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GEOGRAPHY

Higher Level and Standard Level

Paper 2

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SECTION A

A1. Drainage basins and their management

Either

(a) Essay

"The lower courses of rivers are more important to people than the upper courses." Discuss this statement with reference to located examples. ***[20 marks]***

The discussion should focus on the differences in the importance of the lower courses of rivers in comparison to upper courses. Lower courses are often floodplains and densely populated. They may have fertile land and access for road and rail communication. They are often navigable. Much of the world's population resides on flood plains and there are clearly good reasons for this. In many areas, for example, people are dependent on flooding to enhance soil fertility.
Upper courses, in contrast, may be narrow and it may be difficult to find settlement sites. There is less fertile land and there may be a need for terracing and greater human control of nature. On the other hand, upper courses are an important source of clean water and perhaps hydro-electric power (HEP). They often contain valuable resources such as timber/forest. Good responses may point out that some upper courses are much more attractive for settlement. For example, in humid tropical areas the lower course may be very heavily forested or have other hazards that are to the detriment of settlement – flooding, insect hazards, access.

Candidates can choose to agree or disagree with the statement. It is probable that most responses will agree with the statement, but if they choose to challenge it, then full credit should still be available. All responses should be judged strictly on their own merits. Stronger responses accessing band E/F must discuss the value of both the upper and lower courses, but these need not relate to the same river.

Located examples **are** a specific requirement of the question, hence they would be expected in those answers achieving bands D and above.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) (a) Briefly describe how *drainage density* is measured. ***[2 marks]***

Drainage density is the ratio between the total length of stream channels ***[1 mark]*** and the area of the drainage basin ***[1 mark]***.

(b) State which area has the highest drainage density. ***[1 mark]***

Area C

(c) State which area has the lowest bifurcation ratio. ***[1 mark]***

Area B

(ii) Explain how *three* physical factors influence drainage patterns. ***[2+2+2 marks]***

The factors may include:

- **Rock type** – on highly permeable rocks patterns may be chaotic or streams may be absent. On impermeable rocks the drainage density may be higher.
- **Slope** – parallel patterns tend to be found on uniform steep slopes.
- **Relief and Structure** – trellised or rectilinear patterns are often found in areas with parallel ridges. Dendritic patterns are the most commonly found and often characterize areas with hilly or mountainous relief. Radial patterns are found in areas where there are conical hills such as volcanic peaks.
- **Climate/rainfall regimes** – centripetal patterns often characterize desert basins where there are playa lakes. Drainage density is low and variable.

Any other physical factors (vegetation, tectonic activity) with some explanation are acceptable. Award ***[1 mark]*** for naming each factor and ***[1 mark]*** for its development. It is possible to gain full marks without specifically naming patterns but the explanations would need to be very clear.

(iii) Analyse how urban areas affect the hydrology of drainage systems. ***[10 marks]***

Natural channels in urban areas are often replaced with artificial channels (concrete lined, straightened) to cope with throughflow and storm run-off and often show rectilinear patterns. There is less infiltration due to impermeable surfaces and greater run-off: natural throughflow is often reduced or changed to "pipeflow". Surface storage will vary. During storm events there is greater risk from flooding as there is more rapid run-off and greater discharge. Efficient systems of storm drains can reduce the risk of flooding. Water table levels may be affected. In older cities outdated/inefficient sewage systems or drains blocked by human refuse may contribute to flood risk as they do not have the capacity to cope with excessive rainfall – this may be said for many LEDC cities.

An in-depth examination of a limited number of ways in the response may compensate for a broader examination of a greater number of ways. Either approach is equally valid and may be credited at bands E/F.

Responses do not need to use examples to gain full marks.

Marks should be allocated according to the markbands.

A2. Coasts and their management

Either

(a) Essay

Referring to *one or more* named examples, examine the conflicts that result from human activity along coastlines. ***[20 marks]***

Answers should recognize that some coastlines have strong commercial functions such as zones of transfer and interchange, some provide for retirement and recreation and others are multifunctional. The natural attractions of coastlines for human settlement and activity include their scenery, climate, commercial resources such as fish, fossil fuels, flat land, and fertile soil. Coastlines are accessible and often act as transit points for immigrants and tourists.

Many coastlines are zones of intensive human activity and pressure which may result in competition and conflicting interests. Competing groups include those who wish to exploit the natural assets of the coastline and those who wish to conserve them. Friction also arises between crowd-intolerant locals, refuge-seeking retirees and pleasure-seeking tourists, although in some areas the conflict is only seasonal.

Activities most likely to cause conflict are those which exploit, damage or destroy coastal features (cliffs, caves, arches, sand-spits and bars) and ecosystems (coral reefs, mangroves, sand dunes and salt marshes). Such activities include tourism, oil drilling, and effluent disposal from agriculture, industry and housing. Sediment supply to the coastline may also be reduced by construction of dams inland.

Conflict may also arise over finding solutions (exacerbated by poverty and rising sea levels) to the problems of coastal erosion and flooding. In the rich world, where there may be a choice of management options, disputes still arise between conservationists preferring a passive approach, residents wanting concrete protection, and local authorities concerned about the cost.

The title of the essay given offers some flexibility over the number of case studies and the length of coastline given, although there should be more than one conflict examined.

Answers accessing bands E/F are expected to cover the reasons for human interest and activity along coastlines, the nature of conflict and the different groups involved. Answers that use appropriate examples are likely to be credited at band D and above. Alternative approaches could be equally valid and should be credited on their merits.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) Name the features A, B, C and D. ***[4 marks]***

(a) **A** = cliff

(b) **B** = arch

(c) **C** = raised beach

(d) **D** = cave

(ii) Explain the formation of:

(a) the wave-cut platform, ***[3 marks]***

Award ***[1 mark]*** for an explanation of each stage or process involved in the evolution of the feature. For example, the steady recession of the cliff face ***[1 mark]*** due to undercutting at the wave-cut notch ***[1 mark]*** and prolonged abrasion of the surface by repeated wave action ***[1 mark]***.

(b) the stack. ***[3 marks]***

Three valid points might include erosion leading to the formation of caves ***[1 mark]***, the eventual formation of an arch ***[1 mark]***, which collapses to leave a stack ***[1 mark]***. There may be other valid points.

(iii) Referring to examples, explain why the successful management of coastal erosion is difficult to achieve. ***[10 marks]***

Coastal management schemes such as defence systems are implemented to protect people and their livelihoods from erosion caused by a range of possible factors. Successful schemes achieve their aims, are cost-effective, long-lasting and cause minimal disruption to the natural processes and features of the coastline.

The reasons why management strategies fail should be given. These might include negative impacts caused by the management scheme itself, such as sediment starvation down-drift of groynes, ecological disruption or collapse of the tourist industry due to loss of scenic attraction. Failure may also be attributed to changes in the frequency or magnitude of the hazard which causes coastal erosion. For example, more frequent tropical cyclones and accelerating sea-level rise through global warming. Alternatively, success may be more difficult to achieve if the coastal economy collapses and the defence system cannot be maintained. There are several other possibilities.

Answers achieving markbands E and F should include at least one example of a successful and an unsuccessful coastal management scheme.

Marks should be allocated according to the markbands.

A3. Arid environments and their management

Either

(a) Essay

Using examples, examine the range of opportunities for human activity in arid and/or semi-arid areas. ***[20 marks]***

A variety of approaches to the question are possible but responses should refer to several types of opportunities for human activity in arid and/or semi-arid areas and in terms of analysis should explain the interactions involved between people and environment to access bands E/F.

Possible opportunities for human activity could include: agriculture, including both sedentary and nomadic systems, irrigation farming, dry farming, cattle and sheep ranching, hunter gathering and nomadic pastoralism; tourism including cultural, sunshine, beach, activity and adventure holidays; mineral exploitation; and opportunities for the development of settlements at various scales.

The importance of the availability of water should be referred to and might include oases, artesian basins, exotic rivers, water storage systems supplied by exotic streams and seasonal rainfall.

The examples used may be at a variety of scales and need not be in equal depth. Answers that do not refer to named examples should not be credited above band D.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) (a) State which country has the greatest decrease in the amount of annual renewable fresh water *per capita* between 2005 and 2050. ***[1 mark]***

Chad

(b) Estimate the amount of decrease projected in that country. ***[1 mark]***

The decrease from 2005 to 2050 is 3050 cubic metres (4450 cubic metres minus 1400 cubic metres). Award ***[1 mark]*** for any estimate between 2900–3200 cubic metres inclusive.

(ii) Describe the change from 2005 to 2050 in the number of countries experiencing water scarcity. ***[2 marks]***

Responses should note that there is predicted to be an increase in the number of countries that are experiencing water scarcity between 2005 and 2050 ***[1 mark]*** with an additional ***[1 mark]*** for some quantification, *e.g.* 11 in 2005 to 14 in 2050.

(iii) Explain why arid areas receive low levels of precipitation. ***[6 marks]***

Responses should recognize that there are a variety of reasons that result in regions of low precipitation. These could include: subtropical high pressure areas, rain shadow areas, continental interiors and areas adjacent to cold ocean currents. Candidates should explain at least two distinct reasons in some detail (or more reasons in less detail) for the full ***[6 marks]***. Diagrams may substitute for text but are not essential.

(iv) Examine the role of water in the development of landforms in arid and semi-arid areas. ***[10 marks]***

Responses would be expected to include landforms created by both erosion **and** deposition by water. The role of water in mechanical and chemical weathering could also be credited but is not essential to reach bands E/F. Answers should refer to several landforms. Answers that refer to only erosional or only to depositional landforms should not be credited above band D.

Answers might refer to mesa-and-scarp and basin-and-range terrains.

A comprehensive examination of all relevant water erosional and depositional landforms is not required for an excellent answer but a wide enough range should be mentioned to illustrate the extent to which water is a major agent in the formation of arid and semi-arid landscapes.

Marks should be allocated according to the markbands.

A4. Lithospheric processes and hazards

Either

(a) Essay

"The impact of earthquakes is greater in more economically developed countries (MEDCs) than in less economically developed countries (LEDCs)." Discuss this statement. ***[20 marks]***

Responses should examine the impacts of earthquakes in terms of the effects on humans and the effects on property. The discussion should therefore consider the impact of earthquakes of similar magnitude on life and property in MEDCs and LEDCs.

The discussion might reflect on the high value of the built environment in cities in MEDCs where earthquakes cause huge economic losses (as in California and Japan) and where loss of life is usually minimized because of planning and costly earthquake engineering, high awareness of hazard and risk plus other mitigation strategies. The impact on economic systems that use high technology might also be considered in terms of capital losses.

In contrast, in LEDCs, especially in rural areas, mitigation measures are less common because of the costs involved and awareness of the risk may be lower. Responses may refer to the generally higher loss of life during and after the earthquake, slower and less effective response and massive loss of property, though this is usually of lower value than in MEDCs.

Good responses may reflect on the fact that large loss of life may depend on factors such as earthquake magnitude, intensity, density of the population and time of day or night, and that factors relating to levels of development are not the only ones to be considered.

Discussion must involve consideration of the impact on both LEDCs and MEDCS to access band D and above. Responses including explicit discussion of the statement are likely to be credited at bands E/F. Although examples and case studies are not specifically asked for, it is expected that responses that reach above band D would use examples or case studies effectively.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) Using the map, identify the type of plate boundary found at: ***[4 marks]***

(a) **A =** Conservative boundary

(b) **B =** Destructive boundary

(c) **C =** Destructive boundary

(d) **D =** Constructive boundary

(ii) Explain why earthquakes occur at *one* of the locations A, B, C or D. ***[3 marks]***

Explanations should describe the processes taking place at the chosen plate boundary ***[2 marks]*** and explain how this results in the occurrence of earthquakes ***[1 mark]***. An accurately annotated diagram is an acceptable answer and may be awarded ***[3 marks]*** if the requirements of the question are met. If misidentification has taken place in part (i) candidates should not be penalized in part (ii) if the explanation correctly relates to the occurrence of earthquakes at that plate boundary type.

(iii) Distinguish between the Richter Scale and the Mercalli Scale. ***[3 marks]***

Responses should indicate that the Richter scale measures earthquake magnitude (or energy released) ***[1 mark]***, while the Mercalli scale measures earthquake intensity (or effects/damage) ***[1 mark]***. For any further accurate elaboration of either scale award ***[1 mark]***.

(iv) Examine the distribution of active volcanoes shown on the map in relation to plate margins and hot spots. ***[10 marks]***

Responses should refer to the large numbers of active volcanoes found at destructive margins. Mention should be made of concentrations in the Pacific Ring of Fire (or similar) with credit given for the mention of specific boundaries and volcano locations, for example, the Andes where the Nazca and south American plates meet. Other locations might include the Aleutians, Japan, the Philippines and Indonesia. A brief explanation of the reasons for intense volcanic activity due to subduction should be given.

Responses should note that there are far fewer active volcanoes at constructive margins (except for Iceland). At least one example of such a margin should be stated and a brief explanation for the lower concentration of active volcanoes at such boundaries should be given with reference to the less violent process of sea floor spreading.

At least one hot spot volcanic group should be mentioned with a brief explanation of the reasons for volcanic activity in such locations. It is expected that most answers will refer to Hawaii in this context but other hot spots should be given credit.

Answers that refer to specific volcanic areas and boundaries and analyse their links to plate margin types are likely to be credited at bands D and above.

Marks should be allocated according to the markbands.

A5. Ecosystems and human activity

Either

(a) Essay

Discuss the interactions of biotic and abiotic components in *one or more* named ecosystems. ***[20 marks]***

The chosen ecosystem(s) should be clearly named. Biomes are acceptable as ecosystems but answers may also refer to ecosystems at a smaller scale.

Biotic components include all living matter such as plants and animals (including humans) both above and below ground. Abiotic components include water, air, minerals, rock type, nutrients and light.

The interaction is a two-way process; abiotic factors create the environment in which biotic components exist but in turn are changed by these biotic components. The stability and development of ecosystems depend upon the interdependence of biotic and abiotic components. Some human activities may change the nature of interaction between both abiotic (soil, microclimate) and biotic (plants, animals) components. In some cases, previously existing interactions are destroyed, in other cases interactions are strengthened or new interactions are created. Discussion of human interaction should be credited, but is not essential.

Responses that refer to one or more named ecosystems in detail are likely to be credited at band D and above.

A discussion that clearly distinguishes the **interactions** between biotic and abiotic factors and recognizes their interactions is likely to be credited at bands E/F.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) Define the term *biomass.* ***[2 marks]***

Biomass is the total mass of living matter (plant and animal) ***[1 mark]*** within a specific area ***[1 mark]***.

(ii) Describe the trends shown on the graph. ***[4 marks]***

In each area of the grassland ecosystem there is a decline in biomass over time (from 1994 – 2001) ***[2 marks]***. There is a marked decline in 1997/1998 particularly in Area B with subsequent rises in biomass afterwards ***[1 mark]***.

[1 mark] should be awarded for quantification.

(iii) Suggest reasons for the changes in the biomass production in Area B. ***[4 marks]***

The overall decline in biomass may be attributed to factors including human influence in the area (agriculture – cropping, grazing) or climate change in the form of the onset of warmer/drier conditions ***[2 marks]***. The rapid decline in biomass in the years 1997/1998 may be attributed to localized environmental impact – fire, flooding, locust infestation. Human influences may include deliberate burning which would help account for the rapid regeneration of biomass in 1999 ***[2 marks]***.

Other valid reasons may be suggested and should be credited.

(iv) Discuss the factors that affect the resilience and/or fragility in a forest ecosystem. ***[10 marks]***

Candidates should make reference to a specific biome or ecosystem. In the case of the latter this may be at any scale. The types of human impacts and/or natural impacts and their intensity should be assessed. These may include deforestation, overgrazing, burning, hunting, flooding, tropical cyclones, climate change, volcanic eruptions or any other valid impact(s) in the chosen ecosystem or biome.

Responses that focus only on human impacts or natural impacts can be awarded the full ***[10 marks]***.

A very good response will be expected to demonstrate, in detail, how the nature and intensity of impacts affect the biome or ecosystem. Answers which fail to refer to a specific biome or ecosystem should not move above band D.

Marks should be allocated according to the markbands.

A6. Climatic hazards and change

Either

(a) Essay

Describe the development of El Niño and La Niña events and discuss their effects on climate and human activities. ***[20 marks]***

El Niño and La Niña are officially defined as sustained sea surface temperature anomalies of magnitude greater than 0.5°C across the central tropical Pacific Ocean. The mechanisms which might cause these events are not well understood and are not expected in responses.

During non-El Niño conditions, the Walker circulation is seen at the surface as easterly trade winds which move water and lower atmosphere air warmed by the sun towards the west. This also creates ocean upwelling off the coasts of Peru and Ecuador and brings nutrient-rich cold water to the surface, increasing fishing stocks. The western side of the equatorial Pacific is characterized by warm, wet weather.

During an El Niño event, air pressure rises over the Indian Ocean, Indonesia, and Australia, and falls over Tahiti and the rest of the central and eastern Pacific Ocean. Trade winds in the south Pacific weaken or reverse direction. Warm air rises near Peru, bringing rain to coastal areas. The warm ocean water spreads from the west Pacific and the Indian Ocean to the east Pacific. El Niño's warm current of nutrient-poor tropical water, heated by its eastward passage in the Equatorial Current, replaces the cold, nutrient-rich surface water of the Humboldt Current, also known as the Peru Current. El Niño events are associated with warm and very wet summers (December–February) along the coasts of northern Peru and Ecuador, with major flooding whenever the event is strong or extreme. Southern Brazil and northern Argentina also experience wetter than normal conditions but mainly during the spring and early summer. Central Chile receives a mild winter with large rainfall, and the Peruvian-Bolivian Altiplano is sometimes exposed to unusual winter snowfall events.

El Niño events also result in drier conditions in parts of Southeast Asia and parts of Australia, increasing bush fires, worsening haze and decreasing air quality. In North America, El Niño winters are warmer than normal towards the north (including Canada) but cooler and wetter than normal in California and northwest Mexico. Changes to ocean currents can affect the local fishing industry along affected coastlines. For instance, Peruvian anchovies may migrate south to Chilean waters.

La Niña events are essentially the opposite of El Niño events and are characterized by unusually cold ocean temperatures in the eastern equatorial Pacific. Rain on the western coasts of the Pacific is heavier than usual. Atlantic tropical cyclone activity is generally enhanced during La Niña events.

Both El Niño and La Niña events have multiple effects on human activity.

A strong account of El Niño might well compensate for a weaker account of La Niña, and vice-versa. However, responses which fail to describe both events may not be credited beyond band D. Although examples are not a specific requirement of the question, they would be expected in those answers achieving bands D and above.

Responses including explicit discussion of their effects are likely to be credited at bands E/F.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) State the type of weather system that passed over this weather station. ***[1 mark]***

The system is a hurricane or tropical cyclone.

(ii) Describe the changes in wind speed recorded at the weather station over the 48 hour period. ***[3 marks]***

Wind speeds show a rapid rise to the peak wind speed recorded ***[1 mark]***, followed by a dramatic drop in wind speed to a brief, relatively calm period ***[1 mark]***, followed in turn by a sudden increase in wind speed before wind speeds gradually subside to normal ***[1 mark]***. In the absence of any quantification, no more than ***[2 marks]*** should be awarded.

(iii) Explain the geographical distribution and formation of tornadoes. ***[6 marks]***

Tornadoes are formed over land, generally well away from the coast ***[1 mark]***. They are most often spawned by giant thunderstorms known as supercells ***[1 mark]***. These powerful, highly organized storms form when warm, moist air along the ground rushes upward, meeting cooler, drier air ***[1 mark]***. As the rising warm air cools, the moisture it carries condenses, forming a massive thundercloud, sometimes growing to as much as 15,000 metres in height ***[1 mark]***. Variable winds at different levels of the atmosphere feed the updraft and cause the formation of the tornado's characteristic funnel shape ***[1 mark]***. They are most likely to occur in the afternoon because both differential surface heating and moisture availability are at a maximum at that time. Award ***[1 mark]*** for this or any other valid point.

While the question requires that both distribution and formation be explained, it is not necessary for these to be done in equal depth. A strong account of the distribution might well compensate for a weaker account of the formation, and vice-versa.

(iv) Discuss whether the human response to a major weather event is related to the level of economic development of the affected area. ***[10 marks]***

This open-ended question is to encourage some critical reasoning about human responses to major weather events in areas of contrasting levels of economic development. All kinds of responses may be considered. These include prediction, forecasting, preparation, warning systems, cloud-seeding, construction of shelters, human safety, property, building modifications (building codes), economic activity (including land use zoning), insurance and evacuation.

Although examples are not a specific requirement of the question, they would be expected in those answers achieving band D and above.

Marks should be allocated according to the markbands.

SECTION B

B7. Contemporary issues in geographical regions

Either

(a) Essay

Using examples, examine the differences between single-feature regions, functional regions and multi-feature regions. ***[20 marks]***

The three types of region should be clearly distinguished, by means of definitions or short descriptions.

Single-feature regions are those defined on the basis of single features such as distinctive landforms, vegetation or land use.

Functional regions are those defined by a combination of economic activities or by a function. Examples include the Tennessee Valley Authority, and the areas served by particular airlines, newspapers and other services. If the function ceases to exist, then the functional region no longer exists.

Multi-feature regions are defined by several characteristics, usually a combination of physical and human.

Stronger responses will discuss a variety of differences between the types of region, but are likely to note that any one individual place may belong to all three kinds of region simultaneously (*i.e.* that the different regions may coincide or overlap in time and space).

The regions examined need not be of similar scale. Using regions that are overly broad or large as examples is likely to be self-penalizing in the context of this question.

While the question requires that all three types of region be examined, it is not necessary for them to be done in equal depth. A strong account of one type of region may partially compensate for a weaker account of another type of region.

Answers that do not include examples should not be credited above band D.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) Describe the location and distribution of core protected areas in Clayoquot Sound Biosphere Reserve. ***[3 marks]***

The core areas include a large area in the northern part of the reserve (terrestrial) ***[1 mark]*** and smaller areas in southern part (both terrestrial and marine/aquatic) ***[1 mark]***. Almost all marine/aquatic core areas are immediately adjacent to terrestrial core areas (*i.e.* those particular core areas are partly terrestrial and partly aquatic/marine). This or another valid third point should be awarded ***[1 mark]***.

(ii) State *two* ways in which the location of core protected areas in Clayoquot Sound Biosphere Reserve does not match the location of core areas shown in the model. ***[2 marks]***

The model shows a single core area, in the middle, surrounded by a buffer zone, which is surrounded in turn by a transition zone. However, the core areas on the map do not occupy a central location, but are on the extremities of the park, and are not surrounded by buffer zones. In addition, on the map, there is more than one core area, or the core area is discontinuous. Unlike the model, the transition zones on the map do not completely surround buffer zones. Award ***[1 mark]*** each for any two valid points.

(iii) Justifying your choice, suggest whether it is better to consider the Biosphere Reserve as a geographic place or as a geographic region. ***[5 marks]***

In the context of this question, either choice is acceptable. Award ***[2 marks]*** for a clear definition of "geographic place" or "geographic region", ***[2 marks]*** for the justification (which must match the choice made) and ***[1 mark]*** for an evaluative comment about why the choice made is "better".

(iv) Using an annotated map only, describe and explain the essential defining characteristics of your local region, together with its precise boundaries. ***[10 marks]***

The precise mark balance may be varied at the discretion of the examiner, depending on the region chosen, but up to ***[5 marks]*** should normally be reserved for the accuracy of the map, its definition of boundaries, the normal conversion of a scale, and north point, with a further ***[5 marks]*** allocated to the annotations explaining the defining characteristics. No credit may be given for written material which is not either on (or clearly linked to) the map by means of arrows, boxes, appropriate key/legend or similar means.

Marks should be allocated according to the markbands.

B8. Settlements

Either

(a) Essay

Examine the factors influencing the location of retailing in and around large towns and cities in more economically developed countries (MEDCs) and less economically developed countries (LEDCs). ***[20 marks]***

Answers should refer to specific **factors** influencing the **location** of retailing. They may organize their answer by retail location or factor, but both must be clearly identified.

The answer should cover the CBD, the suburbs and the rural–urban fringe. In both LEDCs and MEDCs there are common factors, similar spatial patterns and both have undergone change in recent years. Globalization and the domination of the retail TNC and chain stores have led to convergence in the function, appearance and location of urban retailing.

The location of specific types of retailing is determined by economic factors which involve maximizing access to consumers and minimizing costs. Increasing land values and competition for space in the CBD have encouraged the domination of department stores, international chain stores and specialist shops. At the same time it has encouraged the closure or exodus of many convenience goods shops. These appear in secondary centres serving communities outside the CBD or corner shops serving a local, suburban community. Patterns may vary depending on the precise examples chosen.

Changes in technology and transport have increased mobility leading to centrifugal movement of people, manufacturing and services. This has resulted in the development of out-of-town retail parks and shopping malls. These attract stores needing lower rents, easier access, lower land values and the economies of scale that occur with agglomeration. Hypermarkets, automobile service stations, drugstores and furniture shops tend to dominate these suburban retail centres. Global retailers are also evident here. Retailing may be informal and occur spontaneously. Street vendors may be found in cities at all levels of economic development, although this is more common in LEDCs.

Urban retailing patterns may also be determined by social factors such as ethnicity, age-structure and income. Physical factors such as a coastal or river promenade may also attract both permanent and temporary retailers. Other valid factors may also be relevant.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) Describe the characteristics of the two residential areas shown on the photograph. ***[2+2 marks]***

There are two distinct and contrasting residential zones, one each side of the major road. A poor quality, high density squatter settlement is located haphazardly to the left of the major road. High quality, high-rise, high-value apartments are located to the right of the main road. Award up to ***[2 marks]*** for any two valid points relating to each residential type.

(ii) Suggest reasons for the characteristics you have described in (i). ***[6 marks]***

The characteristics of each residential area reflect the status of the occupants.

The squatter/shanty settlement is likely to be occupied by poor in-migrants ***[1 mark]*** with no legal tenure, therefore the construction of dwellings is uncontrolled ***[1 mark]*** and cheap, non-durable materials are used ***[1 mark]***. Accept other valid reasons.

The high-rise apartments are likely to be occupied by residents with high incomes ***[1 mark]*** who have legal tenure ***[1 mark]*** and can afford the planned, architecturally designed apartments ***[1 mark]***. There may be other valid points, but they must relate directly to the photograph. The answer should explain residential characteristics already described.

It is not necessary for both residential areas addressed in equal depth, so the mark distribution may be adjusted accordingly.

(iii) Describe and evaluate the management strategies used to overcome problems of *either* traffic congestion *or* housing in urban areas. ***[10 marks]***

The description of management strategies should explain the nature of the traffic or housing problem and the reasons for their implementation. The operation of these management strategies should be described. There should be an attempt to evaluate these strategies, but this may be speculative if they have not been in place for long. Such answers are acceptable.

Although examples are not a specific requirement of the question, they would be expected in those answers achieving band D and above. Answers that evaluate strategies are likely to be credited at bands E/F.

Marks should be allocated according to the markbands.

B9. Productive activities: aspects of change

Either

(a) Essay

"Technological innovations in agriculture have created more benefits than problems in recent years." Discuss this statement. ***[20 marks]***

Responses are expected to discuss both benefits and problems that have occurred with the technological development of agriculture.

There is a variety of innovations that could be discussed. These include technologies to maximize production through the use of pesticides, compound fertilizers, high yielding varieties (HYVs), genetically modified (GM) crops, selective livestock breeding, factory farming, drainage, irrigation, and the use of ICT. Agribusiness has developed through the improvement of transport systems, advanced production and marketing technologies.

Benefits may include rising yields, reclamation of marginal land, improved rural incomes, the release of labour for industry, the expansion of markets for agricultural producers and improved food security.

Problems linked to changes in agricultural techniques are relevant at both local and global scales including the disparity of technology between LEDCs and MEDCs and its effects on global markets. There is a wide range of social, economic and political problems arising from these new technologies. There are also environmental effects that degrade soils and pollute water and air, threatening agricultural sustainability.

There are many other possibilities such as organic agriculture that could be credited.

Although examples are not a specific requirement of the question, they would be expected in those answers achieving band D and above.

Responses that discuss both the benefits and the problems of innovations are likely to be credited at bands E/F.

Marks should be allocated according to the markbands.

Or

(b) Structured question

(i) State the type of farming that would be found in Zone X. ***[1 mark]***

Award ***[1 mark]*** for either intensive farming or for naming a specific type of intensive farming such as market gardening.

(ii) Referring to Diagram A, explain why the type of farming changes with distance from the central city. ***[3 marks]***

The main factor is transport costs ***[1 mark]***. The model assumes a uniform plain and transport costs directly proportional to distance from market ***[1 mark]***, leading to a concentric pattern of farming zones. The most likely farming type in each zone is dependent on the relative importance of transport costs in the total costs of production for that farming type in that zone ***[1 mark]***. Accept any other suggested explanation that accords with the information shown in the diagram.

(iii) Referring to *at least one* specific type of farming, distinguish between the factors responsible for optimal (ideal) locations and for sub-optimal (marginal) locations. ***[6 marks]***

The factors responsible for optimal locations are mainly the natural factors of climate, soils, aspect and slope. The factors responsible for sub-optimal locations include market, land ownership and government intervention. Award up to ***[4 marks]*** for the factors responsible for each type of location and the final ***[2 marks]*** for the details of a specific type or types of farming provided in the response.

(iv) Examine the influence of meso-factors (within one region) and micro-factors (choice of site) on the location of manufacturing industries. ***[10 marks]***

There are numerous meso-factors and micro-factors which influence the location of manufacturing industries. They include sources of raw materials and labour, markets, transport networks, cost of land, land use zoning, industrial inertia and the personal preferences of the entrepreneurs or owners of the industry. Some of these factors are common to both scales, but there should be some attempt to categorize into meso and micro-factors.

It is not necessary that responses cover all these factors for ***[10 marks]***, but it is expected that those responses that refer to examples are likely to be credited at band D and above. Those that cover a variety of factors and distinguish between meso-factors and micro-factors are likely to be credited at band D. Note that responses should not be given credit for examining macro-factors (choice of continent and country) or for examining non-manufacturing industries such as services.

Marks should be allocated according to the markbands.

B10. Globalization

Either

(a) Essay

Examine the effects of globalization upon cultural diversity. ***[20 marks]***

It is expected that definitions of both globalization and cultural diversity are given at the start of the essay. Culture should be broadly interpreted to include aspects of language, customs, religion, dress, food, music, art and architecture.

The loss of cultural diversity is evident in many global cities that display common architectural styles and that advertise and sell the same merchandise from global stores in homogenized streets and shopping malls. TNCs play an important role in the promotion of consumer products and this is visible through the adoption of common dress, music, and many other aspects of culture. Migration is also important in diffusing culture and tourists may be responsible for exposing indigenous people to global culture in their search of the unusual and exotic. The domination of the English language and the reduction in the number of indigenous languages is another example of the loss of diversity that has been promoted by information technology. There are many other effects of globalization on cultural diversity that may be relevant to the answer and should receive credit.

Although a judgment on the value of cultural diversity is not expected, it deserves credit.

Candidates may acknowledge that the loss of cultural diversity is neither inevitable nor universal and countries may attempt to resist it. Such answers are likely to be credited at band E/F.

Although examples are not a requirement of the question, they would be expected in those answers achieving band D and above.

Answers that consider a variety of effects upon cultural diversity at a range of scales from global to local are likely to access bands E/F.

Marks should be allocated according to the markbands

Or

(b) Structured question

(i) Describe and explain the trend in journey times shown on the graph. ***[1+3 marks]***

The description should recognize the decline in journey times between 1700 and 2000 ***[1 mark]***. This should be supported by data using the dates and the journey times given ***[1 mark]***. Changing modes of transport should be given as a likely reason for the acceleration shown on the graph ***[1 mark]***. Allow ***[1 mark]*** for further elaboration or an additional point.

(ii) Explain how the changes shown on the graph have accelerated the process of globalization. ***[6 marks]***

There are two important aspects to this question both of which should be covered for full marks. First, the answer should recognize that globalization has been occurring for several centuries, but since 1900 transport improvements have accelerated the process of global shrinkage (time-space convergence) ***[3 marks]***.

Second, the impact of transport improvements upon specific aspects of globalization should be covered. This would include the expansion of the global network and the increased speed of transfer of people, raw materials and manufactured goods through such activities as trade and tourism ***[3 marks]***.

(iii) Referring to *one or more* examples, examine why some countries or regions are less globalized than others. ***[10 marks]***

Likely reasons for the low levels of global participation by some countries might include:

- inaccessibility and the inability to develop an adequate transport network
- a low level of resource potential preventing participation in trade and foreign direct investment
- low levels of education and literacy skills limiting the establishment of transnational corporations
- limited access to communications technologies such as the Internet and telecommunications due to lack of funding
- political regimes resisting westernization
- a lack of physical or cultural attractions for tourists.

Underlying most of these limitations would be poor levels of economic development and poverty, which tend to perpetuate the problem by discouraging integration into the global economy.

The examples chosen are most likely to come from regions of the world such as central Africa and southern Asia. Although these regions are considered to be relatively untouched by globalization, the rate of global involvement is increasing albeit from a very low level. Answers that include examples should be credited at band D and above.

Provided that relative levels of globalization are mentioned and most of the above limitations are covered, an examination of the advantages of countries with a high level of globalization is not required for answers accessing bands E/F.

Marks should be allocated according to the markbands.

SECTION C

C11. Topographic mapping

(a) State the compass direction towards which the camera was pointing when this photograph was taken. ***[1 mark]***

The camera was pointing towards west-north-west (accept north-west) ***[1 mark]***. No other answer is acceptable.

(b) Describe *two* advantages of the photograph compared to the map in showing the geographical characteristics of the town of Ponte de Lima. ***[2 marks]***

There are many possible advantages of the photograph and these include: building style and characteristics, traffic density and vegetation. Award ***[1 mark]*** for each of the two advantages.

(c) Select a site for a new out-of-town shopping centre within two kilometres of the centre of Ponte de Lima and justify your choice. ***[1+2 marks]***

Award ***[1 mark]*** for a realistic choice of site that is clearly located using either grid references or directions and distances. Award ***[2 marks]*** for the justification that identifies at least two reasons for the choice of site. These are likely to include access to open and relatively cheap land away from the town centre and possibly at a road junction. There may be other valid reasons. No credit should be given to any site that is located beyond the 2 km radius from the centre (grid reference 347 243).

(d) Using only an annotated sketch map, describe the main features of relief and drainage shown on the map. ***[6 marks]***

Award ***[2 marks]*** for an accurately drawn map showing the principal features of relief and drainage. Award ***[1 mark]*** for the usual map conventions such as scale and orientation. Award ***[3 marks]*** for annotations that describe the features of both relief and drainage. These descriptions may be quite brief but must be included on the map. No credit should be given for any written information which is not either written on the map or clearly related to it by means of arrows, boxes, appropriate key/legend or similar means.

(e) Referring to the outlined area on the map marked A, describe and explain the influence of relief and drainage on the location of the settlement. ***[4+4 marks]***

(The area under consideration is between eastings 31 and 34 and northings 22 and 24. It should be outlined on the map extract).

This area is dominated by the River Lima; to the south, land is part of a flood plain and drainage is poor as indicated by the network of drainage channels and marshland in the extreme south west. This flat area, which is subject to flooding, limits settlement within 1 km of the river between eastings 31 and 33. On the north side of the river, the land has a steeper incline away from the river and this is not exposed to the same risk of flooding. Consequently it attracts both communications and settlements.

Award ***[4 marks]*** for description and ***[4 marks]*** for explanation.

Marks should be allocated according to the markbands.