CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2013 series

9696 GEOGRAPHY

9696/13 Paper 1 (Core Geography), maximum raw mark 100

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.

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CAMBRIDGE
International Examinations

Section A

Hydrology and fluvial geomorphology

1 Fig. 1 shows the annual hydrograph of the Columbia River in Canada.

(a) (i) State the mean monthly discharge of the Columbia River in October. [1]

2200 cubic metres per second (anything between 2200 and 2300 is acceptable).

(ii) State the highest mean monthly discharge and the month in which it occurs. [2]

4250 cubic metres per second in June (4200 to 4300 is acceptable).

(b) Briefly describe the pattern of the annual discharge of the Columbia River. [2]

The main elements are a decrease from January to March, then an increase to the maximum in June, then a decline and then rise to the end of the year. One mark for a basic description and one mark for some data or two marks for a full description with no data.

(c) Explain two factors that might cause variations in river discharge throughout a year. [5]

There are a number of possible factors but the most likely are seasonal patterns in precipitation with snow or glacial melt in late spring or early summer. The better candidates might mention land use changes throughout the year and possibly water abstraction. Mark 3/2 depending on quality.

Atmosphere and weather

2 Fig. 2 shows the night time temperatures across a large urban area.

(a) Give the term that is used to describe the pattern of temperatures shown in Fig. 2 [1]

Urban heat island.

(b) Describe the pattern of temperatures along a transect from A to B. [4]

There is a general increase in temperature to the urban centre, then a decrease further eastwards. For full marks there should be recognition of the sharp increase at the western end and a very sharp decrease at the eastern end where the river encroaches on the urban area. The temperature variation in the main urban area is more plateau-like.

(c) Explain how buildings and roads can affect the climate in urban areas. [5]

Explanation will mostly be increased temperature as a result of heat absorbed and re-radiated by buildings and roads with some mention of albedo. Heat given off by various buildings and traffic using the roads should also be mentioned. The increased heat will cause convectional uplift and increased precipitation. The wind tunnel effect of buildings and the shelter provided by buildings leading to reduced wind speed are also relevant. There should be more than just increased temperatures for the full marks.

Rocks and weathering

3 Photograph A shows a rock cliff (free face) marked X and a debris slope (scree) marked Y.

(a) Briefly describe the nature of:

(i) the rock cliff, [2]

Several features could be noted such as bare rock, some indication of height, irregular nature with joints etc. Anything relevant should be rewarded.

And

(ii) the debris slope. [2]

Steep slope, large angular block of rock, ill-sorted are some possibilities.

(b) Explain how rock type and structure may influence mass movement. [6]

Rock type and structure are obviously related but might not be seen as such by candidates. Structure is obviously related to possible water intake such as joints and bedding planes. Juxtaposition of permeable and impermeable rocks is a valid point if related to the likelihood of mass movement. Better candidates should be able to relate joints etc. to the possibility of rock falls and clay masses to mud flows. The processes need to be well explained for full marks.

Population

4 Fig. 3 shows births and deaths for Sweden, an MEDC, from 1970 to 2010, and predicted for 2011 to 2060.

(a) (i) Using Fig. 3, describe the pattern of births between 1970 and 2010. [3]

The births fluctuate considerably over the 40 year period, peaking at just over 120,000 in the early 1990s, lowering in the mid 1980s (just over 90,000) and late 1990s, ending at a higher level in 2010. Should have an idea of considerable change and use of data from the graph for the full 3 marks.

(ii) Suggest reasons for the pattern you described in (i). [3]

Candidates should be able to explain such change with reference to economic boom/bust influencing decision making for families, possible changes to social benefits (child support/maternity support etc.), changing availability of contraception, natal policies. Mark on quality answers that relate economic/policy making to fertility choices. Because it is an MEDC post 1970, impact of WW1/WW2 will not be acceptable as explanations, but post-war baby boom population may account for the raised levels in 1970s – has to be appropriate for an MEDC post 1970.

(b) Explain why population predictions, such as those in Fig. 3, are useful to a country. [4]

Countries like Sweden (do not have to refer to Sweden) may find predictions useful for economic planning, old age benefits, pensions, future taxation, social structure planning. Actual planning in terms of health care, old peoples homes, possibility of changes to migration policies to make up for shortfall in workers etc. May refer to the graph to suggest in the short term, for Sweden there is likely to be a population increase (schools, housing etc.), followed by an eventual fall in population. Perhaps the recognition that forecasts are not always useful may be an indication of quality.

Migration

5 Table 1 shows some information about emigrants from El Salvador, an LEDC in Central America, living in the Americas in 2000.

(a) Describe and suggest reasons for the age and sex of the emigrants to the USA in Table 1. [5]

Candidates should refer to the table, noting that 80% are 44 years and younger and 48% are female. A reasonable attempt to give reasons for these characteristics may include an expectation that migrants would be in the younger age group as these are typically the most migratory. The % that is female may be higher than expected, as some theories suggest that males are more migratory. However candidates may come up with reasons to explain this; females are more likely to emigrate from Central/Latin America to USA etc., particularly for domestic service. Reserve 2 for use of/reference to data.

(b) Outline the benefits to LEDCs of high rates of emigration. [5]

Emigration may relieve population pressure, as majority of migrants are of the younger, reproductive sector of the population, especially in rural areas. If the emigration is short-term, then skills and knowledge may be transferred to the source society. Remittance payments may be economically significant to the sending areas, although this may be intermittent/short-lived. It is possible that returning migrants may loosen traditional social structures and encourage more outward looking values. At least two benefits should be mentioned, with developed points and explanations for the full 5 marks.

Settlement dynamics

6 Fig. 4 shows population change in selected cities in the USA, an MEDC, between 2000 and 2010.

(a) Using Fig. 4, compare the data for Chicago and Detroit. [4]

An opportunity to look closely at the differences and any similarities between two cities. Candidates can use the data to illustrate that both Chicago and Detroit have lost between 200,000 and 240,000 people from 2000 to 2010. However, this represents a much higher % change for Detroit, –25%, whereas it is only a –6.9% loss for Chicago. Candidates may notice that Detroit had a much lower urban population than Chicago (713,777 versus 2,695,598), which could account for the difference. Reserve 1 mark for an element of comparison.

(b) Suggest reasons why MEDC cities, such as those in Fig. 4, have seen a decline in their population. [6]

Candidates should be able to identify the main reasons why counterurbanisation on this scale occurs in cities of MEDCs. Aging housing stock, loss of traditional manufacturing jobs, problems associated with urban living (crime, congestion etc.), desire for suburban living**.** Improvements in transport allowing distance between home and work etc. Expect 2 or 3 reasons with some detail or development for 6 marks. Inter-urban movement and natural change are acceptable.

Section B: The Physical Core

Hydrology and fluvial geomorphology

7 (a) (i) Define the fluvial terms *traction* and *saltation*. [4]

Traction is the dragging or rolling of very coarse material along the river bed and saltation is the hopping or bouncing motion of smaller material. Both the form of movement and material size are required for two marks each.

(ii) Briefly describe how abrasion occurs in a river channel. [3]

Erosion instigated by particles being thrown against the channel sides or rubbed along the channel bed. The role of turbulence and high velocities needs to be mentioned.

(b) Explain the formation of alluvial fans and deltas. [8]

Alluvial fans are formed by deposition as a sediment laden stream emerges from a restricted valley zone, such as in arid and semi-arid areas. The drop in gradient is important but also the fact that the river can now spread laterally. They are often associated with flash floods. The formation of deltas is somewhat similar except for deposition in water and the importance of clay flocculation as fresh water meets salt water. Much information can be provided by good diagrams.

(c) Using a diagram or diagrams, explain how erosion, transport and deposition of sediment are related to variations in river flow. [10]

The ideal diagram would be the Hjulstrom curve but many candidates might draw the standard cross-section. High velocities needed for entrainment should be mentioned with possibly lower velocities once the material is entrained. The importance of sediment size is also relevant. A drop in velocity will lead to deposition with the large particles being dropped first. Maximum 6 marks if no diagram. As the question asks for variations in flow, laminar, helicoidal and turbulent flow are acceptable if related to erosion, transport and deposition of sediment. Diagrams might include a cross-section of a meander bend and braided streams.

Candidates will probably:

Level 3
Produce a balanced answer with accurate understanding of how the inter-relationships between erosion, transport and deposition are related to river flow. Diagram shows a degree of accuracy. [8–10]

Level 2
Produce an answer limited is some respects, possibly only dealing with two of the three processes. Diagram will have some inaccuracies. [5–7]

Level 1
Show limited knowledge and understanding of the processes with inaccurate diagrams [0–4]

Atmosphere and weather

8 (a) (i) Define the terms *convection* and *orographic uplift.* [4]

Convection is the transference of energy from a heat source to a gas or liquid and the spread of heat throughout that medium. Orographic uplift is the forced rising of air over a topographic barrier.

(ii) Briefly describe the conditions which may lead to the formation of fog. [3]

Can be radiation or advection fog. Air needs to be cooled to condensation level either by radiation from a surface (radiation fog) or by warm air passing over a cold surface (advection fog). Either/both will be acceptable.

(b) Explain how ocean currents influence the global distribution of temperature. [8]

Ocean currents transfer heat from warm equatorial areas north and south with counter currents bringing cooler water back down in the continuous cycle. These help to ensure a more even distribution of global temperatures. Better answers will produce accurate sketch maps with appropriate currents named. Sea surface temperatures influence winds and the transference of heat to land masses. They influence the development of tropical storms which also redistribute heat.

(c) Describe how human activities have affected the nature and concentration of greenhouse gases in the atmosphere. Examine the likely effects on global climate. [10]

Expect the standard account of the greenhouse effect. The question asks for nature as well as concentration of gases so there should be mention of a range of greenhouse gases. The effects on global climate should extend beyond just warming but include possible effects on droughts, storminess, etc.

Candidates will probably:

Level 3
Demonstrate a thorough understanding of the greenhouse effect with a range of gases. The account of global climate will go beyond simple global warming. [8–10]

Level 2
Produce an answer limited in some respects. The account of the greenhouse effect will be sound but with a limited range of gases. The account of effects on global climate will be partial. [5–7]

Level 1
Produce a seriously limited answer in both knowledge and understanding. There will be inaccuracies in the explanation of the greenhouse effect and will probably be limited to a mention of carbon dioxide. The effect on climate will be limited to warming. [0–4]

Rocks and weathering

9 (a) (i) Define the terms *flows* and *slides* as they apply to mass movement. [4]

Both are movements of material downslope. Flows move with internal deformation, are faster at the centre and do not possess a clear failure zone. Slides move en masse over a failure surface or shear plane. Two characteristics are required for each.

(ii) Briefly describe how slides can affect the shape of slopes. [3]

Although a diagram is not required, a good annotated diagram can get good marks. The effect is essentially moving quite large masses of material from the top to the bottom of the slope. The effect on the slope shape will depend on the nature of the slide. Planar slides will have a different effect to that of rotational slides. Both movements will lead to a scar and displaced material at the slope base.

(b) Explain how the development of slopes is affected by climate and vegetation. [8]

The assessment of climate will probably be easier than that of vegetation. Climatic effects include the influence on the nature and intensity of weathering leading to various types of mass movement. The role of vegetation is essentially in terms of increasing slope stability by roots and the uptake of water; slope development is thus retarded. The answer should be balanced but not necessarily equally.

(c) Using a diagram or diagrams, show how ocean trenches and mountains may develop at a convergent plate boundary. [10]

Good diagrams can achieve quite high marks. If no diagrams, though unlikely, then a maximum of 6 marks. For ocean trenches there should be an understanding of subduction and the scale of the features. With respect to mountain building do not award many marks for the buckling of plates as two plates collide. There should be some indication of the crushing of sediments as the two plates approach each other. Better candidates will write about accretionary wedges. Can mark 5/5 or 6/4.

Candidates will probably:

Level 3
Show convincing knowledge and understanding of both aspects of the question, even though there may be a bias towards one or the other. The diagrams will be full and accurate. [8–10]

Level 2
Will show sound understanding but knowledge of one feature might be incomplete. The diagrams will be lacking in some aspect. [5–7]

Level 1
Demonstrate limited knowledge of both of the features with inaccuracies in the diagrams. [0–4]

Section C: The Human Core

Population

10 (a) Describe and explain the relationship between the infant mortality rate and the level of economic development. [7]

IMR are strongly influenced by economic development; as economic development occurs, IMR reduce. With economic modernisation, the socio-economic benefits of health and welfare provision have a marked affect upon maternal health and natal care, better nutrition and stable households mean that the chances of babies surviving their first year of life increase. Mark on quality and a clear understanding of what the relationship is and how it comes about. Credit appropriate examples.

(b) With the help of examples, suggest reasons why countries may find it difficult to reduce their infant mortality rate. [8]

Candidates response may depend upon the examples chosen, but it is an opportunity to explore some of the issues that affect population change. Candidates may recognise that there have been some successes in reducing IMR, possibly influenced by western intervention, but in some cases little progress has been made or sustained. Environmental conditions such as food and water supply, sanitation and health care make it challenging for some of the least developed countries to reduce IMR. Resistance to diseases (malaria), reduced aid programmes, refugee movements, civil war all make it difficult to deliver social and health related programmes. Perhaps the recognition that it is their dependence on aid and the instability of the regimes that underpin their difficulty. Mark on quality and detail, crediting suitable examples.

(c) 'The role of women is the most important influence on population change'. How far do you agree? [10]

An opportunity to explore the influence of women in population dynamics, considering whether other factors have equal or greater influence. Women as decision makers or government policies. Equal opportunities allowing women to be educated and have careers have been one of the most important reasons given for the reduction in birth rates in MEDCs, it worked well in Singapore. Women being allowed to control their families is also important – the availability of contraception. It is often cited that in LEDCs it is the perception of women as child bearers rather than as career orientated, the education of women may be seen as a key to changing population. Some candidates may attempt to apply their knowledge of, for e.g. China and question whether it was the role of women or government that aided the dramatic fall in the birthrate brought about by the one child policy. Credit accordingly. Quality answers will explore the factors that influence population change and determine the relative role of women in that.

Level 3
A thoughtful and accurate response which recognises the importance of women in population change, but considers wider issues in a balanced way. Uses examples in some way to answer the question. [8–10]

Level 2
A reasonable answer that attempts to look at a wider view, but will be tending towards simply looking at the role of women. May not always provide an entirely evaluative argument with some limited use of examples. [5–7]

Level 1
A basic response that does little more than explaining the role of women, with little/no evaluation of exemplification. [0–4]

Population/Migration

11 (a) (i) Give the meaning of the term *refugee.* [3]

A person who is outside his/her home country (1)owing to a well-founded fear of persecution (1) for reasons of race, religion, nationality or political opinion (1), allow reference to asylum seekers that have been granted refugee status. This is the precise UNHCR definition and has a legal status.

(ii) Describe the impacts a refugee flow may have on a receiving area. [4]

An opportunity to use an example of a refugee flow they have studied. Credit good use of examples, describing the flow (where, why, how many) and explaining the impact in terms of tension, charity response, disease etc. Look for detail and developed points. There could be a positive impact.

(b) Outline the factors that influence the pattern of voluntary international migration. [8]

There should be an emphasis on pattern, basic push/pull factors will not achieve more than 5 marks.

Factors might include:

where they go? – obstacles to migration, transport, communications, encouragement of migrants, barriers, such as government controls, numbers moving and distance travelled, demographic characteristics.

Smaller scale influences such as knowledge, family, linguistic ties etc.

push/pull – the numbers moving will be influenced by the reasons to move, ease of movement for the demographic involved, the character of the migrants, opportunities in receiving areas, communication etc.

Must be voluntary.
Credit use of examples and developed points.

(c) To what extent is immigration a solution to the problem of declining population in MEDCs? [10]

Evaluate the role of immigration, filling employment and tax holes left by falling population etc. Alternatives to encouraging immigration may be discussed, such as pro-natal policies in the form of the welfare system. Worth noting that populations are falling and ageing, immigration will go in some ways towards filling this gap, but depends upon the nature of the immigrants. Fertility levels are unlikely to recover to replacement levels in MEDCs in the long term, therefore immigration is the only option. If retirement ages remain essentially where they are today, increasing the size of the working-age population through international migration is the only option in the short to medium term to reduce declines in the potential support ratio.

Level 3
A thoughtful response which illustrates a good understanding of the issues surrounding immigration in MEDCs and evaluates the suggestion effectively. [8–10]

Level 2
A good answer that is able to examine the issues of immigration effectively, with some attempt at evaluation. [5–7]

Level 1
A basic answer that lacks clarity, goes little beyond explaining why immigration may be needed. Limited/no evaluation or discussion. [0–4]

Settlement dynamics

12 (a) With reference to one named example of a rural settlement or rural area:

(i) describe the character of the rural settlement or rural area; [7]

Depends on example chosen. Credit detail, maps, diagrams. Good use of geographical descriptors and demographic characteristics. Information must be clear and accurate. The area must be clearly identifiable i.e. named and appropriate. Whole countries are not acceptable.

(ii) outline the main issues in the development and growth (or decline) of the rural settlement or rural area described in (i). [8]

Again will depend upon the example chosen, likely to be issues relating to either pressure or decline (MEDCs) possibly economic development or deterioration (LEDCs). Candidates need to clearly describe and explain the relevant issues, with specific detail that is relevant and accurate. Mark on quality and detail and credit diagrams/maps etc. The answer must be related to the area chosen in (i).

(b) Assess the extent to which attempts to manage rural settlements or rural areas have been successful. [10]

Candidates may use the example from (a) to answer this, but they could also bring in other case studies to help answer the question. The key to this is an evaluation of how the management of the rural area has been tackled and whether or not it has been successful. Candidates will need to cover how the area has been managed as well as looking at the success.

Level 3
A detailed and accurate response which not only covers what was attempted in terms of management but also makes a clear evaluation of success. [8–10]

Level 2
A response which is generally accurate and detailed, attempts evaluation, but may not be comprehensive. [5–7]

Level 1
A basic response which covers management in a very general way, little or no evaluation. [0–4]