

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Pre-U Certificate

MARK SCHEME for the May/June 2014 series

9768 GEOGRAPHY

9768/01

Paper 1 (Geographical Issues), maximum raw mark 105

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Page 2	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

SECTION A

Tectonic Hazards

- 1 (a) Define the term *volcanic hot spot*. [2]

An area of increased heat flow that usually leads to volcanic activity; usually intra-plate in location but they do occur at spreading centres such as Iceland. One mark for location.

- (b) Fig. 1 shows the global distribution of volcanic hot spots, the major tectonic plates and type of plate boundaries.

Describe the relationship between volcanic hot spots, plates and plate boundaries. [4]

The fact that they do not occur at converging plate boundaries needs to be pointed out. Their main locations are intra-plate, especially the Pacific plate and some on the African plate. The majority occur within the plates, although there are a number situated along divergent plate boundaries such as Iceland and the Azores on the mid-Atlantic Ridge. There is a complete absence of hot spots on the South American and Eurasian plates. The discussion should not be restricted to just one part of the globe.

- (c) Explain, with the aid of a diagram, the formation of the volcanic islands of Hawaii. [5]

There needs to be an awareness of the fact that hot spots remain in place but that the Pacific plate is moving over the hot spot. This means that as the plate moves, volcanic activity ceases at one island location and starts producing a new island. There is, thus, an age progression of the islands. This means that volcanoes grow and decay. The magma erupted is basaltic in nature. The diagram should indicate the upward moving magma plume and the movement of the plate.

Candidates show:

L3 an appreciation of the movement of the Pacific Plate over the hot spot and the creation of the volcano. There should be an indication of the type of magma. The diagram will be accurate and show all the main elements. [4–5]

L2 an incomplete understanding of the nature of hot spots but with some idea of volcanic activity and the movement of the plate. The diagram will be lacking in some detail and accuracy. The nature of the magma might be missing. [2–3]

L1 little understanding of the nature of hot spots and volcanic evolution with a poor or no diagram. [0–1]

- (d) Discuss the extent to which volcanic hazards can be managed by effective planning during and after the event. [9]

This will involve discussion of the management of the eruption as it occurs. The response to the different types of volcanic eruption and hazards will need to be examined, such as diversion of lava flows and the management of volcanic ash, and mitigation procedures such as evacuation should be examined. The fact that some hazards, such as pyroclastic flows,

Page 3	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

cannot be managed should be discussed. After the event procedures could include development of new infrastructure and buildings and damage repair. It could also include installing more accurate and sophisticated prediction techniques if these were shown to be inadequate.

Candidates show:

- L3** a good knowledge of planning aspects both during and after the eruption with an assessment using specific examples. A reasoned assessment and examination of the varied hazards is necessary to obtain a mark at this level. **[8–9]**
- L2** some knowledge of planning aspects but this may be unbalanced with respect to during and after procedures. The assessment aspect will be weaker and the use of examples might be limited. **[5–7]**
- L1** a limited knowledge and understanding with poor assessment. **[0–4]**

Hazardous Weather

- 2 (a) Name one primary and one secondary hazard associated with tropical cyclones. [2]**

Primary hazards include wind damage, flooding from rainfall and storm surges. Secondary hazards include landslides, soil erosion, diseases, flooded fields especially with salt water.

- (b) Figs 2A and 2B show the frequency of severe and non-severe tropical cyclones in Australia for the period 1970–2005.**

Describe the frequency of severe and non-severe tropical cyclones shown in Fig. 2. [4]

There seems to be a decrease in the number of non-severe storms and a partial cyclic behaviour of severe storms. Generally the years with a large number of non-severe cyclones correspond with fewer severe storms. A balanced account is necessary.

- (c) Explain why fewer than 10% of tropical storms become hurricanes. [5]**

Explanation will be in terms of the factors needed for hurricane development. This usually means warm sea surface temperatures to feed the uplift that creates hurricanes. The general climatic characteristics of the area are also important. The distribution of land and sea will also be significant, as a large area of sea is necessary for the efficient formation of a hurricane. If these factors are not present then tropical storms will simply decay and not develop into hurricanes.

Candidates show:

- L3** a thorough understanding of the formation of hurricanes including the role of latent heat, and the reasons for decay and not development. **[4–5]**
- L2** a somewhat limited understanding of hurricane formation, with the role of latent heat often ignored. There may only be limited reference to decay. **[2–3]**
- L1** little understanding of hurricane development. **[0–1]**

Page 4	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

- (d) **Assess the extent to which the impacts of one type of hazardous weather can be managed successfully.** [9]

The key to a good answer is the assessment. This can only be achieved by using relevant examples. A range of hazardous weather types is possible. The detail will depend on the hazardous weather chosen but should discuss the hazards at different scales. The three main components; management to modify the risk, involving monitoring, prediction and prevention; modifying the hazard, such as preparation, protection and reduction of impacts; and modifying the loss. It is not expected that all three components will be examined with the same detail but there should be recognition of the main components of management.

Candidates show:

- L3** an authoritative knowledge of the specific weather hazards chosen and an ability to provide a realistic assessment of successful management strategies with relevant examples. [8–9]
- L2** a more limited knowledge of the weather hazard chosen, with the assessment being only partial and probably limited in the components listed above. Specific examples may be limited. [5–7]
- L1** very limited knowledge of a specific weather hazard with little or no assessment. [0–4]

Hydrological Hazards

- 3 (a) Define the term *throughflow*.** [2]

The movement of infiltrated water through the soil in a downslope direction.

- (b) Fig. 3 shows the extent of flooding in Carlisle, England, in January 2005. Describe the pattern of flooding shown on Fig. 3.** [4]

The extent of flooded buildings should be noted as well as the number of roads affected. Most vulnerable buildings, such as schools and hospital seem unaffected, but strategic buildings (Council Offices) and some critical infrastructure (Gas Works) have been affected.

- (c) Explain how soft engineering solutions can reduce river flooding.** [5]

This mainly concerns changes to catchment characteristics such as afforestation, changing agricultural practices. But can also include changes to building regulations, creating more drainable open space in urban areas and planting trees and other vegetation along river banks.

Page 5	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

Candidates show:

- L3** knowledge of a range of soft engineering techniques and their effectiveness. **[4–5]**
- L2** limited knowledge of changes to catchment characteristics, probably restricted to reforestation. May be a little unsure of the nature of soft engineering techniques. **[2–3]**
- L1** little understanding of the nature of soft engineering techniques and their effectiveness. **[0–1]**

(d) Assess the short and long term impacts of flooding. [9]

The short term impacts are the immediate effects of the flooding such as damage to property, disruption of infrastructure and loss of life and livestock. Longer term impacts are more related to secondary impacts such as effects on communications, agriculture, disease spread because of contaminated land and water. The impacts largely depend on the nature and scale of the flooding and the ability of authorities to deal with the issues generated. This might be related to the level of economic development of the countries affected.

Candidates show:

- L3** a good understanding of the scope of the question and are able to discuss both the nature of the effects and their short and long term impacts. Good assessment is needed. **[8–9]**
- L2** some understanding of the impacts of flooding but will probably lack the detailed knowledge to provide a thorough assessment of both short and long term impacts. **[5–7]**
- L1** little ability to differentiate short and long term impact and with little realistic **[0–4]**

Page 6	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

SECTION B

The Geography of Crime

- 4 (a) Define the term *environmental crime*. [2]

An illegal act which directly harms the environment.

- (b) Fig. 4 shows the total volume of oil spills by spill size for the USA for the period 1973 to 2004.

Describe the pattern of volume of oil spills above and below one million gallons, shown in Fig. 4. [4]

There seems to be little relationship between volume of spills over and below one million gallons. The large spills vary more annually and there is a general decrease in both over the years. The large spills cease in 1991.

- (c) Explain why the incidence of anti-social crime might be increasing. [5]

Increasing population numbers and densities, urbanisation and economic recession are all factors that might lead to anti-social crime. The nature of urban development might also be a factor. The better answers should point out that none of this is inevitable and may depend on local and national government policies.

Candidates show:

L3 good knowledge of the nature of anti-social crime and of the range of factors that might lead to an increase in anti-social crime but be aware that the increase might not be inevitable. [4–5]

L2 only a partial understanding of the nature of anti-social crime with a limited range of relevant factors [2–3]

L1 little knowledge of anti-social crime with a very limited number of relevant factors. [0–1]

- (d) Assess how the characteristics of the physical and built environment might promote vulnerability to crime. [9]

Answers must be careful not to appear too deterministic. That is why the assessment is a crucial component of this answer. A number of factors could be discussed such as building design and density, lack of street lighting, lack of surveillance cameras, easy access and escape routes. Remote rural areas, farms etc. may be especially vulnerable

Candidates show:

L3 a thorough understanding of the factors that might lead to greater vulnerability to crime and be able to provide a reasoned assessment of these characteristics. [8–9]

Page 7	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

L2 some understanding of the effect of environmental factors on crime vulnerability but the assessment will be somewhat limited. [5–7]

L1 little knowledge or understanding of environmental effects on crime vulnerability [0–4]

Health and Disease

5 (a) Define the term *attack rate* in relation to health and disease. [2]

The cumulative incidence of infection in a group of people observed over a period of time usually during an epidemic.

(b) Fig. 5 shows the global distribution of deaths from vector borne diseases for a year.

Describe the pattern shown in Fig. 5. [4]

Africa has high values in general with the exception of parts of North Africa. whereas South America has fewer deaths from vector-borne diseases. Most of south-east Asia has intermediate values whereas North America, Europe and the near East have minimal deaths. There needs to be a global coverage. Data needed for full marks.

(c) With reference to two named diseases, explain how they spread. [5]

A variety of factors can be brought into the answer and will depend on the chosen disease. Most major diseases depend on close personal contact in some way, either by aerosol or physical contact, although there are some exceptions such as industrial diseases. But these rarely spread through populations. Population demographics are important and include population density, structure and movement. Behaviour includes social habits as well as ease of movement and interaction. The detail will depend on the specific diseases chosen.

Candidates show:

L3 a good appreciation of the various factors affecting the spread of diseases using two appropriate diseases with a good balance between the two [4–5]

L2 an understanding of some of the factors but the answer might be unbalanced with respect to the diseases chosen. [2–3]

L1 limited understanding of the spread of disease and with inappropriate examples. [0–1]

(d) Assess the social and economic impacts of disease on countries at lower levels of development. [9]

There is much information on the link between diseases such as AIDS and malaria and economic development and productivity, especially those diseases that impact the working population. The social impacts on family life, orphaned children and unemployment are also well established. The detail will depend on the range of diseases discussed.

Page 8	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

Candidates show:

- L3** a thorough appreciation of the impacts of at least one major disease that affects lesser developed countries with sufficient knowledge of specific examples to be able to provide a concise assessment of the effects. **[8–9]**
- L2** some understanding of the relationship but may lack the specific examples to substantiate the argument. **[5–7]**
- L1** limited understanding of the issues with no relevant examples and little assessment. **[0–4]**

Spatial Inequality and Poverty

- 6 (a) Name two indicators that might be included in an overall measure of deprivation [2]**

Indicators include level of income, employment status, health deprivation and disability, education, skills and training, barriers to housing and services.

- (b) Fig. 6 shows the relationships between level of deprivation and mode of travel to school.**

Describe the nature of the relationships shown in Fig. 6. [4]

There is a relatively clear positive relationship between walking and deprivation. There appears to be no relationship or possibly a slightly negative relationship between deprivation and travel by public transport. However, there is a great inherent variability. Data extracted from the resource is needed for full marks.

- (c) Explain how political influences can affect levels of poverty and inequality at a regional scale. [5]**

Political influences can operate in a variety of ways. Regional investment policy can influence employment levels which may impact on both poverty and inequality. Political influence can be both national government policies and regional policies. Development of infrastructure can lead to economic development and the reduction in inequality at a regional scale.

Candidates show:

- L3** a good appreciation of the various ways in which political policies, both national and regional, may influence poverty and inequality. **[4–5]**
- L2** some understanding but limited in detail and range of issues. **[2–3]**
- L1** little understanding of political influences at the regional scale. **[0–1]**

Page 9	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

- (d) Examine the factors that may lead to the emergence of areas of multiple deprivation at a local scale. [9]

These are the same factors and indicators that might have been provided in (a) but a greater range is required with an explanation as to how they are significant. Also, there is the need to explain how these factors combine to produce a distinctive local spatial pattern with some assessment as to their relative significance. It is important that any examples used are clearly at the local scale.

Candidates show:

- L3** knowledge of a range of factors leading to multiple deprivation and the manner in which they interact with some assessment of their significance at a local scale. [8–9]
- L2** knowledge of a more limited range of factors with little comparison of their significance. [5–7]
- L1** very limited understanding of multiple deprivation and how this develops. [0–4]

SECTION C

Answer **one** question from this section

- 7 Geographical hazards are easy to identify but the risks they pose are more difficult to assess. How far do you agree with this statement?** [25]

Mark using Generic Mark scheme used for Paper 2 and 3.

Indicative content:

Candidates demonstrate an understanding of the difference between risk and hazards. Thus, many are aware that rivers flood and can be extremely hazardous but human perception of risk tends to be minimal and ill-informed. Risks are also related to accuracy of prediction and warning times. Thus, with volcanoes several false alarms might lead to an erroneous assessment of risks. The hazards of earthquakes and hurricanes are other relevant examples. The prediction of location and timing of earthquakes is difficult and public understanding of flood recurrent intervals can be minimal. Hurricanes are easy to track but it is difficult to predict landfall and the strength of the winds and amount of rainfall.

At lower levels, candidate show little appreciation of the concept of risk and are not able to equate this with the probability of an event of a particular magnitude occurring. A limited range of hazards will be discussed with only a very partial assessment. The conclusion will be speculative and not based on any sensible argument. The structure of the answer will be confused. At higher levels, candidates understand the nature of risk and are able to argue convincingly with a range of hazards with suitable examples. The answer will be well structured and the argument will be based on sensible, relevant and accurate examples. The conclusion will be reasoned and based on the evidence presented in the body of the answer.

Page 10	Mark Scheme	Syllabus	Paper
	Pre-U – May/June 2014	9768	01

8 Discuss the view that human activity is making the world a more dangerous place. [25]

Indicative content:

This question can be answered with respect to either geographical hazards or issues or both. Human activity also covers many aspects such as settling in hazardous areas and changes to the environment that might make it more dangerous. The spread of disease by global transport networks is one example. Urbanisation and increasing population densities, such as building on unsuitable land, such as hillsides in Rio de Janeiro, and the development of favelas, are all relevant issues. Building on floodplains would be another example. Candidates might suggest that human activity and the greenhouse effect is making atmospheric hazards more likely. The argument should be balanced by discussing situations where human activity is making the world safer, such as the development of vaccines, safer transport networks and better prediction of the nature, timing and effect of natural hazards.

At lower levels, candidates show a very limited understanding of the question and are unable to advance a rational argument. Answers will probably contain a limited range of examples with an unbalanced approach. The conclusion, if any, will be assertive rather than based on reasoned argument. At higher levels, candidates are able to discuss a variety of ways in which human activity is leading to increased hazards and issues. However, at this level, the better candidates could argue that increased knowledge, understanding and technology enable better prediction and mitigation procedures to be adopted. The key to answers at this level will be the range of examples and a realistic and balanced assessment. The conclusion will be related to the discussion in the main body of the answer.

9 To what extent is government action the most important way of managing the geographical issues present in an area you have studied? [25]

Indicative content:

Clearly there are some issues that are so major, such as flooding, that only government action is capable of tackling them. This will be true of other hazards such as earthquakes and hurricanes. But personal decision is also important. Individuals do not have to live on floodplains. Similarly, with respect to issues such as smoking and obesity, there is an element of personal choice, over and above government action. The issues could come from Section A or Section B or both sections and the area chosen can be from the local to the global scale. It is important that the argument involves discussion of the 'most' aspect in the question. It is not sufficient to simply assess situations where government has been unsuccessful.

At lower levels, candidates will have trouble interpreting the question and may interpret government action incorrectly. Answers will provide a limited range of issues and the detailed geography of the chosen area will be limited and inaccurate in some respects. The discussion may not be focused on the question and the conclusion will be limited, if present at all. At higher levels, candidates will have a firm understanding of the difference between government action and personal choice. A good variety of geographical issues will be discussed using a detailed account of the geography of the chosen area. The key to answers at this level will be the assessment of the command words 'to what extent' and 'most'. Thus, at this level, the argument will be carefully reasoned and structured and the conclusion will be based on the arguments presented in the answer.