climate change</li> <li>• climate change causes further biodiversity loss.</li> </ul>	

## Question 25

(2 marks)

Identify **one** environmental variable and **one** socio-economic variable that could be used in spatial modelling to project changes in land cover.

Description	Marks
Correctly identifies one environmental variable that could be used in spatial modelling to project changes in land cover	1
Correctly identifies one socio-economic variable that could be used in spatial modelling to project changes in land cover	1
<b>Total</b>	<b>2</b>
<p>Answers could include:</p> <p>Environmental variables could include aspects of:</p> <ul style="list-style-type: none"> <li>• ecological processes</li> <li>• natural vegetation cover</li> <li>• soil</li> <li>• climate change</li> <li>• sea level changes</li> <li>• the carbon cycle</li> <li>• the heat budget</li> <li>• the hydrological cycle</li> <li>• climate systems and weather components (i.e. temperature and rainfall).</li> </ul> <p>Socio-economic variables could include aspects of:</p> <ul style="list-style-type: none"> <li>• population (i.e. total, growth, density)</li> <li>• energy production and consumption</li> <li>• economic activity and land use</li> <li>• rates of economic growth</li> <li>• income, wealth, affluence</li> <li>• levels of development</li> <li>• globalisation.</li> </ul> <p>Accept other relevant answers.</p>	

## Question 26

(2 marks)

Define the term 'natural biome'.

Description	Mark
Correctly defines the term natural biome, including both parts of the definition	2
Defines the term natural biome but only includes one part of the definition	1
<b>Total</b>	<b>2</b>
<p>Marker information:</p> <p>A natural biome is a community of life forms adapted to a large natural area. They may cover a region made up of several ecosystems and refer to the biotic or living components of that region. There is no obvious or direct human interaction with the biome.</p> <p>For two marks candidates will need to correctly indicate that a natural biome is a community of living things and that a natural biome has not been directly altered, changed or transformed by human actions.</p>	

## Question 27

(4 marks)

With specific reference to **Source 6**, describe the nature and extent of land cover change that can be observed to have taken place on the island of Borneo between 1973 and 2010.

Description	Marks
Correctly describes the nature of land cover change that can be observed to have taken place on the island of Borneo between 1973 and 2010, including reference to the source	2
Identifies in general terms that land cover changes have occurred	1
<b>Subtotal</b>	<b>2</b>
Correctly describes the extent of land cover change that can be observed to have taken place on the island of Borneo between 1973 and 2010, including reference to the source	2
Identifies in general terms the extent of land cover change	1
<b>Subtotal</b>	<b>2</b>
<b>Total</b>	<b>4</b>
<p>Marker information:</p> <p>Nature of land cover change: Candidates should use terms from the source such as forest, non-forest, cleared forest, forest clearance, logged forest, intact forest, industrial plantations and logging. Other terms may be relevant and correct, such as deforestation, removal of tropical hardwoods or palm oil plantations/production, but are based on prior knowledge or learning and are not essential to receive full marks. This is a data (satellite image) interpretation question.</p> <p>Extent of land cover change: Candidates should give an indication of the percentage or proportion of land that has been cleared or altered to support their answer. Examples include:</p> <ul style="list-style-type: none"> <li>• approximately a third of the forest cover has been cleared between 1973 and 2010</li> <li>• 20 per cent of forest existing in 1973 was still intact in 2010</li> <li>• almost half of the forest existing in 1973 existed as logged forest in 2010</li> <li>• 10–15 per cent of the forest existing in 1973 was used for industrial plantations by 2010.</li> </ul> <p>Accept other relevant answers.</p>	

## Question 28

(2 marks)

Describe the process of invasion and succession occurring in urban areas.

Description	Marks
Correctly describes the process of invasion and succession occurring in urban areas	2
Identifies in general terms the process of invasion and succession occurring in urban areas	1
<b>Total</b>	<b>2</b>
Marker information: Candidates should refer to both the gradual nature of invasion and the almost complete transformation in land use in urban areas associated with succession.	

## Question 29

(4 marks)

With specific reference to **Source 7**, describe **two** changes that have occurred as the process of urbanisation has taken place between 1960 and 2016.

Description	Marks
For each of <b>two</b> changes (2 x 2)	
Correctly describes a change that has occurred as the process of urbanisation has taken place between 1960 and 2016, referring to data from the source	2
Correctly identifies a change that has occurred as the process of urbanisation has taken place between 1960 and 2016	1
<b>Subtotal</b>	<b>2</b>
<b>Total</b>	<b>4</b>
Marker information: Changes may include description of overall trends, comparison between urban and rural populations and variations within urban and rural populations over time.  Answers could include: <ul style="list-style-type: none"> <li>• urban population has grown steadily over the whole period</li> <li>• rural population has experienced a reduction in the rate of growth over the period shown</li> <li>• rural population has declined as a proportion of the total population</li> <li>• urban population has increased as a proportion of the total population</li> <li>• in (insert year) urban population was (relevant figure) whilst in (insert year) urban population had increased to (relevant figure).</li> </ul> Accept other relevant answers.	



## Question 30

(6 marks)

Explain **one** implication of changes in the level of urbanisation for world population growth and **one** implication for human wellbeing.

Description	Marks
Correctly explains one implication of changes in the level of urbanisation for world population growth. Demonstrates a clear relationship between the changes in the level of urbanisation and the implication for world population growth	3
Correctly describes one implication of changes in the level of urbanisation for world population growth	2
States an implication of changes in the level of urbanisation for world population growth	1
<b>Subtotal</b>	<b>3</b>
Correctly explains one implication of changes in the level of urbanisation for human wellbeing. Demonstrates a clear relationship between the changes in the level of urbanisation and the implication for human wellbeing	3
Correctly describes one implication of changes in the level or urbanisation for human wellbeing	2
States an implication of changes in the level of urbanisation for human wellbeing	1
<b>Subtotal</b>	<b>3</b>
<b>Total</b>	<b>6</b>
<p>Marker information: Candidates may make reference to relevant sources on the broadsheet, however, should not be penalised for not doing so. Candidates may refer to either positive or negative implications.</p> <p>Answers could include: World population growth: As the level of urbanisation increases the rate of world population growth slows as:</p> <ul style="list-style-type: none"> <li>• birth rates typically decline</li> <li>• childbirth typically occurs later in life for adults</li> <li>• family size typically declines.</li> </ul> <p>Human wellbeing:</p> <ul style="list-style-type: none"> <li>• greater access to health facilities</li> <li>• greater access to education</li> <li>• access to a wider range of employment opportunities</li> <li>• lack of access to amenities, infrastructure</li> <li>• lowered standard of living</li> <li>• poor sanitation</li> <li>• access to a wider range of social and cultural opportunities.</li> </ul> <p>Accept other relevant answers.</p>	

## Question 31

(4 marks)

- (a) With specific reference to the June 2006 population pyramid, describe **one** difference in the age and sex distributions between the capital cities and the rest of Australia.

(2 marks)

Description	Marks
Correctly describes one difference in the age and sex distributions between the capital cities and the rest of Australia. Quotes data directly from the source to support their answer	2
Correctly identifies one difference in the age and sex distributions between the capital cities and the rest of Australia	1
<b>Total</b>	<b>2</b>
Answers could include: <ul style="list-style-type: none"> <li>• a higher proportion of the population in all age groups over 45 reside in the rest of Australia as compared to the capital cities</li> <li>• a higher proportion of the population in all age groups 0–14 reside in the rest of Australia as compared to the capital cities</li> <li>• a higher proportion of the population in all age groups 20–44 reside in the capital cities as compared to the rest of Australia</li> <li>• a lower proportion of females aged 15–19 reside in capital cities than males in the same age group</li> <li>• a higher proportion of males aged 15–19 reside in the rest of Australia than females in the same age group.</li> </ul>	
Accept other relevant answers.	

- (b) With specific reference to the June 2006 and June 2017 population pyramids, describe **one** change that has occurred between 2006 and 2017 in the distribution of the population in the 20 to 34-year-old age groups.

(2 marks)

Description	Marks
Correctly describes one change that has occurred between 2006 and 2017 in the distribution of the population in the 20 to 34-year-old age groups. Quotes data directly from the source to support their answer	2
Correctly identifies one change that has occurred between 2006 and 2017 in the distribution of the population in the 20 to 34-year-old age groups	1
<b>Total</b>	<b>2</b>
Answers could include: <ul style="list-style-type: none"> <li>• the proportion of 20–34 year olds living in the capital cities in 2017 is higher than the level in 2006</li> <li>• the proportion of 20–34 year olds living in the rest of Australia in 2017 is higher than the level in 2006</li> <li>• the increase in the proportion of 20–34 year old females living in capital cities in 2017 compared to 2006 is greater than the increase in the proportion of 20–34 year old males living in the capital cities.</li> </ul>	
Accept other relevant answers.	

Section Three: Extended response

40% (40 Marks)

Question 32

(20 marks)

(a) Choose **one** of the natural systems listed below and describe the ways in which it interacts with **two** of the other listed natural systems to influence the Earth’s climate.

- heat budget
- hydrological cycle
- carbon cycle
- atmospheric circulation

or

Describe **two** key elements of ecosystem structure and dynamics from the five listed below.

- biotic and abiotic elements
- food chains and food webs
- biomass
- trophic levels
- flows of matter and energy

(8 marks)

Description	Marks
For each of the <b>two</b> interactions (2 x 4) <b>or two</b> key elements of ecosystem structure and dynamics (2 x 4)	
<p>A detailed description is given and accurate information is provided on the ways in which the chosen natural system interacts with another natural system listed to influence the Earth’s climate.</p> <p style="text-align: center;">or</p> <p>A detailed description is given and accurate information is provided on a key element of ecosystem structure and dynamics from the list provided.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the description. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	4
<p>An appropriate description is given and relatively accurate information is provided on the ways in which the chosen natural system interacts with another natural system listed to influence the Earth’s climate.</p> <p style="text-align: center;">or</p> <p>An appropriate description is given and relatively accurate information is provided on a key element of ecosystem structure and dynamics from the list provided.</p> <p>A range of appropriate supporting evidence and examples are used to develop and strengthen the description. Relevant geographical terminology and concepts helps to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3
<p>An outline (limited description) is given and some generalised information is provided on the ways in which the chosen natural system interacts with another natural system listed. Some detail on the influence on the Earth’s climate is given.</p> <p style="text-align: center;">or</p> <p>An outline (limited description) is given and some generalised information is provided on a key element of ecosystem structure and dynamics from the list provided.</p> <p>Limited evidence and examples are used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response.</p>	2

## Question 32(a) (continued)

Description	Marks
<p>States some features of the chosen natural system. Limited or inaccurate information is provided on the ways in which the chosen natural system interacts with another natural system listed to influence the Earth's climate.</p> <p style="text-align: center;">or</p> <p>States some components of ecosystem structure and dynamics from the list provided with limited description or detail.</p> <p>There is limited or no use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand.</p>	1
<b>Subtotal</b>	<b>4</b>
<b>Total</b>	<b>8</b>
<p>Marker information:</p> <p>Climate: Candidates should make a clear link between elements of the two natural systems and how they influence climate.</p> <p>Ecosystems: Each of the dot points is considered to be one key element as stated in the question.</p> <p>Answers could include: Natural system influence on world climate: e.g. heat budget and hydrological cycle</p> <ul style="list-style-type: none"> <li>• energy required to heat and cause evaporation and transpiration, cooling required for condensation</li> <li>• heat surplus (high amounts of energy absorbed in equatorial regions) cause warmer oceans, more evaporation, and more precipitation. Opposite at poles</li> <li>• water vapour assists in natural greenhouse effect thus warming the atmosphere</li> <li>• clouds have an influence on temperatures by both reflecting and absorbing insolation</li> <li>• transfer of heat energy via condensation (latent heat).</li> </ul> <p>e.g. hydrological cycle and atmospheric circulation</p> <ul style="list-style-type: none"> <li>• low pressure systems and their associated rainfall partially formed by the upward movement of water vapour during evaporation, leading to condensation and precipitation</li> <li>• seasonal movement of pressure belts within the annual variations in atmospheric circulation influences location, timing and amounts of precipitation</li> <li>• prevailing winds associated with atmospheric circulation influence temperature and precipitation.</li> </ul>	
or	
<p>Ecosystem structure and dynamics: e.g. food chains and food webs</p> <ul style="list-style-type: none"> <li>• definitions</li> <li>• description of producers (autotrophs), consumers (heterotrophs – herbivores, carnivores, omnivores), decomposers (detritivores)</li> <li>• flow of energy through chain and/or web.</li> </ul> <p>e.g. trophic levels</p> <ul style="list-style-type: none"> <li>• the position an organism occupies in a food chain</li> <li>• the bottom level or first trophic level is made up of primary producers or autotrophs</li> <li>• the next level are the primary consumers who consume organisms in the previous level</li> </ul>	

- high order consumers, typically predatory carnivores, make up the highest trophic level
- the number of organisms in each successive trophic level typically decrease in number.
- trophic levels may be shown in a trophic or ecological pyramid.

Note: Descriptions of 'flows of matter and energy' and 'biomass' may also make reference to trophic levels or ecological pyramids.

Accept other relevant answers.

**Question 32** (continued)

- (b) With reference to specific examples, discuss **two** ways in which human activity has adapted, or may be required to adapt, to **either** global climate change **or** loss of biodiversity. (12 marks)

Description	Marks
For each of <b>two</b> methods of adaptation (2 x 6)	
<p>A detailed and comprehensive discussion of a way in which human activity has adapted, or may be required to adapt, to global climate change <b>or</b> loss of biodiversity is presented. Detailed and accurate information is provided about the nature and effectiveness of the adaptive measure.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the discussion. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>A discussion of a way in which human activity has adapted, or may be required to adapt, to global climate change <b>or</b> loss of biodiversity is presented. Relatively accurate information is provided about the nature and effectiveness of the adaptive measure.</p> <p>Some supporting evidence and examples are used to develop and strengthen the discussion. Relevant geographical terminology and concepts help to develop a cohesive and concise answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3–4
<p>A basic description, with little discussion, of a way in which human activity has adapted, or may be required to adapt, to global climate change <b>or</b> loss of biodiversity is presented. Limited information is provided about the nature and effectiveness of the adaptive measure.</p> <p>Insufficient evidence is used to support statements and generalisations. There is limited or no use of geographical terminology and concepts and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Subtotal</b>	<b>6</b>
<b>Total</b>	<b>12</b>
<p>Marker information:</p> <p>Adaptation refers to alterations or adjustments in response to a changed environment (brought about, in this scenario, due to climate change <b>or</b> loss of biodiversity). They are measures taken to adapt to the ‘new normal’, not to reverse or stop the changes that have occurred. Candidates may discuss the measure by referring to its environmental, economic and social benefits and costs.</p> <p>Answers could include:</p> <p>Measures to adapt to climate change:</p> <ul style="list-style-type: none"> <li>• decreasing/increasing rainfall affecting water supply or water management</li> <li>• variations in rainfall affecting agricultural production</li> <li>• increases in severe weather events</li> <li>• increased temperatures affecting agricultural production</li> <li>• increased temperatures affecting urban and rural populations</li> <li>• rises in sea level affecting coastal zones and islands.</li> </ul> <p>Measures to adapt to loss of biodiversity:</p> <ul style="list-style-type: none"> <li>• loss of food sources (wild catch, farm production and fish stock)</li> <li>• loss of energy sources (wood and charcoal)</li> <li>• loss of fibres and organic based products used for clothing and shelter.</li> </ul> <p>Accept other relevant answers.</p>	

Question 33

(20 marks)

(a) Describe the effects of climate change on land cover in any **two** of the following types of biomes.

- vegetation
- ice sheets
- glaciers
- coastal systems and coral reefs
- agriculture
- urban settlements and industry

or

Describe the effects of biodiversity loss on any **two** of the following elements, in natural or human biomes.

- ecosystem services
- ecosystem species
- ecosystem diversity
- genetic diversity
- loss of human foods
- loss of medicinal plants

(8 marks)

Description	Marks
For the effects of climate change on each of <b>two</b> biomes (2 x 4) <b>or</b> the effects of biodiversity loss on each of <b>two</b> elements in natural or human biomes (2 x 4)	
<p>A detailed description is given and accurate information is provided on the effects of climate change on land cover in the chosen biome.</p> <p style="text-align: center;">or</p> <p>A detailed description is given and accurate information is provided on the effects of biodiversity loss on the chosen element, in natural or human biomes.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the description. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	4
<p>An appropriate description is given and relatively accurate information is provided on the effects of climate change on land cover in the chosen biome.</p> <p style="text-align: center;">or</p> <p>An appropriate description is given and relatively accurate information is provided on the effects of biodiversity loss on the chosen element, in natural or human biomes.</p> <p>A range of appropriate supporting evidence and examples are used to develop and strengthen the description. Relevant geographical terminology and concepts help to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3
<p>An outline (limited description) is given and some generalised information is provided on the effects of climate change on land cover in the chosen biome.</p> <p style="text-align: center;">or</p> <p>An outline (limited description) is given and some generalised information is provided on the effects of biodiversity loss on the chosen element, in natural or human biomes.</p> <p>Limited evidence and examples are used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response.</p>	2

## Question 33(a) (continued)

Description	Marks
<p>States some features of climate change. Limited or inaccurate information is provided on the effects of climate change on land cover in the chosen biome.</p> <p style="text-align: center;">or</p> <p>States some features of biodiversity loss. Limited or inaccurate information is provided on the effects of biodiversity loss on the chosen element, in natural or human biomes.</p> <p>There is limited or no use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand.</p>	1
<b>Subtotal</b>	<b>4</b>
<b>Total</b>	<b>8</b>
<p>Marker information:</p> <p>Climate change: Primary focus of candidates' answers should be on the effects of climate change on land cover over time and space, that is the changes to the spatial distribution of the land cover types, rather than the secondary impacts the changes to land cover may cause.</p> <p>Biodiversity loss: Candidates will need to demonstrate a clear understanding of the link between biodiversity loss and the two chosen elements.</p>	
Accept other relevant answers.	



- (b) With reference to specific examples, discuss **two** current and/or proposed strategies implemented to mitigate the adverse effects of **either** global climate change **or** loss of biodiversity. (12 marks)

Description	Marks
For each of <b>two</b> methods of mitigation (2 x 6)	
<p>A detailed and comprehensive discussion of a way human activity has mitigated, or may be required to mitigate, the adverse effects of global climate change or loss of biodiversity is presented. Detailed and accurate information is provided about the nature and effectiveness of the mitigation strategy.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the discussion. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>A discussion of a way human activity has mitigated, or may be required to mitigate the adverse effects of global climate change or loss of biodiversity is presented. Relatively accurate information is provided about the nature and effectiveness of the mitigation strategy.</p> <p>Some supporting evidence and examples are used to develop and strengthen the discussion. Relevant geographical terminology and concepts help to develop a cohesive and concise answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3–4
<p>A basic description, with little discussion, of a way human activity has mitigated, or may be required to mitigate the adverse effects of global climate change or loss of biodiversity is presented. Limited information is provided about the nature and effectiveness of the mitigation strategy.</p> <p>Insufficient evidence is used to support statements and generalisations. There is limited or no use of geographical terminology and concepts and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Subtotal</b>	<b>6</b>
<b>Total</b>	<b>12</b>
<p>Marker information: Mitigation refers to the ability, steps taken or strategies implemented to moderate (or even reverse) the impact of climate change or loss of biodiversity. Candidates may discuss the strategy by referring to its environmental, economic and social benefits and costs.</p> <p>Answers could include: Strategies to mitigate the adverse effects of climate change:</p> <ul style="list-style-type: none"> <li>• carbon emission targets (at varying scales)</li> <li>• emission trading schemes</li> <li>• carbon taxes</li> <li>• alternative energy sources (at varying scales)</li> <li>• carbon capture schemes</li> <li>• alternative agricultural practices</li> <li>• alternative transportation methods</li> <li>• development of alternative fuels (transport).</li> </ul>	

**Question 33(b)** (continued)

Strategies to mitigate the adverse effects of loss of biodiversity:

- preservation strategies
- conservation strategies
- restoration and/or revegetation strategies
- breeding programs
- changes in primary industry practices
- use of quotas, restrictive licencing and seasonal restrictions
- gene and seed banks.

Accept other relevant answers/

## Question 34

(20 marks)

- (a) Describe the internal and external morphology of **either** metropolitan Perth **or** a regional urban centre in Western Australia. (8 marks)

Description	Marks
<p>For either metropolitan Perth or a regional urban centre in Western Australia: A detailed and comprehensive description is given and accurate information is provided on both the internal and external morphology of the chosen centre. The locations, nature and extent of features are described. The answer may be supported by maps. A wide range of appropriate supporting evidence and examples are used to develop and strengthen the description. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	7–8
<p>For either metropolitan Perth or a regional urban centre in Western Australia: An appropriate description is given and relatively accurate information is provided on both the internal and external morphology of the chosen centre. The locations, nature and extent of features are broadly described. The answer may be supported by maps. A range of appropriate supporting evidence and examples are used to develop and strengthen the description. Relevant geographical terminology and concepts helps to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>For either metropolitan Perth or a regional urban centre in Western Australia: An outline (limited description) is given and generalised information is provided on both the internal and external morphology of the chosen centre. Elements of the location, nature and extent of features are described. The answer may be supported by maps, however, a map with no accompanying written description should not be awarded more than 50%. Limited evidence and examples are used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response.</p>	3–4
<p>For either metropolitan Perth or a regional urban centre in Western Australia: States some information on either the internal or external morphology of the chosen centre. Few elements of the location, nature and extent of features may be stated. There is limited or no use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Total</b>	<b>8</b>
<p>Marker information: Internal morphology refers to the layout, extent and nature of land uses (functional zones) and transport patterns within an urban area. External morphology refers to the overall shape and extent of the boundary of an urban area. Equal weighting should be given to the descriptions of both internal and external morphology. If only one of these is addressed the maximum score awarded should not exceed 4 out of 8.</p>	

**Question 34(a)** (continued)

Answers could include:

Internal morphology:

- identification of functional (land use) zones
- description of location and extent of land use zones
- description of characteristics of land use zones
- description of the nature and extent of transport links.

External morphology:

- description of the overall shape of the urban area
- description of the extent and size of the urban area (north/south, east/west and area).

Accept other relevant answers.

To answer Question 34(b), refer to both a planning strategy adopted to address **one** challenge facing **either** metropolitan Perth **or** a regional urban centre in Western Australia **and** a planning strategy adopted to address **one** challenge facing a megacity.

- (b) Assess the extent to which these strategies have enhanced the sustainability and liveability of these places. (12 marks)

Description	Marks
For each ( <b>one</b> for metropolitan Perth or a regional urban centre in Western Australia and <b>one</b> for a megacity) of the planning strategies assessed (2 x 6)	
<p>A detailed and comprehensive assessment of the extent to which the strategy has enhanced the sustainability and liveability of the place is presented. Detailed and accurate information is provided about the nature of the strategy and the extent to which it has enhanced the sustainability and identified measures of liveability.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the evaluation. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>An assessment of the extent to which the strategy has enhanced the sustainability and liveability of the place is presented. Relatively accurate information is provided about the nature of the strategy and the extent to which it has enhanced the sustainability and some identified measures of liveability.</p> <p>Some supporting evidence and examples are used to develop and strengthen the evaluation. Relevant geographical terminology and concepts help to develop a cohesive and concise answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3–4
<p>A basic description, with little assessment of the extent to which the strategy has enhanced the sustainability and liveability of the place is presented. Limited information is provided about the nature of the strategy. The extent to which it has enhanced the sustainability and some identified measures of liveability is limited.</p> <p>Insufficient evidence is used to support statements and generalisations. There is limited or no use of geographical terminology and concepts and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Subtotal</b>	<b>6</b>
<b>Total</b>	<b>12</b>
<p>Marker information:</p> <p>Sustainability refers to meeting the needs of current and future generations through simultaneous environmental, social and economic adaption and improvement.</p> <p>Liveability refers to the quality of space and the built environment. The concept of liveability has been linked to a range of factors, for example, quality of life, health, sense of safety, access to services, cost of living, comfortable living standards, mobility and transport, air quality and social participation.</p> <p>If only one of the above elements is addressed the maximum score awarded for that urban centre should not exceed 3 out of 6.</p> <p>The syllabus uses the term strategy as opposed to plan or scheme. Therefore candidates may interpret this term as referring to a large scale plan such as ONENYC, a specific strategy within such a plan or a more local initiative. All of these approaches are to be accepted and assessed on the merit of their evaluation against the three pillars of sustainability.</p> <p>Accept other relevant answers.</p>	

## Question 35

(20 marks)

(a) Describe the internal and external morphology of a megacity.

(8 marks)

Description	Marks
<p>For the selected megacity: A detailed and comprehensive description is given and accurate information is provided on both the internal and external morphology of the chosen centre. The locations, nature and extent of features are described. The answer may be supported by maps. A wide range of appropriate supporting evidence and examples are used to develop and strengthen the description. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	7–8
<p>For the selected megacity: An appropriate description is given and relatively accurate information is provided on both the internal and external morphology of the chosen centre. The locations, nature and extent of features are described. The answer may be supported by maps. A range of appropriate supporting evidence and examples are used to develop and strengthen the description. Relevant geographical terminology and concepts helps to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>For the selected megacity: An outline (limited description) is given and generalised information is provided on both the internal and external morphology of the chosen centre. Elements of the location, nature and extent of features are described. The answer may be supported by maps, however, a map with no accompanying written description should not be awarded more than 50%. Limited evidence and examples are used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response.</p>	3–4
<p>For the selected megacity: States some information on either the internal or external morphology of the chosen centre. Few elements of the location, nature and extent of features may be stated. There is limited or no use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Total</b>	<b>8</b>
<p>Marker information: Internal morphology refers to the layout, extent and nature of land uses (functional zones) and transport patterns within an urban area. External morphology refers to the overall shape and extent of the boundary of an urban area. Equal weighting should be given to the descriptions of both internal and external morphology. If only one of these is addressed the maximum score awarded should not exceed 4 out of 8.</p> <p>Answers could include: Internal morphology:</p> <ul style="list-style-type: none"> <li>• identification of functional (land use) zones</li> <li>• description of location and extent of land use zones</li> <li>• description of characteristics of land use zones</li> <li>• description of the nature and extent of transport links.</li> </ul>	

External morphology:

- description of the overall shape of the urban area
- description of the extent and size of the urban area (north/south, east/west and area).

Accept other relevant answers.

**Question 35** (continued)

To answer Question 35(b), refer to both a planning strategy adopted to address **one** challenge facing **either** metropolitan Perth **or** a regional urban centre in Western Australia **and** a planning strategy adopted to address **one** challenge facing a megacity.

- (b) Evaluate the extent to which these strategies have been, or could be, informed by the concept of sustainability. (12 marks)

Description	Marks
For each ( <b>one</b> for metropolitan Perth or a regional urban centre in Western Australia and <b>one</b> for a megacity) of the planning strategies evaluated (2 x 6)	
<p>A detailed and comprehensive evaluation of the extent to which the strategy has been, or could be, informed by the concept of sustainability is presented. Detailed and accurate information is provided about the nature of the strategy and the extent to which environmental, economic and social benefits and costs have informed its development and implementation.</p> <p>A wide range of appropriate supporting evidence and examples are used to develop and strengthen the evaluation. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive, concise and articulate answer, with well-developed sentences and paragraphs in an extended answer format.</p>	5–6
<p>An evaluation of the extent to which the strategy has been, or could be, informed by the concept of sustainability is presented. Relatively accurate information is provided about the nature of the strategy and the extent to which environmental, economic and social benefits and costs have informed its development and implementation.</p> <p>Some supporting evidence and examples are used to develop and strengthen the evaluation. Relevant geographical terminology and concepts help to develop a cohesive and concise answer, with well-developed sentences and paragraphs in an extended answer format.</p>	3–4
<p>A basic description, with little evaluation, of the extent to which the strategy has been, or could be, informed by the concept of sustainability is presented. Limited information is provided about the nature of the strategy. The extent to which environmental, economic and social benefits and costs have informed its development and implementation is not addressed.</p> <p>Insufficient evidence is used to support statements and generalisations. There is limited or no use of geographical terminology and concepts and poor literacy skills may contribute to a response that is difficult to understand.</p>	1–2
<b>Subtotal</b>	<b>6</b>
<b>Total</b>	<b>12</b>
<p>Marker information:</p> <p>Sustainability refers to meeting the needs of current and future generations through simultaneous environmental, social and economic adaption and improvement.</p> <p>The syllabus uses the term strategy as opposed to plan or scheme. Therefore candidates may interpret this term as referring to a large scale plan such as ONENYC, a specific strategy within such a plan or a more local initiative. All of these approaches are to be accepted and assessed on the merit of their evaluation against the three pillars of sustainability.</p> <p>Accept other relevant answers.</p>	



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