

**GEOGRAPHICAL ASSOCIATION OF WESTERN AUSTRALIA** [Inc.]

**Year 11 ATAR GEOGRAPHY**

**Unit 1**

**Semester 1, 2017**

**MARKING GUIDE**

**for**

**Teachers**

**NOTE:**

**Some element of teacher discretion will be required for the allocation of marks for some questions, with specific reference to the quality of the answer.**

**Section One: Multiple-choice 20% (20 marks)**

Each correct answer is worth **one (1)** mark.

|  |  |  |  |
| --- | --- | --- | --- |
| **Qu** | **Ans** | **Description** | |
| 1 | (b) | Comment | The scale of the map in Source 1 is shown as a ratio above the scale bar (100 000). At this scale, one centimetre on the map represents 100 000 centimetres on the ground, which is the same as 1km. |
| **Syllabus** | Interpret and express scale in written, linear and ratio (representative fraction) formats, and convert scale from one format to another. |
| 2 | (a) | Comment | A quick scan of the map will reveal the small amount of contour lines present and their numerical value. Also written on the map under the title! |
| **Syllabus** | Interpret marginal information represented on maps (title, conventional signs contained in the legend, north point, numerical and linear scale)  Interpret relief on a map using contours and height information, to describe the steepness and shape of a slope, and calculate the average gradient |
| 3 | (c) | Comment | Bearings are used to give directions; they are given in terms of degrees from the north. It is important to use AR 0101 on Source 1 as the starting point for the calculation of this bearing. Given that the direction is slightly north of north west (315°) the correct bearing would be (c) 325° |
| **Syllabus** | Establish direction on a map using general compass directions and bearings. |
| 4 | (a) | Comment | Using the information provided on the border of Source 1, students can approximate the latitude and longitude of the Oval in the town of Red Cliffs as 34°19’ S and 142°11’ E, (a). (c) and (d) have latitude and longitude values listed in incorrect order, (b) being 2 minutes different means the student has made a big GR error or is just not very precise. |
| **Syllabus** | Establish position on a map using alphanumeric grid coordinates, easting and northings, four figure area references, six figure grid reference and latitude and longitude expressed in degrees and minutes. |
| 5 | (b) | Comment | By adding up the segments of the lake the area is greater than 3 kilometres square and less than 4 kilometres square. Therefore (b) is the closest answer. |
| **Syllabus** | Apply the map scale to basic calculations to determine time, speed, distance and area. |
| 6 | (a) | Comment | The terms given are commonly used to describe relief, steepness and shape of land. Virtually no contour lines exist in this area indicating that the land is very flat. |
| **Syllabus** | Interpret relief on a map using contours and height information, to describe the steepness and shape of a slope, and calculate the average gradient. |
| 7 | (b) | Comment | The distance between the two points given is approximately 13 kilometres. Distance (13) divided by speed (90) multiplied by time (60) = Time Taken. Can also be worked out by cross multiplication method. 8.66’ minutes – converts to 8 minutes and 40 seconds. |
| **Syllabus** | Apply the map scale to basic calculations to determine time, speed, distance and area. |
| 8 | (b) | Comment | Students should be able to distinguish between **natural vegetation** and cultural features such as vineyards/orchards and drainage features. The dominant natural vegetation is medium scrub. |
| **Syllabus** | Identify different relief features, types of natural vegetation cover and hydrological features.  Identify and interpret natural features and cultural features on a map. |
| 9 | (c) | Comment | Features on Source 2 (vertical aerial photograph) appear larger and in more detail than they do on Source 1 (topographic map). Therefore the scale of the vertical aerial photograph is larger than that of the topographic map, meaning that only alternative (c) can be correct. Students who have difficulty with this concept can be reminded that they should pick the same feature found on both the map and photograph and measure their size. |
| **Syllabus** | Interpret the difference in scale between a photograph and a topographic map of the same place. |
| 10 | (d) | Comment | A cultural feature is a manmade feature. The distinct feature indicated by ‘**A**’ is a training track, identifiable due to the distinct shape on photo and labeling at correct location on the map. |
| **Syllabus** | Identify and describe natural and **cultural features** and their patterns on the Earth’s surface using **aerial photographs** (**vertical** and oblique), radar imagery and satellite imagery (Landsat, weather satellites and Google Earth).  Use remote sensing products as an aid to interpreting natural and cultural features shown on topographic maps  Identify and interpret natural features and cultural features on a map. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Qu** | **Ans** | **Description** | |
| 11 | (b) | Comment | A natural or physical feature is a feature that naturally occurs. The distinct feature located at ‘**B**’ is Lake Ranfurly, identifiable due to the distinct shape on photo and labeling at correct location ion the map. |
| **Syllabus** | Identify and describe **natural** and cultural features and their patterns on the Earth’s surface using **aerial photographs** (**vertical** and oblique), radar imagery and satellite imagery (Landsat, weather satellites and Google Earth).  Use remote sensing products as an aid to interpreting natural and cultural features shown on topographic maps.  Identify and interpret natural features and cultural features on a map. |
| 12 | (b) | Comment | Lock Island in the foreground is a good reference point for the students to ascertain that the photograph was taken facing a South-East direction. |
| **Syllabus** | Establish direction on a map using general compass directions and bearings.  Determine direction on remote sensing products. |
| 13 | (d) | Comment | Students need to correctly orientate the oblique photograph and map, find the feature on both and correctly use the map legend to ascertain what feature is indicated by **C** – a railway line. |
| **Syllabus** | Identify and describe … cultural features and their patterns on the Earth’s surface using **aerial photographs** (**oblique)**.  Identify and interpret natural features and cultural features on a map.  Interpret marginal information represented on maps (title, conventional signs contained in the legend, north point, numerical and linear scale). |
| 14 | (d) | Comment | Floods are clearly the highest occurring hazard. Not always caused solely by excess rainfall, therefore hydrological not atmospheric. |
| **Syllabus** | Classification of natural hazards (atmospheric, hydrological and geomorphic). |
| 15 | (c) | Comment | The hazards caused by tectonic forces (geomorphic hazards) are earthquakes (8%), landslides (5%) and volcanic activity (2%) adding up to 15%. |
| **Syllabus** | Classification of natural hazards (atmospheric, hydrological and geomorphic)  Examples of natural hazards, including storms, cyclones, hurricanes, typhoons, tornadoes, frosts, droughts, bushfires, flooding, earthquakes, volcanoes and landslides. |
| 16 | (b) | Comment | Overall the area shaded green (Great Divide 2003) exceeds the area shaded blue and all the other bushfires obviously covering smaller areas. |
| **Syllabus** | Interpret and construct tables and graphs, including: picture graphs, line, bar and compound graphs; histograms; scattergrams; climate graphs; pie graphs; flowcharts and population pyramids.  The spatial and temporal distribution, … of natural and ecological hazards at a global scale.  Identify and interpret a variety of topographic and thematic maps. |
| 17 | (d) | Comment | (a) a very specific list of criteria related to buildings – not applicable to any hazard type. (b) are measures of impact, (c) are factors affecting temperature, and (d) are factors relevant for any hazard type that influence vulnerability. |
| **Syllabus** | The physical and human factors that explain why some places and people are more vulnerable to the hazard than others. |
| 18 | (a) | Comment | Simple definition based on SCSA course Glossary statemen. |
| **Syllabus** | The concepts of risk and hazard management as applied to natural and ecological hazards. |
| 19 | (c) | Comment | Simple definition based on terminology in the SCSA course. |
| **Syllabus** | The spatial and temporal distribution, magnitude, duration, frequency, probability and scale of spatial impact of natural and ecological hazards at a global scale. |
| 20 | (a) | Comment | (b) are used to measure earthquakes, (c) are measures of tropical storms, and (d) is a measure of volcanic activity. (a) are tools and technologies used to capture or project spatial information, typically in a digital format. |
| **Syllabus** | The role of spatial technologies in the study of natural and ecological hazards. |

1. = 5 (b) = 7 (c) = 4 (d) = 4

**Section Two: Short response 40% (40 marks)**

Refer to **Source 1** Mildura topographic map 1976 to answer questions 21 to 23.

**Question 21 (4 marks)**

Describe **two** **(2)** characteristics of the site and **two (2)** characteristics of the situation of the town of Mildura.

**Syllabus:**

Describe the site and situations of places.

**Key word:**

Describe: provide characteristics and features.

**Teacher Notes:**

Site can be described by referring to the physical characteristics of a place. Site characteristics should be described accurately in full sentences, using good geographical language. Features referred to should be for the site of the settlement, not areas 5, 10 or more kilometres away (5, 10 or more cm)! Surrounding natural vegetation does provide evidence of vegetation type before clearing. Site features may include:

* Topography – height, gradient, slope. E.g. 0 - 40 m asl, flat land
* Landforms – e.g. floodplain, valley E.g. Floodplain
* Drainage – rivers, lakes, swamps E.g. on banks of the Murray River, surrounded by (now dissected by) perennial streams
* Vegetation – evidence of original natural vegetation in the area E.g. medium scrub
* Soils – E.g. alluvial associated with the river

Situation can be described by referring to the location of a place in relation to its surroundings or its proximity to other places or features. Situation characteristics should be described accurately in full sentences, using appropriate geographical language. Can include:

* Distance and Direction from other settlements of major features. E.g. 7 km west-south-west of Merbein
* Latitude and Longitude E.g. 34° 11
* ’ or 12’ S 142° 9’ or 10’ E
* Location in relation to or on major transport routes E.g. dissected by the Sturt Highway, Railway line runs through the town, intersection of Sturt Highway and National Route 79.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Correctly describes any **one (1)** site characteristic (e.g. elevation, natural drainage, natural vegetation, slope, soil). | 1 |
| Correctly describes any **one (1) other** site characteristic (e.g. elevation, natural drainage, natural vegetation, slope, soil). | 1 |
| Correctly describes any **one (1)** situation characteristic (e.g. latitude and longitude, distance and direction from other places or features, location in relation to major transport routes). | 1 |
| Correctly describes any **one (1) other** situation characteristic (e.g. latitude and longitude, distance and direction from other places or features, location in relation to major transport routes). | 1 |
| **TOTAL** | **4** |

**Question 22 (4 marks)**

Describe the spatial relationships between land use, settlements and transport links in the area of the map to the south of the Murray River.

**Syllabus:**

Identify, describe and interpret spatial patterns (including land use, settlement and transport), and spatial relationships between natural and cultural features on the maps.

Establish direction on a map using general compass directions and bearings.

**Key word:**

Compare: Show how things are similar or different.

**Teacher notes:**

To the south of the Murray River, largely cleared for urban land use and predominantly orchards, plantations and vineyards. Associated with this is a high density of dwellings and buildings both within and outside of the urban settlements labelled. A high density, uniform road pattern is associated with this pattern of land use – a grid pattern immediately to the southwest, south and southeast of Mildura, a uniform slightly uncoordinated pattern in the vicinity of Red Cliffs. Further to the southwest of this area land use diminishes and the area is covered in medium scrub and sand ridges. Settlement and transport is almost non-existent in this area, with a Glider Airfield being present.

A good answer will use Grid References to highlight examples of the types of patterns and relationships identified. Better answers will also integrate the three elements listed in the question, highlighting the **interrelationships** between them, rather than simply listing the characteristics of each component.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Thoroughly describes how all three components are interrelated to each other to form the patterns observed, Uses Area Reference and Grid References to locate examples of patterns mentioned. Full sentences are used. | 4 |
| States how all three components are interrelated to each other to form the patterns observed. Uses Area Reference and Grid References to locate examples of patterns mentioned. Full sentences are used. | 3 |
| States the pattern of some of the components without identify the relationships. Few, if any, Area Reference and Grid References to locate examples of patterns mentioned. Poor sentence structure or dot points. | 2 |
| All the components not covered. No Area Reference and Grid References to locate examples of patterns mentioned. Poor sentence structure or dot points. | 1 |
| **TOTAL** | **4** |

**Question 23 (3 marks)**

Using the map legend, locate (provide Grid or Area References for) one perennial lake, one intermittent lake and an area of land subject to inundation found on **Source 1**.

**Syllabus:**

Identify different … hydrological features (land subject to inundation, perennial and intermittent water bodies)

**Key word:**

Locate: to indicate the position of

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Correctly locates (Grid or Area reference) a perennial lake from the Mildura map sheet. Can name if present. | 1 |
| Correctly locates (Grid or Area reference) an intermittent lake from the Mildura map sheet. Can name if present. | 1 |
| Correctly locates (Grid or Area reference) an area of land subject to inundation from the Mildura map sheet. Can name if present. | 1 |
| **TOTAL** | **3** |

Refer to **Source 1** the Mildura topographic map 1976 and **Source 2** Mildura vertical aerial photograph 2016 to answer question 24.

**Question 24 (4 marks)**

Describe **two (2)** pieces of evidence and their location that demonstrate that **Source 1** was produced 40 years before **Source 2**.

**Syllabus:**

Use combinations of remote sensing products and topographic maps to provide information based on change over time.

**Key words:**

Describe: provide characteristics and features.

Locate: to indicate the position of

**Teacher Notes:**

Source 2 is clearly the most recent data source. Numerous examples can be given of increased urban growth and features, particularly to the south and southwest of Mildura.

Examples:

* Area southwest of ARs 0415 and 0514 has experienced expansion of the Mildura built up area.
* Expansion of orchard, plantation or vineyards land use immediately to the east of aerodrome into AR 9811.
* Expansion of urban area into AR 0811, (NE of Irymple, also SW).
* Other numerous areas of increased urban land use such as AR 0518 and AR 1111, 1217 and others where appropriate.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| **2 x 2 marks each** | **4** |
| Correctly describes **one (1)** piece of evidence or feature found on the aerial photograph that is not found on the topographic map. Correctly locates the evidence or feature by using a Grid or Area Reference or distance and direction from an existing feature to accurately locate the newer feature. | 2 |
| Correctly describes **one (1)** piece of evidence or feature found on the aerial photograph that is not found on the topographic map. No location is given by use of Grid or Area Reference or distance and direction or other indicator.  OR  Correctly locates the evidence or feature by using a Grid or Area Reference or distance and direction from an existing feature, but does not describe the evidence or feature. | 1 |
| **TOTAL** | **4** |

Refer to **Source 6** to answer questions 25 and 26

**Question 25 (2 marks)**

Define the concept of *natural hazard*.

**Syllabus:**

The concept of hazard geography

Use systems and flow diagrams to organise thinking about relationships

**Key word:**

Define: provide characteristics and features

**Syllabus Glossary**

**Natural hazards**: Atmospheric, hydrological and geomorphic processes and events in our environment that have the potential to affect people adversely.

**Teacher notes:**

Key point is that a natural hazard is so recognised when the natural process or systems interface with human systems, as indicated in Source 6.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A clear and correct definition is given, highlighting the interaction between natural and human systems. Reference is made to the Source. | 2 |
| Definition only mentions an extreme process. Misses the human aspect. No reference to Source. | 1 |
| **TOTAL** | **2** |

Refer to **Source 6** to answer questions 25 and 26

**Question 26 (4 marks)**

Describe the physical and human factors that may cause a natural hazard to be viewed as a natural disaster.

**Syllabus:**

The concept of hazard geography

Use systems and flow diagrams to organise thinking about relationships

**Key word:**

Describe: provide characteristics and features.

**Syllabus Glossary:**

Physical factors: of nature, naturally occurring phenomena, processes and factors

Human factors: actions, structures, conditions and processes of people

**Teacher Notes:**

A distinction between a natural hazard and a natural disaster should be evident in the answer. A hazard becomes a disaster when it impacts on human and physical systems.

**Physical factors** may include: excessive magnitude, duration, frequency, spatial extent, nature of the natural environment, probability.

**Human factors** may include: location of settlements and characteristics, quality of infrastructure, population density, level of urbanisation, land use, demographic profile, level of economic development, early detection and warning systems, hazard and emergency management policies, education and support structures.

Look for terminology in Source 6 in the student response.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Physical factors and Human factors: **2 x 2 marks** | **4** |
| **Physical factors:** Describes a number of the factors listed that will heighten the impact of a hazard, thus causing a disaster to occur. | 2 |
| States only one or two factors, no description | 1 |
| **Human factors:** Describes a number of the factors listed that will heighten the impact of a hazard, thus causing a disaster to occur. | 2 |
| States only one or two factors, no description | 1 |
| **TOTAL** | **4** |

**Question 27 (3 marks)**

Describe the nature of ecological hazards with reference to examples.

**Syllabus:**

the nature of natural and ecological hazards with particular reference to:

examples of ecological hazards, including environmental diseases/pandemics (toxin-based respiratory ailments, infectious diseases, animal-transmitted diseases and water-borne diseases) and plant and animal invasions

**Key word:**

Describe: provide characteristics and features.

**Teacher Notes:**

The following description is adapted from the glossary found in the Year 11 syllabus.

Ecological hazards may be biological or chemical based hazards that have the potential to negatively impact the wellbeing of people or the environment in general. Biological factors lead to infectious diseases, endemics or pandemics. Historically many of these diseases have proven difficult to eradicate, however interventions that drastically reduce their incidence, spread and mortality are increasingly being applied. Chemical hazards can cause immediate, negative health effects and can also contribute to chronic, or long-term, health issues. Our understanding of the consequences of chemical exposure for people’s health, especially very low level exposures typically found in the environment, remains incomplete.

Candidates emphasis on biological or chemical hazards may depend on the focus their depth studies.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Provides a comprehensive description of the nature of ecological hazards, with reference to both biological and chemical hazards with at least two (2) examples of ecological hazards given. Geographical terminology and full sentences are used. | 3 |
| Provides a description of the nature of ecological hazards, with reference to either biological OR chemical hazards with at least two (2) examples of ecological hazards given. Some geographical terminology and basic sentences are used. | 2 |
| Basic description of the nature of ecological hazards given, may not mention types and only gives one (1) example. Geographical terminology not evident and poor sentence structure or dot points used | 1 |
| **TOTAL** | **3** |

Refer to **Source 7** to answer Question 28.

**Question 28 (4 marks)**

Explain the concept of *Mitigation and Prevention* in relation to a type of Ecological Hazard you have studied.

**Syllabus:**

The concepts of risk and hazard management as applied to natural and ecological hazards

Interpret and construct tables and graphs, including: picture graphs, line, bar and compound graphs; histograms; scattergrams; climate graphs; pie graphs; flowcharts and population pyramids.

**Key word:**

Explain: relate cause and effect; make the relationships between things evident; provide why and/or how.

**Syllabus Glossary:**

Mitigation: The ability to moderate the severity of a hazard or similarly adverse occurrence.

Prevention: The act of keeping from happening, taking precautionary action.

**Teacher Notes:**

Due to the scope of ecological hazards that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

Mitigation and prevention go together, (hence linked on the diagram). They are steps taken either before a potential hazard turns into a crisis/disaster or in response to an event that has occurred with the belief that another event is likely to occur, (hence position on diagram).

The measures taken act to lessen the impact of the chosen event by either preventing the event itself from occurring or taking precautionary measure to lessen the size of the impacts, either spatially, temporally or in various numerical measures.

**Marking Key:** A good answer will make reference to the Source.

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Correctly explains the meaning of the terms mitigation and preparedness in terms of what they are and when the actions are taken. Explains a number of measures taken to mitigate and prepare for a type of ecological hazard they have studied. Refers to specific examples of ecological hazard events they have studied to strengthen the explanation. Geographical terminology and full sentences are used. | 4 |
| Correctly explains the meaning of the terms mitigation **and/or** preparedness in terms of what they are and when the actions are taken. Explains a measure taken to mitigate and prepare for a type of ecological hazard they have studied. Refers to specific examples of ecological hazard events they have studied to strengthen the explanation. Geographical terminology and full sentences are used. | 3 |
| Explains the meaning of the terms mitigation **or** preparedness in terms of what they are **or** when the actions are taken. Attempts to explain a measure taken to mitigate and prepare for a type of ecological hazard they have studied. Limited reference to specific examples of an ecological hazard event they have studied. Geographical terminology not evident and poor sentence structure or dot points used. | 2 |
| Limited explanation of the meaning of the terms mitigation **or** preparedness. Unsatisfactory attempt to explain a measure taken to mitigate and prepare for a type of ecological hazard they have studied. May not refer to a type of ecological hazard. Specific examples of an ecological hazard event they have studied are lacking. Geographical terminology not evident and poor sentence structure or dot points used. | 1 |
| **TOTAL** | **4** |

Refer to **Source 7** to answer Question 29.

**Question 29 6 marks)**

Outline the differences between the concepts of *Response* and *Recovery* in relation to a type of Ecological Hazard you have studied. Use specific examples.

**Syllabus:**

The concepts of risk and hazard management as applied to natural and ecological hazards.

Interpret and construct tables and graphs, including: picture graphs, line, bar and compound graphs; histograms; scattergrams; climate graphs; pie graphs; flowcharts and population pyramids.

**Key word:**

Outline: sketch in general terms; indicates the main features of

**Syllabus Glossary:**

Response: to react to an event or action

Recovery: restoration to a former or better condition

**Teacher Notes:**

Due to the scope of natural hazards that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

Response refers to the **initial actions** taken after a hazard event has occurred. ‘First responders’ is a common term used for the emergency services personnel, rescuers, medical and others in command of logistical and operational matters. Rescue operations, measures taken to restore essential services and infrastructure as quickly as possible after the initial hazard event. Immediate mitigation measures taken once an outbreak has been identified. Initial measures taken to reduce the risk or source of the hazard.

Nature of points highlighted will vary with the nature of the hazard identified.

Recovery refers to the **longer-term actions** and measures taken to restore the area, structures and people impacted by the hazard back to the pre existing or improved level of functionality. Recovery can refer to restoration and/or reconstruction. Long term measures taken to ensure further events, accidents or outbreaks do not occur. May refer to medicines, vaccinations, education, new structures, improved procedures.

Nature of points highlighted will vary with the nature of the hazard identified.

A good answer will make reference to the Source**.**

**Refer over for Marking Key**

**Marking Key**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| **Response and Recovery: 2 x 3 marks each** | **6** |
| **Response:** Correctly gives the meaning of the terms response in terms of what it is and when the actions are taken. Outlines a number of typical measures taken in response to a type of ecological hazard they have studied. Refers to specific examples of ecological hazard events they have studied to strengthen the answer. Geographical terminology and full sentences are used. | 3 |
| Correctly gives the meaning of the terms response in terms of what it is **and/or** when the actions are taken. Outlines a typical measure taken in response to a type of ecological hazard they have studied. Refers to a specific example of an ecological hazard event they have studied to strengthen the answer. Geographical terminology and full sentences are used. | 2 |
| Limited detail of the meaning of the term response. Unsatisfactory attempt to explain a measure taken in response to type of ecological hazard they have studied. May not refer to a type of ecological hazard. Specific examples of an ecological hazard event they have studied are lacking. Geographical terminology not evident and poor sentence structure or dot points used. | 1 |
| **Recovery:** Correctly gives the meaning of the terms recovery in terms of what it is and when the actions are taken. Outlines a number of typical measures taken during the recovery phase after a type of ecological hazard they have studied. Refers to specific examples of ecological hazard events they have studied to strengthen the answer. Geographical terminology and full sentences are used. | 3 |
| Correctly gives the meaning of the terms recovery in terms of what it is **and/or** when the actions are taken. Outlines a typical measure taken during the recovery phase after a type of ecological hazard they have studied. Refers to a specific example of an ecological hazard event they have studied to strengthen the answer. Geographical terminology and full sentences are used. | 2 |
| Limited detail of the meaning of the term recovery. Unsatisfactory attempt to explain a measure taken during the recovery phase after a type of ecological hazard they have studied. May not refer to a type of ecological hazard. Specific examples of an ecological hazard event they have studied are lacking. Geographical terminology not evident and poor sentence structure or dot points used. | 1 |
| **TOTAL** | **6** |

Refer to **Source 8** to answer Question 30.

**Question 30 (2 marks)**

Outline **two (2)** trends relating to the human impacts of natural hazards.

**Syllabus:**

The spatial and temporal distribution, magnitude, duration, frequency, probability and **scale of spatial impact of natural** and ecological **hazards at a global scale**

Interpret and construct tables and graphs, including: picture graphs, line, bar and compound graphs; histograms; scattergrams; climate graphs; pie graphs; flowcharts and population pyramids.

**Key word:**

Outline: sketch in general terms: indicate the main features of

**Teacher Notes:**

Candidates can outline human impacts:

* spatially – **where** impacts have occurred
* temporally – **when** impacts have occurred
* numerically – the size or magnitude of impacts.

Trends are easier to identify in the spatial realm. Generally, East Asia and Pacific have experienced the greatest total life years lost due to natural hazards, particularly since 1988. Between 1980 and 1988 South Asia was the most impacted area. Other trends may be identified and correct. However references to one region and one year, such as ‘South Asia was impacted the most in 2002’ is not a trend.

NOTE: Colours are drawn from bottom to top to correspond with key being read left to right.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Correctly outlines **two (2)** different trends. Refers to where, when and size of impacts for each trend. | 2 |
| Correctly outlines **two (2)** different trends. Only mentions where. **OR** Only outlines **one (1)** trend, referring to where, when and size of impact. | 1 |
| **TOTAL** | **2** |

Refer to **Source 9 and Source10** to answer Question 31.

**Question 31 (4 marks)**

Explain why the two maps show different patterns despite both displaying economic loss due to natural disasters.

**Syllabus:**

The spatial and temporal distribution, magnitude, duration, frequency, probability and **scale of spatial impact of natural** and ecological **hazards at a global scale**

Interpret and apply data from different types of statistical maps (isopleth/isoline maps, choropleth maps, proportional circle maps, overlay and dot distribution maps)

**Key word:**

Explain: relate cause and effect; make the relationships between things evident; provide why and/or how.

**Syllabus Glossary:**

Spatial distribution: the arrangement of a phenomena across the earth’s surface; the location of features of a place; how features are arranged across the surface of the earth.

**Teacher Notes:**

The first map shows that when a disaster impacts on More Developed Countries, such as Japan and USA, and to a lesser extent Australia and the countries of Europe, the economic impact (losses) in total terms will be very high. This is due to the high value manufacturing industries present, the highly developed settlement, communications and transport systems plus the high percentage of the workforce employed in non-primary industries. China with its large population and rapidly developing infrastructure will also experience high economic losses in terms of total value, as will India to a lesser extent.

The second map measures economic losses as a percentage of GDP therefore it reflects the very large Gross Domestic Product of the USA, Japan and central European countries, closely followed by China, India and Australia. The large total number for economic loss shown in the first map is only a small percentage of these countries’ total GDP compared to other Less Developed Countries. The countries and regions named have large domestic markets and/or are major exporters therefore their GDP is very large in total monetary terms.

NOTE: This question requires the synthesis of deeper knowledge combined with higher order thinking skills and is purposely provided as a discriminator.

**Refer over for Marking Key**

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Correctly identifies the difference in the two measures being mapped. Thoroughly explains why various countries and regions display the patterns they do, giving plausible reasons, which demonstrate an understanding of the nature MDC’s and LDC’s. Refers to specific examples from the source to strengthen their answer. Geographical terminology and full sentences are used. | 4 |
| Correctly identifies the difference in the two measures being mapped. Explains why various countries and regions display the patterns they do. Some understanding of the nature MDC’s and LDC’s evident although the terms may not be specifically used. Refers to specific examples from the source to strengthen their answer. Geographical terminology and full sentences are used. | 3 |
| Attempt made to Identify the difference in the two measures being mapped. May have difficulty clearly stating the difference. Basic explanation of why various countries and regions display the patterns they do. Limited reference to specific examples from the source. Geographical terminology not evident and poor sentence structure or dot points used. | 2 |
| Partially identifies the trends being shown on the two maps. May make no reference to examples. Geographical terminology not evident and poor sentence structure or dot points used. | 1 |
| Shows no understanding of what the two maps are showing. | 0 |
| **TOTAL** | **4** |

**End of Section Two**

**Section Three: Extended response 40% (40 marks)**

**PART A: Depth Study 1 Answer either Question 32 or Question 33 20% (20 Marks)**

**Question 32 (20 marks)**

1. Describe the nature and causes of a natural hazard you have studied.

(8 marks)

**Syllabus:**

The nature and causes of the hazard

**Key word:**

Describe: provide characteristics and features.

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Nature of** can refer to: when and where the hazard occurs – frequency, magnitude, duration and probability. Classification or type of natural hazard (atmospheric, geomorphic, hydrological), nature of or types of impacts – scale of impact, damage to property, damage to environment, injury and deaths.

**Causes of** can refer to: the source of the hazard, how the hazard is generated, physical factors and any significant human factors that may contribute to the occurrence of the hazard.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A detailed and comprehensive description is given and accurate information is provided on both the nature (distinguishing characteristics of) and causes of a natural hazard. 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. | 7-8 |
| An appropriate description is given and general, relatively accurate information is provided on both the nature (distinguishing characteristics of) and causes of a natural hazard. 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. | 5-6 |
| A limited description is given and some generalised information is provided on both the nature (distinguishing characteristics of) and causes of a natural hazard. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-4 |
| A very basic description is given and little information is provided on the nature (distinguishing characteristics of) **or** causes of a natural hazard. Insufficient evidence is presented in the description. 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. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **8** |

**Question 32 (20 marks)**

1. Evaluate the physical and human factors that help explain why some places and people are more vulnerable than others to a type of natural hazard that you have studied.

(12 marks)

**Syllabus:**

The physical and human factors that explain why some places and people are more vulnerable to the hazard than others

**Key word:**

Evaluate: to ascertain the value or amount of: appraise carefully

**Syllabus Glossary:**

Vulnerability: the susceptibility to harm or change

Physical factors: of nature, naturally occurring phenomena, processes and factors

Human factors: actions, structures, conditions and processes of people

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Physical factors** may relate to the following where relevant: location (physical and human factors influence proximity), magnitude, duration, frequency, spatial extent, nature of natural environment, probability.

Reference to Source 7 may assist students in identifying some of these factors

**Human factors** may relate to the following where relevant: location of settlements, quality of infrastructure (particularly transport, communication and utilities), build quality and density of settlements, building codes, population density, level of urbanisation, land use, demographic profile, level of economic development and wealth, early detection and warning systems, hazard and emergency management policies, education and support structures.

Reference to Source 9 may assist students in identifying some of the places that are more vulnerable to natural than others,

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A clear and concise explanation of the concept of vulnerability is given as it applies to **both** people and places. In relation to a clearly identified type of natural hazard, a detailed and comprehensive evaluation of a number of physical **and** human factors influencing the vulnerability of both people and places is provided. (A thorough response will identify those factors that have the greatest influence on the level of vulnerability for the particular type of natural hazard being discussed.) A wide range of appropriate supporting evidence and examples are used to develop and strengthen the evaluation and demonstrate varying levels of vulnerability. 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. | 11-12 |
| A concise explanation of the concept of vulnerability is given as it applies to **both** people and places. In relation to a clearly identified type of natural hazard, a detailed evaluation of a number of physical **and** human factors influencing the vulnerability of both people and places is provided. (A thorough response will identify those factors that have the greatest influence on the level of vulnerability for the particular type of natural hazard being discussed.) A range of supporting evidence and examples are used to develop and expand the evaluation and demonstrate varying levels of vulnerability. Relevant geographical terminology and concepts help to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format. | 9-10 |
| An explanation of the concept of vulnerability is given as it applies to **both** people and places. In relation to a clearly identified type of natural hazard, an appropriate evaluation of a number of physical **and** human factors influencing the vulnerability of both people and places is provided. (A good response will identify those factors that influence the level of vulnerability for the particular type of natural hazard being discussed.) Some supporting evidence is used to develop the evaluation with demonstrate levels of vulnerability. Geographical terminology and concepts are applied to construct a response that shows some detail, but may have difficulty articulating ideas. | 6-8 |
| A limited explanation of the concept of vulnerability is given as it applies to people **and/or** places. In relation to an identified type of natural hazard, a limited evaluation of one or two physical **and/or** human factors influencing the vulnerability of people and places is provided. Limited evidence is used to support statements and generalisations with little reference to varying levels of vulnerability. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-5 |
| A very limited or no explanation of the concept of vulnerability is given. A type of natural hazard might be stated, and a very basic evaluation of a physical **and/or** human factor influencing the vulnerability of people and places is provided. Insufficient evidence is used to support statements and generalisations with no reference to varying levels of vulnerability. There is limited use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **12** |

**Question 33 (20 marks)**

1. Describe how **one (1)** biophysical process and **one (1)** human process can be used to explain the spatial and temporal distribution of a natural hazard you have studied.

(8 marks)

**Syllabus:**

The spatial and temporal distribution of the hazard and how an understanding of biophysical and human processes can be used to explain the patterns that are identified

**Key word:**

Describe: provide characteristics and features.

Explain: relate cause and effect; make the relationships between things evident; provide why and/or how.

**Syllabus Glossary:**

Biophysical process: The atmospheric, biological, chemical and physical processes that take place in the lithosphere, hydrosphere, atmosphere and biosphere.

Human process: (In the context of hazards) Actions taken by individuals or communities, relating to settlement, livlihood and lifestyle, which inadvertantly may contribute to a hazard event occuring.

Spatial distribution: the arrangement of geographical phenomena or activities across the earth’s surface; the location of features of a place; how features are arranged across the surface of the earth.

Temporal distribution: the distribution of geographical phenomena over time; when phenomena occur and/or how frequently (if known)

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Biophysical processes** may include the following where relevant: atmospheric process and patterns associated with pressure and wind systems, climatic components such as rainfall, winds, temperature. Components of the water cycle. Tectonic processes, movements and their location. The nature of, distribution of and variations in soil types, rock types, vegetation types. Fuel loads. Slope materials and processes. Drainage patterns and characteristics. Others not mentioned may be relevant to specific natural hazards.

**Human processes** may include the following where relevant: Nature and location of human settlements. Activities associated with and the nature of agricultural practices. Activities associated with and the nature of mineral extraction practices. Water catchment management and structures associated with water storage, distribution and power generation. Management practices associated with forest reserves and bushland areas. Specific structures built along coastlines. Pre-emptive programs and processes that may either hinder or encourage the frequency of occurrence. Others not mentioned may be relevant to specific natural hazards.

**Note** – processes should relate to spatial and temporal distribution, NOT vulnerability, magnitude or impact.

**Spatial distribution** of the natural hazard should include where the hazard occurs and the patterns associated with this distribution.

**Temporal distribution** of the natural hazard should include how often the hazard occurs/has occurred (frequency) and the provability of the hazard occurring, if known.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Biophysical Process and Human Process: **2 x 4 marks** | **8** |
| **Biophysical process:** A detailed and comprehensive description is given and accurate information is provided of one (1) biophysical process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and temporal distributions of a natural hazard are thoroughly and accurately described. 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. | 4 |
| An appropriate description is given and general, relatively accurate information is provided of one (1) biophysical process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and temporal distributions of a natural hazard are clearly and accurately described. 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. | 3 |
| A limited description is given and some generalised information is provided of one (1) biophysical process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and/or temporal distributions of a natural hazard are described to a limited extent. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 2 |
| A very basic description is given and little information is provided of one (1) biophysical process that helps explain the spatial and temporal distribution of a natural hazard. A attempt may be made to describe the spatial **or** temporal distributions of a natural hazard. Insufficient evidence is presented in the description. 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. | 1 |
| No relevant attempt. | 0 |
| **Human process:** A detailed and comprehensive description is given and accurate information is provided of one (1) human process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and temporal distributions of a natural hazard are thoroughly and accurately described. 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. | 4 |
| An appropriate description is given and general, relatively accurate information is provided of one (1) human process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and temporal distributions of a natural hazard are clearly and accurately described. 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. | 3 |
| A limited description is given and some generalised information is provided of one (1) human process that helps explain the spatial and temporal distribution of a natural hazard. The spatial and/or temporal distributions of a natural hazard are described to a limited extent. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 2 |
| A very basic description is given and little information is provided of one (1) human process that helps explain the spatial and temporal distribution of a natural hazard. A attempt may be made to describe the spatial **or** temporal distributions of a natural hazard. Insufficient evidence is presented in the description. 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. | 1 |
| No relevant attempt. | 0 |
| **TOTAL** | **8** |

**Question 33 (20 marks)**

b)Account for the variations in economic impacts of a natural hazard between a developed country such as Australia and in a less developed country or region

(12 marks)

**Syllabus:**

The environmental, **economic** and social impacts of the hazard in a developed country such as Australia compared with those in at least one less developed country or region

**Key word:**

Account for: state reasons for, report on.

**Syllabus Glossary:**

Developed Country: is a country that is considered to be strong in terms of its economy, infrastructure and economic base. The population of a developed country typically has a high standard of living as measured by GDP per capita, personal income levels, levels of employment and a number of social indices, particularly those related to education and health.

Less Developed Country: is a country that is considered to be lacking in terms of its economy, infrastructure and industrial base. The population of a less developed country has a relatively low standard of living as measured by low income levels, high unemployment, abundant poverty and a number of social indices, particularly those related to education an health.

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Economic impacts** of a natural hazard may refer to the following where relevant: destruction of homes, destruction of buildings related to employment and/or provision of goods and services, destruction of infrastructure and transport and utilities. The cost or repair and replacement of the above structures. Cost of immediate relief efforts, rescue and ongoing medical responses. Looting and rioting due to need and opportunism. Destruction of income earning food crops for domestic and international markets. Loss of, or interruption to jobs, income and spending, domestically and internationally, leading to destabilisation of economy and government. Potential closure of borders (medical quarantine) and international transport (quarantine or physical damage). Evacuation of foreign nationals and workers, leading to loss of workforce and expertise. Loss of confidence and international investment.

The impact, size and recovery from these potential economic impacts will vary between developed countries and less developed countries.

**Reasons** can be related to: political systems and structures, the economic base of the economy, the social structure of the society and the overall level of vulnerability of the country/region. The nature and density of settlements. The nature of agriculture and industry. The levels of technological innovation evident. The existing infrastructure base and the subsequent level of preparedness. Federal monetary reserves available to contribute towards response and recovery.

**See over for Marking Key**

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A clear and concise identification of a developed country and a less develop country or region is made. In relation to a clearly identified type of natural hazard, a detailed and comprehensive account is given of the various reasons for the differences in the level of economic impact of a natural hazard between the areas identified. (A thorough response will necessarily describe various potential economic impacts for the particular locations and type of natural hazard being discussed.) A wide range of appropriate supporting evidence and examples are used to develop and strengthen the account and demonstrate varying levels of economic impact. 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. | 11-12 |
| A concise identification of a developed country and a less develop country or region is made. In relation to a clearly identified type of natural hazard, a detailed account is given of the various reasons for the differences in the level of economic impact of a natural hazard between the areas identified. (A thorough response will necessarily describe various potential economic impacts for the particular locations and type of natural hazard being discussed.) A range of appropriate supporting evidence and examples are used to develop and strengthen the account and demonstrate varying levels of economic impact. Relevant geographical terminology and concepts help to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format. | 9-10 |
| A concise identification of a developed country and a less develop country or region is made. In relation to a clearly identified type of natural hazard, an account is given of the various reasons for the differences in the level of economic impact of a natural hazard between the areas identified. (A good response will describe a number of potential economic impacts for the particular locations and type of natural hazard being discussed.) A range of appropriate supporting evidence and examples are used to develop and strengthen the account and demonstrate varying levels of economic impact. Relevant geographical terminology and concepts help to develop a cohesive and answer, with well-developed sentences and paragraphs in an extended answer format. | 6-8 |
| Might identify a developed country and a less develop country or region, or may vaguely refer to the concepts. In relation to a natural hazard, a limited account is given of the reasons for the differences in the level of economic impact of a natural hazard between the areas identified. (Response will describe one or two potential economic impacts for the particular locations and natural hazard being discussed **or** will describe the impacts in some detail but fail to account for the variations at all.) Limited evidence is used to support statements and generalisations with little reference to varying levels of economic impact. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-5 |
| Might identify a developed country and a less develop country or region, or may vaguely refer to the concepts, or not at all. In relation to a natural hazard, a very limited, or no, account is given of the reasons for the differences in the level of economic impact of a natural hazard. (Response may describe one or two potential economic impacts for the natural hazard being discussed **or** will very briefly describe the impacts but fail to account for the variations at all.) Insufficient evidence is used to support statements and generalisations with no reference to varying levels of economic impact. 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. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **12** |

**PART B: Depth Study 2 Answer either Question 34 or Question 35 20% (20 Marks)**

**Question 34 (20 marks)**

(a) Describe the magnitude, duration, frequency and scale of spatial impact of an ecological hazard you have studied.

(8 marks)

**Syllabus:**

The magnitude, duration, frequency, probability and scale of spatial impact of the hazard

**Key word:**

Describe: provide characteristics and features

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A detailed and comprehensive description is given and accurate information is provided for all four of the factors listed in relation to an ecological hazard. 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. | 7-8 |
| An appropriate description is given and more general, but accurate information is provided for all four of the factors listed in relation to an ecological hazard. 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. | 5-6 |
| A limited description is given and some generalised information is provided for at least three of the factors listed in relation to an ecological hazard. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-4 |
| A very basic description is given and little information is provided for at least two of the factors listed in relation to an ecological hazard. Alternatively, very brief descriptions (1 sentence each could be given for all four factors). Insufficient evidence is presented in the description. 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. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **8** |

**Question 34 (20 marks)**

(b) Assess the extent to which human activities and structures can intensify the impacts of an ecological hazard you have studied.

(12 marks

**Syllabus:**

The means by which the activities of people can intensify the impacts of the hazard.

**Key word:**

Assess: make a judgement of value, quality, outcomes, results or size.

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

Students will need to clearly identify and discuss the nature of their chosen ecological hazard.

A good answer will demonstrate understanding of the phrase ‘intensify the impacts of’ in relation to their chosen ecological hazard.

**Human activities and structures** may include the following where relevant:

* Nature and location of human settlements - Materials used in construction of associated buildings and structures. Construction by-laws. Density of human settlement. Increasing population density and urbanisation. Location in relation to aspects of the physical environment and climate characteristics that may intensify the impact of the hazard.
* The quality of infrastructure and utility supplies – water supply infrastructure (collection, storage, distribution), water treatment, sewage infrastructure/plants, storm water drainage, transport infrastructure, power supply infrastructure.
* The quality of emergency response and medical infrastructure, knowledge and supplies.
* General population’s education and knowledge of potential causes and symptoms associated with the ecological hazard. Understanding of hygiene, food handling and safe work practices that would limit the spread and impact of the chosen hazard.
* The movement of foreign nationals, tourists and workers
* Activities associated with and the nature of agricultural practices – such as clearing of land, irrigation infrastructure and practices, alteration to microclimate, use of chemicals, introduction of foreign species, which may act as vectors.
* Activities associated with and the nature of mineral extraction practices – such as clearing of land, water management practices, alteration to microclimate, use of chemicals,
* Management practices associated with forest reserves and bushland areas.
* Others not mentioned may be relevant to specific ecological hazards.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| A clear and concise description is given relating to the type and nature of the ecological hazard being discussed. In an integrated format, detailed information about how human activities and structures can intensify the impact of an ecological hazard is presented, where both the human activities and structures plus the intensity and nature of the impacts are comprehensively assessed. A wide range of appropriate supporting evidence is 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. | 11-12 |
| A concise description is given relating to the type and nature of the ecological hazard being discussed. In an integrated format, detailed information about how human activities and structures can intensify the impact of an ecological hazard is presented, where both the human activities and structures plus the intensity of the impacts are assessed. A range of appropriate supporting evidence is used to develop and strengthen the discussion. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer. | 9-10 |
| A description is given relating to the type and nature of the ecological hazard being discussed. In an integrated format, information about how human activities and structures can intensify the impact of an ecological hazard is presented. Some assessment of both the human activities and structures plus the intensity of the impacts are made. Some supporting evidence is used to develop and strengthen the discussion. Geographical terminology and concepts are applied to construct a response, which shows some detail, but may have difficulty articulating ideas. | 6-8 |
| A limited description is given relating to the type and nature of the ecological hazard being discussed. Information, lacking in detail, about how human activities and structures can intensify the impact of an ecological hazard is presented. Little assessment of the human activities and structures plus the intensity of the impacts are made. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-5 |
| A very limited, if any, description is given relating to the type and nature of the ecological hazard being discussed. Answer may just refer to ecological hazards in general. Very limited Information about how human activities and structures can intensify the impact of an ecological hazard is presented. Little or no assessment of the human activities and structures plus the intensity of the impacts are made. Insufficient evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts, and poor literacy skills may contribute to a response that is difficult to understand. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **12** |

**Question 35 (20 marks)**

1. Describe the nature of the risks to be managed for an ecological hazard you have studied.

(8 marks)

**Syllabus:**

Students study the hazard in order to investigate:

* the nature of the risks to be managed, such as:
* loss of property/life
* effects on infrastructure, jobs and the economy
* the impact on physical and mental health

**Key word:**

Describe: provide characteristics and features.

**Glossary:**

Risk: level of exposure to injury or loss.

Risk Management: preparedness, mitigation and/or prevention of a natural or ecological hazard.

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question. Candidates will need to describe the typical risks associated with their chosen ecological hazard.

NOTE that the syllabus dot point says ‘such as’ therefore the list of examples is neither exclusive nor exhaustive. The way the word risk is used in this syllabus dot point appears to be equating risk with the nature of the potential impacts. As it is the second of a series of dot points introducing the ecological hazard, (lower order concepts), the emphasis is taken to be on the nature of the risks or potential impacts, rather than their actual management, (higher order concept), which is covered in the last two dot points of the depth study.

**Risks, or impacts, to be managed may include:**

Human health impacts such as: physical injury, nature of impacts on physical health including symptoms, spread of the disease – particularly if spread by a biological agent or human to human, containment of contaminant if a chemical agent of due to industrial accident, loss of life and impacts on mental health. Risks/impacts on human environment and structures such as: contamination of water supplies and/or food sources, loss of property, impact on agriculture, loss of employment, jobs, and income and wider associated impacts on the economy. There may be specific environment impacts associated with specific ecological hazards.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Clearly identifies an ecological hazard and describes the concept of risk as related to this hazard. A detailed and comprehensive description is given and accurate information is provided on the types of risks associated with the given ecological hazard. 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. | 7-8 |
| Identifies an ecological hazard and describes the concept of risk as related to this hazard. An appropriate description is given and more general, but accurate information is provided on the types of risks associated with the given ecological hazard. 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. | 5-6 |
| Identifies an ecological hazard. Describe the concept of risk in part. A limited description is given and some generalised information is provided on the types of risks associated with the given ecological hazard. Limited evidence is used to support statements and generalisations. There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-4 |
| May talk about ecological hazards in general terms. A very basic description is given and little information is provided on the types of risks associated with a given ecological hazard. 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. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **8** |

**Question 35 (20 marks)**

1. Identify **two (2)** groups of stakeholders affected by an ecological hazard and explain

their values and viewpoints on adaptation to future hazard events.

(12 marks)

**Syllabus:**

The stakeholders affected by the hazard and their values and viewpoints on recovery and adaptation to future hazards in terms of modifying:

* human vulnerability (susceptibility to future loss)
* loss burden (cost of loss mitigation and **adaptation**)

**Key word:**

Identify: recognise and name.

Explain: relate cause and effect; make the relationships between things evident; provide why and/or how.

**Glossary:**

Stakeholders: a group or organisation that has interest or concern in an event, process or activity.

Values: a judgement of what is important to an individual or group in a given situation. Important beliefs or ideals shared by a group about what are good, bad or desirable outcomes.

Viewpoints: a way of looking at or thinking about something.

Adaptation: alteration or adjustment in response to a changed environment

**Teacher Notes:**

Due to the scope of depth studies that can be used in this unit, the teacher will have to use their discretion when deciding if the student’s answer supports the question.

**Stakeholders:** Students will need to identify and name **two (2)** different stakeholder groups, along with a brief description of who they are, what they do and their nature of their stake in the scenario. An extremely strong case would have to be presented by the candidate to accept an individual as a stakeholder. Terms such as ‘the residents’ and ‘the citizens’ are also generally accepted as too vague, as opinions can vary throughout such broad groups.

Whilst it would be preferable (and a better structured answer) to present two differing sets of values and viewpoints, the syllabus dot point and question does not explicitly require this.

Examples of stakeholders could include:

* local aid workers
* international aid workers and agencies
* environmental groups and agencies
* village council
* local governments and councils
* regional, state and federal governments and departments
* United Nations agencies
* Doctors Without Borders
* Occupational related groups, e.g. local farmers, mine owners, utility suppliers
* Others as relevant to specific ecological hazard studied

**Values and Viewpoints:** In outlining values and viewpoints candidates should state what the stakeholder groups role in, or connection to the affected area is. Are they local to the area, are they involved or connected on a permanent or temporary basis, is their presence permanent or transitory?

Discussion should include their value and viewpoints on a number of adaptation strategies that could be or are being applied in response to the ecological hazard being examined. A clear understanding of the meaning of adaptation in response to the ecological hazard should be demonstrated. More than one adaptation measure should be referred to.

Another way of looking at stakeholders values and viewpoints is to outline whether the stakeholders’ values and viewpoints in regard to adaptation can be classified as *proactive*, *reactive* or *fatalistic*. Whether candidates refer to these terms will be a reflection on the approach taken in the classroom.

**Marking Key:**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| Identifies **two (2)** different stakeholder groups and an ecological hazard they are affected by. Thorough descriptions of the nature of their role and stake are provided. A comprehensive explanation of the values and viewpoints of each stakeholder group in relation to a number of adaptations to future occurrences of the ecological hazard is given. Nature of the adaptive measures is clearly explained. A wide range of appropriate supporting evidence is used to develop and strengthen the explanation. 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. | 11-12 |
| Identifies **two (2)** different stakeholder groups and an ecological hazard they are affected by. Descriptions of the nature of their role and stake are provided. A concise explanation of the values and viewpoints of each stakeholder in relation to more than one adaptation to future occurrences of the ecological hazard is given. Nature of the adaptive measures is clear. A range of supporting evidence is used to develop and expand the explanation. The accurate use of relevant geographical terminology and concepts helps to develop a cohesive and detailed answer, with well-developed sentences and paragraphs in an extended answer format. | 9-10 |
| Identifies **two (2)** different stakeholder groups and an ecological hazard they are affected by. A basic description of the nature of their role and stake is provided. A generalised explanation of the values and viewpoints of the stakeholders in relation to adaption to future occurrences of the ecological hazard is given. Nature of adaptive measures is not clearly stated. Some supporting evidence is used to develop the explanation. Geographical terminology and concepts are applied to construct a response which shows some detail, but may have difficulty articulating ideas | 6-8 |
| May not identify **two (2)** different types of stakeholders. Very limited descriptions of their role and stake are given. Limited explanation of the values and viewpoints of the stakeholders in relation to adaption to future occurrences of an ecological hazard is given. Limited evidence is used to support statements and generalisations There is limited use of geographical terminology and concepts in a largely unstructured response. | 3-5 |
| May not identify **two (2)** different types of stakeholders. Non-existent descriptions of their role and stake are given. A type of ecological hazard not identified. Insufficient information is presented in their explanation. There is limited use of geographical terminology and concepts and poor literacy skills may contribute to a response that is difficult to understand. | 1-2 |
| No relevant attempt. | 0 |
| **TOTAL** | **12** |

**END OF QUESTIONS**