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Paper 1 Core Geography

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MARK SCHEME

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Question	Answer	Marks
1(a)(i)	Fig. 1 shows a type of river channel. Name the type of river channel shown in Fig. 1. Braided channel	1
1(a)(ii)	Draw a cross section from A to B shown in Fig. 1. Label the main features on your drawing. A cross sectional diagram is to be expected, with some of the main features annotated. Features can include: - Multi-channel system - Bars forming from loose sediment - Eroded banks - Vegetation eyots / islands 2 correct labelled features – 1 mark each; 2 marks for general shape. If A/B not labelled then max. 1 for shape. Max. 2 if no labels.	4
1(b)	Explain how features of the river channel shown in Fig. 1 were formed. Key points can include: - Major changes in discharge / velocity - Sudden change in gradient may also decrease energy leading to deposition but not to be confused with alluvial fans and deltas - High load levels carried by the river in relation to the velocity and discharge - Decrease in discharge (capacity) and velocity (competence) as a result of changing conditions causes deposition to occur - Bars forming through deposition causes river channel to divide - Erosion and accretion at different parts of the channel in response to changing discharge / velocity - Erosion occurring at channel junctions and on highly erodible banks causes sediment to be entrained and deposited - Vegetation growth stabilises some of the bars At least 2 different features with explanation for full marks.	5

Question	Answer	Marks
2(a)(i)	Fig. 2 shows the relationship between air temperature and relative humidity. Describe the relationship shown in Fig. 2. As air temperature increases, relative humidity falls (1 mark) Relative humidity falls steeply at first, then at smaller intervals (1 mark) 1 mark for quoting data from graph.	3
2(a)(ii)	State the temperature when condensation would occur. 5 °C	1
2(b)	Describe the atmospheric conditions that can lead to condensation occurring near the ground. The question asks for description. A variety of conditions can be given here, the key point being that the air must be cooled to dew point. Conditions will vary depending on the explanation i.e. conditions will vary between condensation by advection and radiation. Radiation cooling: Ground cooling through radiation at night to the dew point, typically on clear nights with calm conditions, reference to hygroscopic nuclei is relevant for fog Advection cooling: Warm air passing over a cooler surface or cold air passing over a warm surface High relative humidity Description of temperature inversion is another possibility. Allow for description of formation of dew, fog and mist.	6

Question	Answer	Marks
3(a)	Photograph A shows some landform features. Describe the landform features shown in Photograph A. Steep rock face Layering / bedding planes Exposed rocks Scree slope / talus slope Vertical joints (cracks) Rounded (convex) top Large blocks on scree There may be other relevant features that can be credited. Four relevant features for full marks.	4
3(b)	Explain how the features you have identified in (a) may have been formed. There must be a link between the features identified in 3(a) and this answer. For example: Talus slope – formed from the weathering of the rock face above. Falls to the base of the slope. It remains because of the lack of erosion at the base of the freeface. Give credit to feasible erosion and weathering processes described. There may be discussion about slope processes and mass movement processes which would be relevant and the resulting gradient shown in Photograph A.	6

Question	Answer	Marks
4(a)(i)	Fig. 3 shows population ageing for selected countries. Using Fig. 3: State the year in which 14% of the population of the USA was aged 65 and over. 2010 ± 2	1
4(a)(ii)	Calculate the number of years it took in France to increase the percentage of the total population aged 65 and over from 7% to 14%. 1865 to 1978 = 113 years ± 5 years	2
4(b)	Suggest <u>two</u> reasons why the population structure in many countries is ageing. A number of reasons – 1 mark per valid reason with extra mark for development. These could include: Lower death rate so people live longer due to improved medical care, better diet, greater social services, fewer wars and disease Lower birth rates so fewer young people due to greater use of birth control, increased education, greater female autonomy, fewer younger people Migration of either young or old. Countries (LEDCs) started at a much lower rate but could apply immediately improvements in health etc. created in MEDCs – an effect of globalisation.	3
4(c)	Explain some of the economic impacts of an ageing population. Two impacts with sound development can reach max. Some impacts will be negative such as: Less active labour force / labour shortage Need for more health care (cost – higher taxes) Cost of pensions / social security will rise – fewer to pay these Underused schools etc. Some may be positive such as: Greater use of elderly labour e.g. charity work Greater proportion working beyond pension age Greater experience e.g. less absenteeism at work Others may be simply changes such as changes in patterns of consumption, housing etc. No requirement for both negative and positive impacts.	4

Question	Answer	Marks
5(a)(i)	Fig. 4 shows labour migration between the member countries of ASEAN in 2010. Using Fig. 4, name the country which was the largest: exporter of labour; Indonesia	1
5(a)(ii)	importer of labour; Malaysia	1
5(a)(iii)	net importer of labour. Singapore	1
5(b)	Suggest why a country might be both an exporter of labour and an importer of labour. It may reflect: - Differences in the labour – skilled v unskilled, levels of education - Differences in types of jobs e.g. agricultural v industrial v services - Seasonality of employment e.g. agricultural harvesting - Fluctuation in the economy Can be one explanation with good development for full marks. The answer must relate to a single country.	3
5(c)	Explain the impacts on the source area of a large outward migration of labour. This may be positive or negative depending on the nature of the area and the nature of the migrants. Impacts could include: - Increased employment or overemployment OR labour shortages - Loss of tax revenue OR remittance inflow increases - Loss of investment in education and training - Reduced pressure on housing and service provision OR need to support dependents left behind - Lower birth rate – more aging population - Increase in the dependency ratio - Gender imbalance - Underutilisation of resources Four valid points (negative or positive) or two well developed for 4 marks. No requirement for both negative and positive impacts.	4

Question	Answer	Marks
6(a)(i)	Fig. 5 shows sales by type of retail location in 2000 and 2011 for an MEDC. Describe the changes in the pattern shown in Fig. 5. 1 mark per valid change: CBD sales decreased (by about 7%) Out-of-town sales risen (by about 3%) Local sales fallen (by about 1%) Internet sales risen (by about 5%) If no indication of scale of changes max. 2. Data support is one way to indicate scale of changes.	3
6(a)(ii)	Suggest <u>two</u> reasons for the changes described in (i). This depends on the selection in (a)(i). Reasons could include: Rise of on-line shopping High cost of town centre sites CBD congestion and high cost of parking etc. Ease of travel to and parking at out-of-town centres Movement out of population from city inner areas (counterurbanisation) One mark for each reason plus one mark for development.	3
6(b)	Explain how the competition for space influences the type of shops located in CBDs. Generally competition for the limited most accessible sites in CBDs drives bid-rent and results in those shops capable of paying higher rates getting the 'best' sites. Explanation of influence on type (function, size, order) of shops could include: Larger chain stores can outbid other retailers Shops that sell expensive goods need access to the largest footfall of population + have high turnover Shops that rely on meeting frequently changing demand need to be very central Some shops share sites or locate above other shops to reduce costs Some shops are complementary so cluster e.g. shoes and clothes Similar shops often cluster to increase competition Two with development for full marks.	4

Question	Answer	Marks
7(a)(i)	Define the hydrological terms <i>infiltration</i> and <i>stemflow</i>. Water entering soil (ground) (1 mark) from the surface (1 mark) Vegetation intercepts water (1 mark) which then flows down trunk / stems of vegetation (1 mark)	4
7(a)(ii)	Explain how the type of soil can influence the rate of throughflow. The emphasis is on type of soil. The main factor is permeability and should be differentiated from porosity although the two can be related, but not always. Clay soils have a low permeability even though they are quite porous (sometimes up to 30%) but the pores are small and not well connected thus the permeability is low. Sandy and loam soils are more permeable partly because of their porosity (relatively large pores) and thus allow more throughflow. Candidates might discuss soil structure, related to soil types, which can be influential, thus a granular structure is more permeable than a blocky or platy structure. Loam soils tend to be more granular, clay soils more blocky. Two specific points with development is enough for full marks.	3

Question	Answer	Marks
7(b)	Briefly explain how both drainage density and vegetation can influence the shape of a storm hydrograph. Drainage density – the presence of a higher density of drainage, in a dendritic pattern would, all else being equal, mean that the storm hydrograph would register a shorter lag time, steeper rising limb and higher peak discharge. This is because overland flow and throughflow would have shorter distance to reach a river and the water flowing within the streams and rivers would affect the hydrograph more directly. The presence of vegetation means that vegetation interception rates are higher, as well as the water being able to enter the system through the variety of flows associated with vegetation. As a result, this would lead to a shallower rising limb and longer lag time, with a lower peak discharge. The question asks for both drainage density and vegetation. If only one is explained, then max. 5 marks. Answers that differentiate types of vegetation should be well rewarded. The better answers will be balanced thus contrasting high / low density and vegetation and lack of it. Mark 4/4, 5/3 or 3/5. Credit the use of diagrams of storm hydrographs which help to explain the answer.	8

Question	Answer	Marks
7(c)	To what extent does urbanisation result in the increase of flows within the drainage basin? The question states urbanisation which can be considered different to ‘urban areas’. It also stresses ‘within the drainage basin’. Urbanisation is a process therefore issues relating to urbanisation, such as deforestation to create more space for the development of the urban areas, are relevant. But discussion of deforestation on its own is not relevant unless related to the process of urbanisation. The ‘within the drainage basin’ issue opens up the question. The urban area might only be a part of the drainage basin, thus procedures to protect the urban area from flooding, such as upstream dams, spillways etc., are relevant. Water abstraction is also relevant if related to groundwater flow. The best question structure would be to state the flows at the beginning and then to consider each in turn. Flows would also include channel flow. Candidates may discuss individual flows both above and below the surface, and how they may change as a result of urbanisation. On the other hand, consideration can be given to the way modifications of the drainage basin and use of water may result in decreased flows within the drainage basin. Therefore, there is an argument to develop as to the extent urbanisation results in an overall increase (or increase in parts) of the system. Credit the use of diagrams as part of the candidates answer – for example a candidate may use a before and after flow chart which depicts the changes to the size of the flows due to urbanisation. If the approach of before and after urbanisation is used, then the candidate must be clear on whether the flows increase or decrease (these may be individual flows or taken as a whole); a simple statement of which flows may be significantly changed or absent is not likely to gain much credit. Level 3 8–10 A detailed and well balanced answer that looks at the extent to which urbanisation increases the flows within a drainage basin and also how it may reduce the flows within a drainage basin. The argument is supported through examples of flows and there is a clear evaluation. The complexity of the balance is appreciated. Level 2 5–7 A reasonable attempt to look at how urbanisation increases the flows within a drainage basin, and some attempt to assess how it may not. Lacks balance and evaluation is likely to be limited. Level 1 1–4 A basic answer with little attempt to present how urbanisation increases the flows within a drainage basin. An evaluation considering how urbanisation may also decrease the flows is lacking in detail or is absent. The evaluation is likely to be limited or not present. Lists and basic description may be typical. No response, or no creditable response, 0.	10

Question	Answer	Marks
8(a)(i)	Define the terms <i>evaporation</i> and <i>incoming solar radiation</i>. Change of state (1 mark) from (water) liquid to gas (1 mark) as a result of temperature (1 mark). Any two for two marks. The energy emitted from the sun (1 mark) that reaches the earth as short wave radiation (1 mark).	4
8(a)(ii)	Draw a labelled diagram to show what is meant by atmospheric stability. Lapse rates is one approach with a diagram showing ELR, DALR and SALR. DALR and SALR shown to the left of the ELR, and do not cross the ELR (DALR and SALR may be shown as one line). An alternative approach would be descending air leading to high pressure and stability of atmospheric conditions.	3
8(b)	Explain how latitudinal excesses and deficits of radiation result in atmospheric transfers. Excess radiation at equator, with net loss towards poles. Heat (radiation) at areas of excess are transferred to the areas of deficiency. The presence of energy surplus at the tropics means that energy is transferred via both horizontal and vertical heat transfers towards the poles. There should be explanation of both vertical and horizontal transfers.	8

Question	Answer	Marks
8(c)	To what extent is precipitation influenced by the landscape of both rural areas and urban areas? The two main causes of precipitation in the syllabus are orographic and convectional. Both need discussing for a mark in Level 3. Precipitation in the syllabus refers to rain, hail, snow, dew and fog. Differentiation of types of precipitation and intensity would probably indicate a very good answer. Thus this is a very open question. Landscape plays an important role, and can include the topography of the area. A candidate may discuss orographic precipitation and apply it to hilly areas in both rural and urban areas. Convectional uplift and strong thermal activity also encourages the distribution of rainfall. This can also be related to differences in landscape such as intense evapotranspiration above large forests, and above large bodies of water. Also, effects of the topography of the urban landscape which includes buildings. A balanced argument expected given that landscape is not the only influence on the distribution of rainfall. The influence of smog and dust providing condensation nuclei for water droplets to form may be discussed. Level 3 8–10 A detailed and well balanced answer that looks at precipitation of both rural and urban areas. There is detailed discussion of the way the landscape influences the characteristics and amount of the precipitation. The argument is supported through examples of landscape type and there is a clear evaluation. Level 2 5–7 A reasonable attempt to look at the precipitation in both rural and urban areas. There is some discussion on the way the landscape influences the characteristics of the precipitation. Lacks balance and evaluation is likely to be limited. Level 1 1–4 A basic answer with little or no attempt to consider the differences in precipitation and the influence landscape has on it in both urban and rural areas. The evaluation is likely to be limited or not present. Lists and basic description may be typical. No response, or no creditable response, 0.	10

Question	Answer	Marks
9(a)(i)	Define the weathering terms <i>oxidation</i> and <i>freeze-thaw</i>. Oxidation is the breakdown of rocks by a combination of air (oxygen) (1 mark) and water (1 mark). Freeze-thaw is the process whereby water enters pores and cracks in rock then freezes and expands (1 mark) and subsequently thaws (1 mark).	4
9(a)(ii)	With the aid of a diagram, describe the main features of a debris flow. Diagram showing scar / flowtrack / toe lobe (fan) The features must be located in the correct position. A well annotated diagram can gain full marks. Allow 2 marks for the annotations / description and one mark for the diagram.	3
9(b)	Explain how mass movement processes can affect the shape of a slope. Good diagrams could form the basis for the answer. The emphasis is on processes and the main ones are sliding, flowing, falling and heave. All are relevant. There needs to be more than one mass movement process. Shape includes slope angle as well as slope form. Examples of how different types of mass movement processes can change the shape and gradient of the slope: <u>Sliding</u> Rotational landslides leading to a stepped profile with an upper steep scarp, main mass and lower lobe. <u>Fall</u> Rockfall leading to a steep backwall and lower scree. <u>Flow</u> Scar, flowtrack and toe lobe. <u>Heave</u> Soil creep leading to small slope terracettes and build up of material at the slope base.	8

Question	Answer	Marks
9(c)	Discuss the view that strong chemical weathering only occurs in climates of high annual precipitation. The amount of precipitation is key as water is the main factor that controls the type and rate of chemical weathering. Precipitation is important, but answers need to also acknowledge that temperature plays a key role too, which increases the rate of chemical weathering by approximately 2 – 3 times for every 10 degrees Celsius rise in temperature, although carbon dioxide is more soluble in water at lower temperatures. Therefore, the discussion must consider the other key aspect of climate, that of temperature. The assessment of other factors, such as composition of rock is also creditworthy, as both rock type and rock structure influences the amount of chemical weathering. Level 3 8–10 A detailed and well balanced answer that looks at climates of high annual precipitation and considers it in detail against other types of climates or other factors which may result in strong chemical weathering. Other climates could be ones of low annual precipitation, or high temperatures. The argument is supported through examples of climates and / or chemical weathering processes and there is a clear evaluation. Level 2 5–7 A reasonable attempt to look at the climate of high annual precipitation and considers it against other types of climates or other factors which may result in strong chemical weathering. Some attempt to assess the importance of other factors. Lacks balance and evaluation is likely to be limited. Level 1 1–4 A basic answer with little or no attempt to consider the climate of high annual precipitation against other types of climates or other factors which may result in strong chemical weathering. The evaluation is likely to be limited or not present. Lists and basic description may be typical. No response, or no creditable response, 0.	10

Question	Answer	Marks
10(a)(i)	Outline the main components of population structure. The syllabus refers to age / gender / dependency as the three main aspects = 2 marks with extra mark for development. Accept other valid constituents such as ethnicity, socio-economic group, marital status, income, education.	3
10(a)(ii)	Suggest <u>two</u> differences between the population structure of LEDCs and MEDCs. If candidates use the syllabus approach then these could include: LEDCs have younger / less aged population MEDCs tend to be more balanced in gender whereas LEDCs often have more males (or more females if males migrated to find work) Dependency ratio; MEDCs due to aging population and LEDCs because of young dependents 2 differences = 2 marks but with development then 2x2. The 'other constituents' are more difficult to compare beyond the basic level such as poor v rich so are more likely to be 2x1 mark.	4
10(b)	Explain why population structure changes as countries develop. Many may see this as applying the DTM (to explain age and dependency) which is a valid approach but it is not required. Better answers will clearly link the explanation to some aspects of the population structure as a result of economic development. Explanation could include: Greater resources to support health care, education, birth control, housing and sanitation Improved transport – less famine, more mobile population Greater technology – impact on employment opportunities Change in economy from mainly primary (male workers) to tertiary (female) Greater level of international migration	8

Question	Answer	Marks
10(c)	‘Governments face difficulties in managing the effects of population change.’ To what extent do you agree with this statement? This question looks at the management of the effects (environmental, demographic, economic, social and political) of population change – both in number, location and structure (e.g. ageing population) rather than the population change itself. A focus on the latter is unlikely to get beyond Level 1. Governments often do struggle as they lack resources, knowledge and the political will to tackle the results which are often very dynamic and unpredictable. Higher level responses should recognise that governments (local and / or national) vary in their capacity due to a range of factors including the nature and scale of the effects. Candidates will probably: Level 3 8–10 Make a response from detailed knowledge and strong conceptual understanding. Have clear cause and effect link between government attempts to manage and the effects of population change. Provide an effective assessment. Use one or more examples in detail Level 2 5–7 Make a reasonable attempt, which may contain good points, but which remains partial. Show a thinly developed cause / effect link between government attempts to manage and the effects of population change. Offer a valid, but limited assessment. Refer briefly to examples. Level 1 1–4 Offer one or more basic ideas and struggle to deal with the issue. Take a descriptive approach making little or no assessment. Offer limited or no examples. No response, or no creditable response, 0.	10

Question	Answer	Marks
11(a)(i)	Define the term <i>stepped migration</i>. Stepped migration: A series of shorter, less extreme migrations from a person's place of origin to final destination (1 mark) – such as moving from a farm, to a village, to a town, and finally to a city (1 mark). This may be supported with a diagram. Movement may be geographical or up the hierarchy.	2
11(a)(ii)	Outline the advantages of stepped migration for the migrant. Advantages could include: - Economic – cheaper as can save up for each move – it spreads the cost in both transport and housing - Social – can find out more about the next step before making it, stay with relatives, learn the 'language' of the city culture - Personal – can gain education / skills that are better suited to the next step - Psychological – gain in confidence by taking small steps, see if they like the more urban life style Two advantages with some development can gain full marks.	5
11(b)	Explain why the mobility of the population tends to increase as an area develops economically. This tends to be explained in terms of economic developments such as: - Improved public and personal transport - Higher incomes so can afford to move and transport costs become relatively smaller - Greater number and range of jobs available - More remote areas opened up by resource development - Better communications so greater knowledge of other areas - More even distribution of infrastructure such as schools and hospitals so less need to locate near them - Increased technology / automation so easier for mobility between jobs / sectors - Increased inequalities (in wealth etc.) between areas / regions	8

Question	Answer	Marks
11(c)	To what extent is international migration driven by social factors? Clearly social factors (such as age, family ties, ethnicity, population growth, education) are important in encouraging international migration but this is only part of the cause. Economic, environmental and political forces are also at work and much international migration is now the result of war, disaster, disease etc. – fear for their lives. Candidates may decide to develop this via a push v pull approach or voluntary v forced migration. In either case it is the degree of evaluation of the extent to which social factors are the drivers of international migration which is crucial to get into the higher levels. Candidates are expected to recognise that the extent may vary over time, with location, with the nature of the individual and the nature of the source / reception countries. Candidates will probably: Level 3 8–10 Make a response from detailed knowledge and strong conceptual understanding. Have clear cause and effect link between a range of forces and international migration. Provide an effective assessment. Use one or more examples in detail. Level 2 5–7 Make a reasonable attempt, which may contain good points, but which remains partial. Show a thinly developed cause / effect link between a limited range of forces and international migration. Offer a valid, but limited assessment. Refer briefly to examples. Level 1 1–4 Offer one or more basic ideas and struggle to deal with the issue. Take a descriptive approach making little or no assessment. Offer limited or no examples. No response, or no creditable response, 0.	10

Question	Answer	Marks
12(a)	Describe the differences between rural settlements and urban settlements. Answers will vary with the candidate's home country – some countries have very different definitions of rural and urban settlement in terms of population number / density. In some countries, a rural settlement is any settlement in the area defined as rural by a governmental office, e.g. by the national census bureau. Differences could include: - Population size / density – housing type / density - Type of occupation of the inhabitants e.g. primary v tertiary - Number and order of services and their provision - Degree of planning and organisation - Level of communications / transport – connectivity - Congestion / pollution Three well developed distinguishing points (the difference clearly stated) can gain full marks. Simple listing without stating difference max. 3 marks.	7
12(b)	Explain why in MEDCs some rural settlements are growing whilst other rural settlements are declining. Candidates are expected to appreciate that there are underlying forces at work here rather than just chance (although that is a valid answer). Reasons could include: - Level of remoteness – remoter tend to decline - Level of connectivity / transport – inaccessible decline, commuter villages grow - Occupation / function – primary tend to decline but tertiary based settlement (tourist centres) expand - Nature of the area – climate, relief etc. – harsher areas decline - Government decisions e.g. establishing National Parks etc. - Size of settlement / population – larger ones retain functions and grow - Relative role of push / pull factors Better responses will go beyond remoteness and accessibility.	8

Question	Answer	Marks
12(c)	For your case study of a rural settlement or rural area, outline <u>one</u> of the issues of its development and evaluate the success of the response(s). Clearly the issue and resultant responses will depend on the nature of the case study but there should be a clear link between response(s) and issue with appropriate evaluation of its relative success level. It is the evaluation of the relative success that is key. The level of success may vary with: - The nature of the area (physical and human geography) - The nature of the issue (its scale, importance, persistence etc.) - Level of resources available - The nature of the local population - Political and historical factors - From whose viewpoint is success considered Candidates will probably: Level 3 8–10 Make a response from detailed knowledge and strong conceptual understanding. Have clear cause and effect link between response(s) and issue. Provide an effective assessment of its relative success. Use one or more specific examples of responses in detail. Level 2 5–7 Make a reasonable attempt, which may contain good points, but which remains partial. Show a thinly developed cause / effect link between response(s) and issue. Offer a valid, but limited assessment. Refer briefly to examples. Level 1 1–4 Offer one or more basic ideas and struggle to deal with the issue. Take a descriptive approach making little or no assessment. Offer limited or no examples. No response, or no creditable response, 0.	10