**G1**

**Q.1** **(a)** **Use Figure 1 to describe the patterns of ice duration on Lake Mendota.**
Theme 1.2 [5]

The question is looking for the ability to identify patterns that indicate climate change at a variety of scales. There is a general decrease in the duration of ice from 1852 to 2007 whilst at a shorter scale there are fluctuations. Allow two marks for the application of this concept to the graph. Marks should be allocated to the use of the graph in the form of extraction of data such as duration of fluctuations, magnitude of fluctuations, groups of fluctuations, and data for general trends. Allow one mark for trend and 1 mark for exemplar. 1 mark for information from the box.

**(b)** **Explain how one type of extreme weather event has had an impact on human activity.** Theme 1.4 [10]

The question is looking for an understanding of the weather event and impact on human activity – not looking for the causes of the extreme weather event. Most answers will address the question with reference to cyclones or drought but be prepared to credit other events that can be reasonably linked to climate change – extreme snowfall, periods of low temperature, rainfall events. The focus of the question is on the short term rather than long term climate change.

Answers may contain an element that is a description of the characteristics of the extreme weather event and this can be given credit as it is setting the scene for the impacts on human activity. This is however not a prerequisite for a Level 3 answer as some may give great detail on impacts. The concept of human activity is broad and any valid impact relative to the identified event should be given credit. Impacts may focus on demographic, economic and social although many candidates may not classify their responses in such a manner. Common responses will see an event as having an impact on mortality, migration, food production transport, aid, energy consumption etc. There will be other impacts that may be valid.

The approach may focus on impacts at a regional scale e.g. drought in Australia, heat wave in France, floods in Tewkesbury. The other main approach will be to look at an event such as hurricanes and illustrate from around the world.

| Level 3 8-10 marks | Detailed and developed understanding of impacts produced by the weather event. Knowledge of the characteristics of the weather event. Good development of examples. |
|---|---|
| Level 2 4-7 marks | Developed knowledge of the characteristics of the weather event. Some understanding of impacts produced by the weather event. Examples are evident and enhance the explanation. |
| Level 1 0-3marks | Superficial knowledge of the characteristics of the weather event. Superficial understanding of impacts produced by the weather event. Little use of examples. |

**(c)** **Outline strategies used to address climate change:**

**Either, by governments**
**Or, by pressure groups and/or individuals**                    Theme 1.5 [10]

The question is looking for the identification and description of the response as well an explanation of how it will combat climate change.

The analysis of government strategies may involve a variety of scales from parish council to the European Union. Do not expect all levels and many answers will only address one level and may look at one example e.g. Swansea, Gwynedd, Cornwall, Italy. The measures that are examined will therefore be varied.  There may be comment on responses that look to decrease the emission of greenhouse gases such as financial measures (e.g. car taxes), the improvement of public transport, advertising to raise awareness, involvement in international agreements etc. Other responses may look at the methods used to combat the effects such flood barriers, land use planning and training of emergency services. There will be other strategies so be prepared to credit if they are valid.

Strategies carried out by individuals will probably be centred on lifestyle choices such as switching to renewable energy, transport options, reduce energy use, energy efficient white goods, recycling, composting and buy food from local producers to save food miles. There will be other lifestyle strategies so be prepared to credit if they are valid. There may also be candidates who make comment on the individual acting as part of a pressure group and these should be given credit as long as it has an individual focus. Where pressure groups such as Greenpeace and Campaign against Climate Change are addressed there may be comment on how they raise public awareness by their advertising, campaigns, media work and demonstrations. There may also be comment on the lobbying powers of the groups in the political arena.

| Level 3 8-10 marks | Knowledge and discussion is detailed and developed. Good use of examples. |
|---|---|
| Level 2 4-7 marks | Some depth to knowledge of strategies and how they can be applied to combat global warming. Examples are evident. |
| Level 1 0-3marks | Superficial knowledge of strategies and how they can be applied to combat global warming. Little use of examples. |

**Q.2** **(a)** **Outline the factors shown in Figure 2 that may have influenced the number of deaths caused by recent earthquakes in the eastern Mediterranean.** Theme 2.2 [5]

The question is looking for the ability to link the number of deaths to population density and the position of the fault. In general the higher numbers of deaths occur where there are high concentrations of population, proximity to cities of 500,000 inhabitants, coastal locations and to the fault. There is one possible anomaly in the centre of Anatolia and in Thessaloniki. Allow two marks for application of these concepts to the map. 1 mark per valid comment and 1 mark for development from the resource.

**(b)** **Explain the tectonic processes that occur at destructive plate margins.**
Theme 2.1 [10]

The question is looking for an understanding of the processes operating at destructive boundaries. Answers need to display a knowledge and understanding of the internal forces that generate plate movement. At destructive boundaries credit should be given for comments that identify the movement of plates towards each other and the subsequent subduction of one of the plates. Some candidates may recognise different types of destructive margin – ocean/ocean, ocean/continent and continent/continent– and this should be credited. Some answers may give depth in this element but others may link the movement of plates to the production of volcanoes and/or earthquakes. Allow credit for this breadth of approach. Allow full marks for an approach that constructs the answer through a detailed annotation(s). Allow reference to extrusive tectonic **processes** such as liquefaction, lava flows etc.

| Level 3 8-10 marks | Detailed understanding of process. Good examples. |
|---|---|
| Level 2 4-7 marks | Understanding of process has some depth. Examples are evident and enhance the explanation. |
| Level 1 0-3marks | Superficial understanding of process. Little use of examples. |

**(c)** **Explain why some groups of people perceive tectonics hazards negatively**. Theme 2.3 **[10]**

The question is looking for an understanding of the nature of the hazards and the ability to apply this to the views of various groups.

Hazards produce a variety of impacts that can be perceived as negative. These can be classified into categories such as demographic, economic, social and environmental – do not require candidates to approach their answer in this manner but some will. There may be reference to the impact of volcanoes or earthquakes on mortality, migration, health, transport, economics, stress and landforms. Be prepared to credit reference to other valid impacts. Answers may be approached from a regional view or illustrated with reference to a variety of examples from all over the world.

Question is looking for the identification and analysis of the perception of groups. These may be seen most commonly as the inhabitants of an area and comment may be implicit in the analysis of the impacts of tectonic hazards. Other groups that maybe examined are government, rescue services and aid agencies – be prepared to accept other valid groups. Comment could be on the organisation required to combat the hazard or its effects and funds that are used in response to the hazard.

| Level 3<br>8-10 marks | Detailed development of evidence.<br>Detailed understanding of process and integrated link to hazard produced.<br>Good examples.<br>Groups and perception integrated into answer. |
|---|---|
| Level 2<br>4-7 marks | Some development of evidence for view of hazard.<br>Understanding of process has some depth and is well linked to the hazard.<br>Examples are evident and enhance the explanation.<br>Groups identified with link to perception. Max if answers lack balance in terms of emphasis on groups, |
| Level 1<br>0-3marks | Limited/superficial evidence for view of hazard.<br>Superficial understanding of processes.<br>Little use of examples.<br>Superficial reference to groups or perception. |

**Q.3** **(a)** **Describe the predicted impact of the increasing severity of floods on commercial properties in Elgin shown in Figure 3.** [7]

The table displays a number of patterns that can be identified:
- Increase in number of properties flooded with more severe flooding
- Manufacturing the only category flooded in 1in5 whist others affected by more severe floods
- Retail biggest group after 1 in 5
- Manufacturing always important group
- Retail grows fastest
- Utilities consistently the lowest group
- There may be other valid patterns that are identified by candidates and these should be given credit.

| Level 3 6-7 marks | Shows clear and detailed identification and description of patterns. Extensive use of data and locations. |
|---|---|
| Level 2 3-5 marks | Shows some ability to identify and describe patterns. Uses some information from graph in form of data and locations. Period by period account. |
| Level 1 0-2marks | Limited ability to identify and describe patterns. |

**(b)** **Describe two graphical techniques that could be used to represent the data in Figure 3. Justify your choice** [8]

There are a number of graphical methods that are suitable to represent this type of data

For the change in total candidates will probably suggest a line graph and justify the choice by saying that the line shows change and that the angle of the line is able to indicate rate of change.

For the grouped data candidates may examine bar charts, cumulative bars and pie charts and justify these with comment concerning the ability of such graphs to display the relative importance of the groups and be able to compare this at each return period. Some candidates may look at graphs that show change of relative importance of different types of commercial properties over time. Be prepared to give credit to answers that use diagrams to show techniques rather than description in text format.

Justification of techniques chosen may be the same for each method chosen. This may point out issues such as ease of construction, clarity, ability to show change over time and identification of individual groups of commercial properties. Be prepared to credit other valid justification.

Some candidates may try to combine the change in total and relative importance by referring to proportional pie charts.

| Level 3<br>6-8 marks | Good knowledge of graphical methods.<br>Developed ability to apply knowledge of graphical methods to information shown in table.<br>Developed justification. |
|---|---|
| Level 2<br>3-5 marks | Some knowledge of graphical methods.<br>Some ability to apply knowledge of graphical methods to information shown in table.<br>Some justification. Lacks balance. |
| Level 1<br>0-2 marks | Limited knowledge of graphical methods.<br>Limited ability to apply knowledge of graphical methods to information shown in table.<br>Superficial justification. |

**(c)** **Discuss the main conclusions of an investigation into a changing physical environment that you have undertaken.**

*You should state clearly the question you have investigated.* [10]

The content of the answer will vary greatly as individual centres will engage in a wide variety of investigation. However the content should have a link to the substance of the specification.

The question is looking for the main conclusions and the better answers will refer the outcomes of the investigation to the original question, issue or hypothesis set by the candidate or centre. These responses may comment on patterns that were identified, processes that were proved, relationships that were recognised or characteristics that were distinguished. Other valid conclusions should be credited. A detailed description of the outcomes of the investigation will be enough to gain credit to the top of Level 2. To gain access to Level 3 the description must be more analytical. Credit considerations about possibilities for further investigation.

| Level 3<br>8-10 marks | Detailed and analytical description of conclusions. |
|---|---|
| Level 2<br>4-7 marks | Sound description of outcomes with some attempt to link to the original question, issue hypothesis. |
| Level 1<br>0-3marks | Limited description of outcomes. |

|  | Knowledge and Understanding | Application | Skills |  |
|---|---|---|---|---|
| **Question 1** |  |  |  |  |
| **a** |  | 2 | 3 | 5 |
| **b** | 8 | 2 |  | 10 |
| **c** | 7 | 3 |  | 10 |
|  | 15 | 7 | 3 | 25 |
| **Question 2** |  |  |  |  |
| **a** |  | 2 | 3 | 5 |
| **b** | 8 | 2 |  | 10 |
| **c** | 7 | 3 |  | 10 |
|  | 15 | 7 | 3 | 25 |
| **Question 3** |  |  |  |  |
| **a** |  |  | 7 | 7 |
| **b** | 4 | 4 |  | 8 |
| **c** | 2 |  | 8 | 10 |
|  | 6 | 4 | 15 |  |