



GEOGRAPHY

9768/03

Paper 3 Geographical Issues

May/June 2017

MARK SCHEME

Maximum Mark: 105

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2017 series for most Cambridge IGCSE[®], Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

Section A

Question	Answer	Marks
Tectonic Hazards		
1	Table 1 gives details of the magnitudes, on the Richter Scale, of selected Earthquakes, and the number of lives lost as a result of those earthquakes.	
1(a)	State <u>two</u> secondary hazards associated with earthquakes. A variety to choose from e.g. fire, landslides, soil liquefaction, disease, blocked communications, dam failures, tsunami, flooding and many more.	2
1(b)	Using Table 1, describe the relationships between earthquake magnitude and lives lost. There is a mixed group of relationships. There is some increase in lives lost with higher magnitude events but a number of anomalies such as Chile. The contrast between India and Iran is interesting. The one Christchurch earthquake also seems to be an anomaly,	4
1(c)	Suggest reasons for the relationships you have discussed in (b). It is clear that the magnitude of the earthquake is only one of several factors governing the loss of life. The most important factor seems to be the level of development of the country concerned and the preparedness for disasters of this nature. Comparison between Japan and Haiti is the obvious example of this. The Christchurch earthquake could also be discussed. Other factors could be depth of focus and nearness to the epicentre, rock type and incidence of secondary hazards. Only a few relevant ideas are necessary as it is only 5 marks. Candidates show: L3 A detailed, thorough and accurate appreciation of the data with a clear explanation of the relationships. [4–5] L2 Sound discussion of the relationships in the data but limited in the detail provided and lacking a sustained argument. [2–3] L1 Basic observation of the relationships in the data with little relevant explanation. [0–1]	5

Question	Answer	Marks
1(d)	<p>To what extent can the hazardous effects of earthquakes be minimised by the modification of buildings?</p> <p>Earthquake hazards are difficult to manage. The main hazards to buildings are caused by the shaking of the ground. Much will depend on the nature of the seismic waves whether compressional or tensional. Side by side movement is more difficult to manage than up and down movement. To counter ground shaking in earthquakes steps can be taken to strengthen buildings and protect public utilities. Retrofitting can be achieved in many ways. A variety of these measures needs to be discussed and an assessment made as to how successful this can be.</p> <p>Candidates show</p> <p>L3 A detailed evaluation of the relative success of modification techniques with respect to earthquakes. [8–9]</p> <p>L2 A sound evaluation of the relative success of modification techniques but with a partial assessment of their potential success. [5–7]</p> <p>L1 Little understanding and assessment of the different modification techniques. [0–4]</p>	9

Question	Answer	Marks
Meteorological hazards		
2	Fig. 1 shows the area of land that might be flooded as a result of storm surges of varying heights at Corpus Christi, Texas, USA.	
2(a)	State <u>two</u> ways that meteorological hazards may be classified. The syllabus lists scale, frequency, nature of the hazard (wind, precipitation, temperature) and intensity, damage caused.	2
2(b)	Using Fig.1, describe the pattern of areas of potential flooding of depth 1–2 metres. There is a general linear pattern parallel to the shoreline but also localised areas of potential flooding in the lower parts of the main river systems (creeks and estuaries) when they exit into the Gulf. Both of these main patterns are needed for full marks. .	4
2(c)	Briefly discuss the possible effect of climate change on the intensity of tropical cyclones. The explanation will be in terms of global warming and its effect on sea temperatures and the global circulation. This will require an understanding of the factors that lead to the formation of tropical cyclones. Candidates show L3 A detailed, thorough and accurate appreciation of the reasons for the possible increase and frequency of tropical cyclones. [4–5] L2 Sound discussion of the reasons for the possible increase in tropical cyclones but somewhat limited in understanding and lacking a sustained argument. [2–3] L1 Basic discussion of the nature of tropical cyclones with little relevant explanation. [0–1]	5

Question	Answer	Marks
2(d)	<p>Examine the ways that risk modification of <u>one</u> meteorological hazard can be adapted to deal with a possible increase in the intensity and frequency of the hazard.</p> <p>The answer will depend on which hazards are chosen although there will be many similarities in risk modification procedures. There are three generic elements that could be examined, namely prediction, prevention and mitigation. For Level 3 marks there should be consideration of at least two of these elements.</p> <p>Candidates show</p> <p>L3 A detailed analysis of the relevant modification procedures covering at least two elements noted above. [8–9]</p> <p>L2 A sound analysis of the modification procedures but limited in some respect. [5–7]</p> <p>L1 Little understanding of the different modification procedures that might be used. [0–4]</p>	9

Question	Answer	Marks
Hydrological hazards		
3	<p>Fig. 2A shows December 2013 rainfall as a percentage of the 1981–2010 December average for Great Britain.</p> <p>Fig. 2B shows January 2014 rainfall as a percentage of the 1981–2010 January average for Great Britain.</p>	
3(a)	<p>Define the hydrological term <i>throughflow</i>.</p> <p>The downslope movement of infiltrated water in the soil (1), parallel to the ground surface (1).</p>	2
3(b)	<p>Contrast the pattern of rainfall of greater than 200% of average shown on Fig. 2A with that shown on Fig. 2B.</p> <p>The most obvious pattern is that Scotland and the south of England received the high amounts in December with the rest of the country below this value especially eastern England. The pattern is generally reversed for January except that southern England still shows higher amounts but the area is larger. In January, there is still a small area in north east Scotland.</p>	4
3(c)	<p>With the aid of a diagram(s), briefly explain how rock type can affect the storm hydrograph of a drainage basin.</p> <p>Many will see rock type, in simple terms, of impermeable rocks leading to a flashier response due to surface runoff and permeable rocks leading to percolation and base flow. Better answers will examine a number of flows and stores and will realise that on most slopes there is a soil covering and that the water must infiltrate the soils before rock characteristics become important. The major role of impermeable rocks is to reduce percolation and induce throughflow and water saturation leading to saturated overland flow at the lower parts of the slopes.</p> <p>If no diagram – maximum 3 marks.</p> <p>Candidates show</p> <p>L3 A detailed, thorough and accurate appreciation of the influence of rock type on the storm hydrograph. [4–5]</p> <p>L2 Sound discussion of the relationships in the data but limited in the detail provided and lacking a sustained argument. [2–3]</p> <p>L1 Basic observation of the relationships in the data with little relevant explanation. [0–1]</p>	5

Question	Answer	Marks
3(d)	<p data-bbox="296 248 1262 282">How far can soft engineering solutions prevent rivers from flooding?</p> <p data-bbox="296 315 1302 613">Soft engineering prevention methods might include changing catchment land use e.g. afforestation and land use patterns. The assessment needs to be made with respect to how far such methods are successful with respect to other procedures such as hard engineering methods. They might argue that use of dams is the most successful measure as it allows the control of discharge. But even here prevention is not possible as reservoir capacity can be exceeded requiring the release of excess water into channels below the dam. It might be argued that catchment management is potentially the most successful as it prevents water reaching the rivers.</p> <p data-bbox="296 651 544 680">Candidates show</p> <p data-bbox="296 719 336 748">L3 A thorough explanation as to why rivers flood and a detailed evaluation of the relative success of soft engineering techniques used in relation to flood prevention. [8–9]</p> <p data-bbox="296 891 336 920">L2 A sound explanation as to why rivers flood and a solid evaluation of the relative success of soft engineering techniques used in relation to flood prevention. [5–7]</p> <p data-bbox="296 1059 336 1088">L1 Little explanation as to why rivers flood and limited assessment of the soft engineering techniques used in relation to flood prevention. [0–4]</p>	9

Question	Answer	Marks
Crime issues		
4	Fig. 3 shows crimes against property crimes in the USA for 2012.	
4(a)	<p>State <u>two</u> characteristics of the physical and built environment that may promote vulnerability to crime.</p> <p>The syllabus lists street layout and lighting, building design, height and density, presence of vegetation, amount of open space.</p>	2
4(b)	<p>Using Fig. 3, describe the variations in crimes against property.</p> <p>There are two components in the figure. The numbers and trends related to the different types of property crimes. The detail needn't be comprehensive although both elements should be covered.</p>	4
4(c)	<p>Outline some local scale initiatives to combat crime against property.</p> <p>The syllabus lists the concept of defensible space, removing the risk by improved design, target-hardening, mobilisation of communities and neighbourhood watch. There should be some discussion rather than a list.</p> <p>Candidates show:</p> <p>L3 A detailed, thorough and accurate appreciation of local scale initiatives. [4–5]</p> <p>L2 Sound appreciation of local scale initiatives but limited in the detail provided and lacking a sustained argument. [2–3]</p> <p>L1 Basic appreciation of local scale initiatives with little relevant explanation. [0–1]</p>	5
4(d)	<p>Assess the social impacts on communities of high levels of crime.</p> <p>Social impacts could include fear of crime, community suspicion, breakdown in relationships, depression which have an effect on employment, absenteeism at work and many others. The question asks for assessment so a comparison of the impacts is need to access the higher level marks.</p> <p>Candidates show</p> <p>L3 A detailed evaluation of the social impacts on communities of high criminal activity and are able to provide a reasoned assessment of the impacts. [8–9]</p> <p>L2 A sound evaluation of the social impacts on communities of high criminal activity but lacking in detail and reasoned assessment. [5–7]</p> <p>L1 Little understanding and assessment of the social impacts of high criminal activity. [0–4]</p>	9

Question	Answer	Marks
Health issues		
5	Fig. 4 shows changes in life expectancy 1990–2012 for a selection of world regions.	
5(a)	<p>Define the term <i>life expectancy</i>.</p> <p>The average number of years that an individual or group of individuals (1) can be expected to live (1).</p>	2
5(b)	<p>Using Fig. 4, describe the variations in life expectancy.</p> <p>All regions show an increase in life expectancy but some more than others. Also, some started from a lower life expectancy. Thus, Southeast Asia and Africa show the greatest increase in years and in percentage increase. Europe and North America show the smallest increase in age. Answers should describe the main changes as well as actual ages using data from the resource.</p>	4
5(c)	<p>Briefly explain <u>two</u> reasons why life expectancy is increasing in many countries at lower levels of development.</p> <p>Any relevant explanatory factors may be credited, Including:</p> <ul style="list-style-type: none"> • Economic, e.g. decrease in poverty leading to improved diet and housing; employment in secondary and tertiary sector brings higher standard of living; • Social/cultural e.g. increased literacy, improved education; • Political e.g. investment in health care, improved food supply, investment in clean water and sanitation; pursuit of Millennium Development Goals. <p>Candidates show:</p> <p>L3 A detailed, thorough and accurate appreciation of factors influencing life expectancy with a clear explanation with reference to countries at lower levels of development. [4–5]</p> <p>L2 Sound appreciation of factors influencing life expectancy, limited in the detail provided and lacking a sustained argument. [2–3]</p> <p>L1 Basic observation of the factors influencing life expectancy with little relevant explanation. [0–1]</p>	5

Question	Answer	Marks
5(d)	<p>'International migration makes it more difficult to control the spread of disease.'</p> <p>Briefly discuss the validity of this statement.</p> <p>There is a combination of increased numbers, making it more difficult to control, and the difficulty of monitoring the characteristics of the migrants especially the increased number from areas where many diseases are endemic. The efficiency of transport also means that many individuals might have migrated before a disease epidemic has been appreciated.</p> <p>Candidates show</p> <p>L3 A thorough explanation as to why the increase in international migration has made it more difficult to control the spread of disease with a detailed evaluation of the statement. [8–9]</p> <p>L2 A sound explanation and a solid evaluation of the statement. [5–7]</p> <p>L1 Little explanation of the possible relationships between international migration and the spread of disease and a limited evaluation of the statement. [0–4]</p>	9

Question	Answer	Marks
Spatial inequality and poverty issues		
6	Fig. 5 shows poverty rates for regions of the USA between 1992 and 2012.	
6(a)	What is meant by the term <i>social exclusion</i>? Exclusion from the prevalent social systems (1) and rights, privileges. (1).	2
6(b)	Using Fig. 5, compare and contrast the trend in poverty rates for the South and the Midwest. The South has a generally higher rate than the Midwest and after 2000 the trends are very similar except for the different values. However, the Midwest trend rises sharply after 2000. Thus the overall trends and the peaks and troughs are very similar but with slightly variable absolute values. That for the South is markedly different although the trend comes into alignment at 1999. Data values should be used to illustrate the trends. If no data, maximum 3 marks.	4
6(c)	Briefly discuss why the poverty trap is difficult to resolve. Poverty tends to be reinforced from generation to generation, thus it is difficult for the poor to break out of the poverty trap. Lack of education means it is difficult to obtain well paid jobs thus exacerbating poor living conditions with positive feedback reinforcing the issues. It is important to see it as a vicious cycle. Candidates show: L3 An appreciation of the poverty trap with a clear explanation as to why the poverty trap is difficult to resolve. [4–5] L2 Some appreciation of the nature of the poverty trap with a sound explanation as to why the poverty trap is difficult to resolve. [2–3] L1 Little appreciation of the nature of the poverty trap with an inability to provide a relevant explanation as to why the poverty trap is difficult to resolve. [0–1]	5

Question	Answer	Marks
6(d)	<p>Assess how either Rostovian or neo-Marxists theories help in understanding unequal global development.</p> <p>Whichever one of the theories is chosen, the knowledge and understanding needs to relate to an understanding of global development and ultimately the development gap, as the two theories go some way to explaining why the gap has developed and how it might change in the future. The assessment implies that a critical analysis of the theories is required. Even though just one theory is taken as the main discussion it will be necessary to consider other theories in order to assess the merits of the chosen theory.</p> <p>Candidates show:</p> <p>L3 A thorough knowledge of the chosen ‘model’ with a reasoned assessment as to how it helps in understanding unequal global development [8–9]</p> <p>L2 Some knowledge of the chosen ‘model’ but with a limited assessment as to how it helps in understanding unequal global development. [5–7]</p> <p>L1 Little knowledge of the chosen ‘model’ and no assessment as to how it helps in understanding unequal global development. [0–4]</p>	9

SECTION CAnswer **one** question from this section

Question	Answer	Marks
7	<p>Discuss the view that vulnerability to geographical hazards is related to the level of development of the area concerned.</p> <p>Indicative content</p> <p>The question requires knowledge and understanding of more than one geographical hazard and an understanding of the nature of vulnerability. One would expect some definition of vulnerability and how it might be related to the level of development of the areas/countries used as examples.</p> <p>At lower levels the range of hazards discussed will be limited and the lack of knowledge of specific examples will limit the assessment. The question will be understood weakly and may only be addressed slightly. There will be a lack of clarity in the organisation and the conclusion will be weak, simply asserted or maybe absent completely. At higher levels, the range of hazards will be impressive with a good appreciation of specific examples. The discussion will be wide-ranging with excellent exemplification. The arguments will be logical, well founded and will show a high level of insight.</p>	25

Question	Answer	Marks
8	<p>‘Geographical issues are becoming more numerous and more serious.’</p> <p>Discuss the validity of this statement with respect to an area you have studied.</p> <p>Indicative content</p> <p>Much will depend on the level of knowledge and understanding of the area studied. This area can be at a variety of spatial scales. The emphasis is on the time dimension and the interpretation of the term ‘problematical.’ The question implies that more than one issue should be discussed but not necessarily with a similar amount of detail.</p> <p>At lower levels, the detail concerning the specific area may be limited and inaccurate in some respects with very little realistic assessment. The question will be addressed only partially and the answer will be badly organised. The analysis may be based on limited exemplification, some of which may be irrelevant or inaccurate. The conclusion may be absent or simply asserted. At higher levels, the candidate will demonstrate a thorough knowledge of the chosen area and a good understanding of the nature of the issues. The assessment will be based on reasoned argument using sound geographical knowledge. The exemplification will be detailed and relevant and will be used in a meaningful way to substantiate the arguments presented. The conclusion will show a high level of insight and will be logical and related to the argument within the body of the question.</p>	25

Question	Answer	Marks
9	<p>‘When developing management strategies it is difficult to differentiate between geographical issues and natural hazards.’</p> <p>Discuss the validity of this statement.</p> <p>Indicative content</p> <p>The question asks for a discussion of both geographical issues and natural hazards. These issues and hazards will need to be discussed in relation to possible management strategies with an assessment of their relative success or failure. In discussion this there will be need to be an assessment of the relative merits of the management strategies vis-à-vis the issues and hazards chosen.</p> <p>At lower levels, candidates will discuss a limited range of hazards and issues. Candidates will demonstrate some knowledge and understanding of the subject content but this will be lacking in depth and detail. Exemplification, if used, will probably be limited and perhaps not appropriate. The question will only be addressed partially and the conclusion will be basic and may not be related to the main part of the answer. At higher levels, candidates will be able to write convincingly about a range of issues and hazards using good examples to illustrate the assessment. The analysis will be detailed, wide-ranging and accurate. Exemplification will be relevant, detailed and accurate and the conclusion will show a high level of insight concerning the management strategies relating to the geographical issues and natural hazards that have been discussed. The answer will be thoroughly organised with ideas following in a logical order.</p>	25