



MARKSCHEME

May 2012

GEOGRAPHY

Higher Level and Standard Level

Paper 2

18 pages

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Optional Theme A — Freshwater – issues and conflicts

1. (a) **Identify *two transfers* and *two stores* shown in the diagram.** [2+2 marks]

Award [2 marks] for the correct identification of two stores (interception/surface water/ soil moisture /groundwater/channel) and [2 marks] for the correct identification of two transfers (soil infiltration / percolation / overland flow/throughflow/groundwater flow). No marks should be awarded for the identification of evapotranspiration or river enters the sea as a transfer.

- (b) **Explain *three ways* in which human activity can reduce the time taken for water to pass through the system.** [2+2+2 marks]

Answers depend on the human activity/activities chosen which may lead to land use changes (urbanization, deforestation, agriculture), river channel modifications, drainage systems. Marks should not be allocated to “increased rainfall”.

Award [1 mark] for correct identification of a relevant human activity and [1 mark] for a valid explanation of how it reduces the time taken for water to pass through the system.

- (c) **Examine how an international conflict has arisen as a result of competing demands for freshwater.** [10 marks]

The freshwater water resource involved should be clearly identified and located, as should the countries involved in the water conflict.

Answers should clearly describe the nature of the conflict and explain why it occurs.

The associated problems for each of the countries involved should be examined.

Attempts to resolve the conflict can lead to further conflict and this can be credited where relevant.

Answers that refer only to a conflict within a country should not move above band C.

Marks should be awarded according to the markbands.

2. (a) **Describe the geographical characteristics of the Río Grande de Santiago downstream from La Presa.** [4 marks]

Award [1 mark] for meandering, [1 mark] for south west direction and [2 marks] for other characteristics such as oxbow lake, delta.

Award a maximum [3 marks] for a list of landforms with no overview/description. Full marks should not be awarded in the absence of map evidence – names or grid references.

- (b) **Analyse how the freshwater resources shown in box A on the map could be used for different purposes.** [6 marks]

Use of the river for irrigation, navigation, domestic use.

Wetland has potential for tourism, nature reserves, farming, aquaculture.

Lakes – fish farming, tourism, sport and recreation.

At least two different types of water resource (wetlands, rivers, lakes) should be analysed.

A maximum of [4 marks] should be awarded where only one resource is analysed.

Full marks should not be awarded without some use of map evidence – names or grid references.

- (c) **“People should not try to prevent rivers from flooding.” Discuss this statement.** [10 marks]

There are various approaches to answering this question. Candidates could focus on avoiding the expensive consequences of river flooding, or the impacts of levée building on floodplains or alternative stream management strategies.

Answers should propose arguments for and against allowing rivers to flood. Arguments against could include the need to protect population, settlements, infrastructure, farmland crops and livestock from loss.

Mention of drawbacks of natural flooding could include loss of agricultural land, the cost of relocation of population, transport disruption, contamination of water supplies, the spread of disease and disease carrying insects, loss of life and property.

Reference could be made to flood frequency and the cost of protection from small, medium and large floods.

Counter arguments may refer to engineering strategies that actually exacerbate flooding downstream in terms of the increased volume and reduced arrival time of a flood surge. The benefits of allowing rivers to flood naturally might include reduced costs of levée and dam construction, the accumulation of new soil thus raising fertility and reducing the need for chemical fertilizers, more organic content entrained in the river boosting the aquatic ecosystem, lower and later flood crests and less erosion of the river bed. Answers may also refer to the benefits of the re-establishment of wetland areas to absorb floodwater, thus lowering flood peaks and reducing the risk downstream.

Good answers will probably conclude that a balance of protection in some areas and allowing floods in others is the best solution. Not all of the above is needed for an answer to reach the top bands, however, answers that present only one aspect of the argument should not be credited above band C.

Marks should be allocated according to the markbands.

Optional Theme B — Oceans and their coastal margins

- 3. (a) Describe the pattern of ocean currents shown on the map. [4 marks]**

Warm ocean currents move water away from the equator whereas cold ocean currents move water away from cold regions towards the equator. Warm currents tend to be on the west side of the Atlantic ocean and cold currents tend to be on the east. The current circulation in the northern hemisphere is clockwise; in the southern hemisphere it is anticlockwise. The northern Atlantic does not have a circumpolar current, whereas the southern Atlantic does. Warmer currents appear to be faster than colder currents. Anomalies such as the Labrador current should be credited.

Award [1 mark] for each valid point made up to a maximum of [4 marks].

Award a maximum of [2 marks] for a listing/description of currents where no pattern is identified or described.

- (b) Explain the functioning and importance of the oceanic conveyor belt. [6 marks]**

Functioning (how it works) – the oceanic conveyor belt is important for the transfer of energy. In polar regions, cold, salty water sinks into the depths and makes its way towards the equator. This cold, dense water sweeps around Antarctica and then spreads into the deep basins of the Atlantic, the Pacific and the Indian Oceans. Surface currents bring warm water to the North Atlantic from the Indian and Pacific Oceans.

Importance (why it matters) – it raises temperatures in some mid-latitudes such as the British Isles and Scandinavia. It also influences the amount of rainfall received in certain areas. In addition, it brings nutrients up from the sea bed and carries them around the world creating valuable fishing grounds. This benefits a range of human activities including agriculture, tourism and ocean navigation.

Award a maximum of [4 marks] if only functioning or importance is explained.

- (c) **“Ocean fishing can never be sustainable.” Discuss this statement.** [10 marks]

Sustainability needs to be explained in terms of maintaining fish catches (or yields) without causing any decline in stocks.

Sustainability measures include quotas, bans and the closing of fishing areas. However, these still fail to address the real problems of the fishing industry: too many fishermen are chasing too few fish and too many immature fish are being caught. For fisheries to be protected and for the industry to be competitive on a world scale, the number of boats and the number of people employed in fishing must be reduced. At the same time, the efficiencies which come from improved technology could be considered. The industry’s fishing capacity continues to increase. The number of vessels is increasing slowly. However, each boat has greater capacity due to improved technology. Due to over-capacity, much of the investment in new technology is wasted. The amount of fish caught at sea has barely changed in the last decade. Fish stocks are depleted, so the effort to catch the fish remaining is higher than it needs to be.

Other themes that could be explored may focus on issues of increasing global consumption due to growing population numbers and affluence and long term difficulties in matching rising demand with supplies, as well as the greater use of aquaculture.

Changes in dietary pattern could also have an influence *e.g.* the current trend in many MEDCs for moving from a red meat to a fish diet and fish supplements, increasing numbers of sushi restaurants *etc.*

Attempts to make fishing more sustainable – regulations: net sizes, line lengths, depth of fishing, education policies, establishment of non fishing zones.

Valid alternative approaches should also be credited.

Answers accessing markbands E/F should include a balanced conclusion – however, they may be speculative.

Marks should be allocated according to the markbands.

4. (a) Identify *two* abiotic resources found in each of the following:

- (i) **continental shelf areas,** [2 marks]

Award [1 mark] for each valid resource identified *e.g.* placer deposits, oil and natural gas.

- (ii) **ocean floor deposits.** [2 marks]

Award [1 mark] for each valid resource identified *e.g.* manganese nodules, zinc, phosphates, sulphates, copper, lead, silver.

- (b) **Explain *three* consequences of oil pollution in oceans.** [2+2+2 marks]

Possible consequences include:

- reduction in biodiversity
- declining ecological and/or economic productivity
- costs of clean-up operations
- social costs such as loss of livelihoods (short- and long-term unemployment)
- political costs such as after Deepwater Horizon.

Credit other valid consequences.

Award [1 mark] for the description or example of each consequence and [1 mark] for each explanation.

- (c) **Examine the effects of the loss of coral reefs and mangrove swamps.** [10 marks]

It is likely that most answers will refer to the possible causes of loss of coral reefs and mangroves as a first step to examining the effects of such loss.

The consequences of the loss of coral reefs are:

- erosion of coastlines
- loss of fish habitats (occupying less than 0.25 % of the marine environment, they nevertheless shelter more than 25 % of all known fish species)
- loss of biological and economic productivity
- loss of biodiversity
- loss of breeding and feeding grounds for fish
- economic and social loss to people who depend on fishing and/or coral reef tourism/diving.

Some of these effects are similar in the case of mangrove swamps.

In addition, a loss of mangroves may reduce the amount of available food and fuel, building materials and medicine. Mangroves also act as natural filters, absorbing nutrients from farming and sewage disposal.

Both coral reefs and mangroves protect coastlines by absorbing some wave energy, especially during storms such as hurricanes (tropical cyclones). The dense interlocking roads of mangroves help to stabilize shorelines and prevent erosion.

The loss of coral reefs and mangroves are not entirely negative. Removing them may improve navigation. Material eroded from coral reefs can accumulate to form attractive (and economically important) white-sand beaches.

The destruction of mangrove swamps may allow for the construction of hotels, harbours and marinas.

Answers accessing markbands E/F should include the consequences of both coral and mangrove loss. Examples would be expected for bands E and F.

Marks should be allocated according to the markbands.

Optional Theme C — Extreme environments

5. (a) **Briefly describe *two* erosional landforms shown in this photograph.** [2+2 marks]

Award [1 mark] for correctly naming an erosional landform with a further [1 mark] for a matching description.

Landforms include: corries, arête, pyramidal peak, u-shaped valley (which counts only as the name, not the description).

- (b) **Explain *three* ways in which the characteristics of periglacial environments hinder resource development.** [2+2+2 marks]

Resource development in periglacial environments is hindered by:

- low temperatures that reduce plant growth and make the working environment difficult
- low temperatures that make it difficult/expensive to provide services such as water and sewage disposal
- long hours of darkness in winter that limit plant growth and affect human disposition (biometeorology)
- some machines having to be kept running the whole time in winter or they shut down
- vehicles needing to be equipped with special wheels to deal with the snow and ice in winter
- thawing of permafrost causing subsidence – the weight of vehicles or buildings may cause subsidence too.

Award [1 mark] for each valid characteristic and [1 mark] for an explanation.

- (c) **With reference to *one or more* extreme environments, discuss whether human activities can be sustainable.** [10 marks]

Extreme environments are characterized by very low population densities. They are generally relatively inaccessible and tend to be viewed as inhospitable to human habitation. Despite this, they provide numerous opportunities for settlement and economic activity.

Agriculture can be sustainable, as long as the carrying capacity of the land is not exceeded. In some areas, this means migrating with herds rather than practising sedentary farming. Tourism offers some possibility for sustainable economic activity, especially in hot areas. However, water shortages may be an issue. Mineral development is unsustainable but can be used as a catalyst for economic development.

Answers should show a good understanding of sustainability.

Answers accessing markbands E/F should include located examples and a range of human activities.

Marks should be allocated according to the markbands.

6. (a) **Describe the climatic characteristics of *either* periglacial or glacial environments.** [4 marks]

Key aspects will be temperature, temperature range, seasonality, precipitation. Award [1 mark] for each valid statement, supported by some quantification or development.

- (b) **Explain *two* landforms associated with deposition by glaciers.** [3+3 marks]

The most likely landforms to be chosen will be terminal moraine, lateral moraine, erratic, till plains, drumlins. Also accept fluvio-glacial features, such as kettle holes, eskers, kames, outwash plain.

Award [1 mark] for a description of the landform and [2 marks] for explanation.

The explanation is likely to focus on the unsorted, ungraded, angular nature of deposits as well as other key features. A fluvio-glacial feature's explanation may focus on the rounded, stratified, sorted nature of deposits.

- (c) **Examine the opportunities and challenges for agriculture in hot, arid areas.** [10 marks]

Annual rainfall varies between 250 mm and 500 mm, so there is some possibility for farming, especially where water conservation methods are used.

Opportunities include:

- nomadism (the traditional way of dealing with insufficient amounts of rainfall and pasture)
- irrigation in areas close to rivers or oases
- increased use of drought-tolerant species
- irrigating with silt-laden river water to restore soil in badly eroded areas
- land enclosure to reduce wind erosion.

Challenges include the shortage of water and the high temperatures. All arid and semi-arid areas have a **negative water balance**. The shortage of water can be made up by using irrigation water – including central pivot irrigation, drip irrigation.

Desert soils are arid (dry) and often infertile, due to:

- a low organic content because of the low levels of biomass
- being generally very thin with few minerals
- lack of clay (the amount increases with rainfall).

Salinization may occur in areas where annual precipitation is less than 250 mm. The saline soils adversely affect the growth of most crop plants by reducing the rate of water uptake by roots and germinating seeds. Desertification occurs when already fragile land in arid and semi-arid areas is overexploited.

Answers accessing markbands E/F should include both the opportunities and challenges of farming in hot arid areas, and refer to examples or case studies.

Answers that only examine either opportunities or challenges should not be credited beyond band D.

Marks should be allocated according to the markbands.

Optional Theme D — Hazards and disasters – risk assessment and response

7. (a) **Describe the distribution of areas in the northern hemisphere that have been affected by *five or more* severe drought events from 1974 to 2004.** [4 marks]

Award [1 mark] for each valid statement, either about general distribution (*e.g.* most of the affected areas are between the equator and 30°N) or based on the naming of specific regions, *e.g.* East Africa, or countries. No credit should be given for references to locations in the southern hemisphere.

- (b) **Analyse *three* ways in which communities can reduce the impact of drought.** [2+2+2 marks]

Possible answers might include: early prediction through satellite remote sensing that detects changes in vegetation growth; the adoption of water conservation legislation in cities; cloud seeding; desalination; prevention of vegetation loss through overgrazing or soil erosion; water conservation techniques such as cisterns or tanks, catching runoff to raise water tables in wells using check dams and soil bunds; animal herd diversification; crop diversification migration; dry farming methods; government and international food aid; and disaster relief programmes. A variety of scales is acceptable.

Award [1 mark] for a description of the method used, and [1 mark] for development either by example or elaboration.

- (c) **“Hazard preparedness is more important than hazard prediction.” Discuss this statement with reference to any *one* hazard other than drought.** [10 marks]

It is expected that most answers will refer to earthquakes or volcanoes or to hurricanes or their associated hazards.

Answers that focus on a single, related hazard, such as a tsunami or storm surge, are equally acceptable. Discussion of human induced hazards is also valid.

Answers should examine the effectiveness of methods of prediction of the chosen hazard and balance this with the success of methods used to prepare populations and property for the impact of a hazard event. In order to reach markbands E and F answers should present a discussion rather than just a list of prediction and preparation methods and reach a conclusion.

It should not be possible to reach markbands E and F without reference to actual hazard events.

Marks should be allocated according to the markbands.

8. (a) Define:**(i) *hazard risk,*****[2 marks]**

Hazard risk is the probability (accept “potential threat”) of a hazard event causing harmful consequences [1 mark]. Award a further [1 mark] for development of this in terms of threats to life/property, injury, possessions, building structures, infrastructure.

(ii) *hazard probability.***[2 marks]**

Hazard probability is the likelihood of a hazard event actually occurring [1 mark]. Award a further [1 mark] for development of this in terms of the magnitude of an event and the frequency of its occurrence (the greater the magnitude, the less frequent the occurrence), or for reference to seasonal hazard occurrence, such as hurricanes.

(b) Explain *three* factors that affect the way that people perceive hazards. [2+2+2 marks]

Factors could include past experience of hazard events, level of education, age, gender, social status, access to information systems, level of technology, wealth, level of economic development, government awareness programs, religion (hazards as acts of God), personality. Award [1 mark] for identifying a valid factor, with a further [1 mark] for explaining how it affects hazard perception.

(c) Examine the impact of a recent human-induced (technological) hazard event. [10 marks]

The hazard event should be identified and located. A description of the nature of the hazard event should be stated. The impact of the hazard, on people, the environment, infrastructure and economy (as relevant) should be examined, though not necessarily all in the same depth. References to responses to the hazard should also be credited according to the markbands.

Answers that do not relate to explosion or escape of hazardous material should not be credited beyond band C.

Marks should be allocated according to the markbands.

Optional Theme E — Leisure, sport and tourism

9. (a) **Identify *one* possible heritage tourism location *and one* possible ecotourism location shown on the map and justify your choice.** [2+2 marks]

Ecotourism focuses on the natural environment; heritage tourism is based on a historic legacy.

Heritage tourism locations include:

- Old Irontown Ruins – clearly a historical site, celebrating the industrial history of the area
- Parowan Gap Petroglyphs – petroglyphs represent the culture and activities of ancient societies – the attraction is historical.

Ecotourism locations include:

- Red Canyon
- Yankee Meadow Reservoir.

Other suggestions that are suitably justified are equally acceptable.

[1 mark] should be awarded for the site location with the remaining [1 mark] awarded for the valid justification.

- (b) **Explain how the carrying capacity may be different for *two* of the activities at Three Peaks recreation area.** [6 marks]

Answers may distinguish between different kinds of carrying capacity (environmental/perceptual). Carrying capacity is defined as the maximum number of people that a site/event can satisfy at one time. If this limit is exceeded, then there may be immediate impact on the environment (*e.g.* erosion caused by mountain biking and 4x4) *or* some users consider usage excessive (*e.g.* a picnic spot that becomes overcrowded and overused). Award up to [2 marks] for each well developed idea, reserving the final [2 marks] for demonstrating a clear understanding of the term “carrying capacity”.

A maximum of [4 marks] should be awarded if variance in carrying capacity is identified but not explained.

- (c) **Discuss the factors affecting the distribution of leisure facilities in urban areas.** [10 marks]

Leisure includes sport, tourism and recreation. Candidates are expected to include a range of factors that could include: bid rent, population densities, socio-economic influences, government grants/policies, cultural influences, accessibility, transport, demographic considerations, physical factors (*e.g.* rivers for rowing), availability of land.

Some candidates may illustrate differences between urban areas in economically rich and poor regions/countries.

While examples are not a specific requirement of the question, those answers that provide supporting examples are likely to access the higher markbands.

Marks should be allocated according to the markbands.

10. (a) Define:

- (i) *leisure*, [2 marks]

Leisure is a freely chosen activity or experience [1 mark] that takes place in non-work time [1 mark].

- (ii) *tourism*. [2 marks]

Tourism involves travel away from home [1 mark] for at least one night [1 mark].

All tourists are involved with leisure but not all leisure is tourism.

- (b) Analyse *three* geographic factors, other than accessibility and affluence, that determine levels of participation in *one* named sport you have studied. [2+2+2 marks]**

Participation may be on a local, national or international scale.

Candidates are expected to consider three distinct factors. [2 marks] are available for each developed factor up to a maximum of [6 marks]. The range of answers is wide, but could include socio-economic factors, education levels, funding, investment in infrastructure, marketing, role of governing body, media exposure, facility requirements. The answer may focus on the numbers of nations participating in international sports or individuals participating in sports. There may be other valid approaches, such as levels of spectator participation.

- (c) Compare the influence of accessibility and affluence on the growth of *either* recreation *or* tourism *or* sport. [10 marks]**

Sport, recreation and tourism are all leisure activities.

In general, increased affluence is likely to increase the participation in any of these leisure activities because of increases in disposable income, and increased investment in leisure facilities and infrastructure. A greater range of leisure resources are more accessible because of the ability to meet transport costs and membership/access fees.

Accessibility is likely to increase with affluence. As affluence allows investment in more leisure facilities and infrastructure, so accessibility increases. Accessibility for minority groups can be increased because of investment.

Answers are expected to provide obvious comparison between the relative influences of affluence and accessibility. Answers that provide only description of the influences should be limited to markband D.

While examples are not a specific requirement of the question, those answers that provide supporting examples are likely to access the higher markbands.

Marks should be allocated according to the markbands.

Optional Theme F — The geography of food and health

- 11. (a) (i) Define the term *health-adjusted life expectancy*. [2 marks]**

Health-adjusted life expectancy (HALE) is the life expectancy [1 mark] adjusted for time spent in poor health due to disease and/or injury [1 mark].

It can also be defined as the equivalent number of years of full health [1 mark] that a newborn can expect to live [1 mark], based on current rates of mortality and ill-health.

- (ii) State *one* reason why this is a better measure of the health of a population than child mortality. [2 marks]**

There are many possibilities. Child mortality reflects the health of mothers and young children, whereas HALE reflects the entire population, including the elderly. The costs and policies associated with the provision of health services in a society are probably better judged by HALE than by child mortality. Award [1 mark] for a valid reason with an additional [1 mark] for further development, such as quantification or exemplification.

- (b) Referring to *one or more* diseases, explain how *three* geographic factors influence the spread of disease. [2+2+2 marks]**

Depending on the disease(s) chosen, many different geographic factors may be relevant, including climate, relief, transport lines and connections, incidence of hazards such as flooding, availability and access to methods of prevention (e.g. vaccination) or cure, population density, mobility, religion, politics, poverty. Award [1 mark] for each valid factor, with an additional [1 mark] for further development, clearly linked to the spatial diffusion/spread of the disease. Award a maximum of [2 marks] if no diseases are named.

- (c) **“Affluent societies are less affected by disease than those with a high level of poverty.” Discuss this statement.** *[10 marks]*

There are few simple relationships between poverty/affluence and the incidence of disease. At a global level, a distinction is recognized between the so-called “diseases of affluence” (type 2 diabetes, heart disease, cardiovascular disease, some forms of cancer, asthma, allergies, depression, some psychiatric illnesses) and the “diseases of poverty” (AIDS, malaria, tuberculosis, pneumonia, measles, cholera, typhoid, malnutritional diseases, dysentery, diarrhoeal diseases). In practice, both groups of disease often co-exist in any one society, with their incidence depending on income levels and other socio-economic characteristics.

Higher life expectancies in affluent societies may explain the higher incidence of diseases of affluence, most of which are degenerative, chronic and non-communicable. Diseases of poverty tend to be linked to infections, inadequate environmental health regulations or poor hygiene; they are often communicable. Rapidly developing countries may have relatively high levels of both groups.

Candidates should discuss the statement not only in terms of the distribution or incidence of disease, but should also look at other effects. These include the financial costs associated with disease prevention, treatment options and public health facilities, the possible economic consequences of disease in terms of reduced workforce productivity, the social costs of any disease linked especially to a particular age-group, such as women of child-bearing age.

Answers with developed examples or case studies are likely to be credited at bands E/F.

Marks should be allocated according to the markbands.

12. (a) **Identify the province with the most efficient energy ratio.** [1 mark]

Saskatchewan.

- (b) **Describe the pattern of energy efficiency ratios shown on the map.** [3 marks]

The lowest (least efficient) energy efficiency ratio is in British Columbia; the highest (most efficient) ratio is in Saskatchewan. Larger provinces (in area) tend to have lower ratios than smaller provinces, but overall there is not a very clear pattern. The Eastern seaboard has medium to high values; the lowest value is on the West coast.

The overall pattern is of distance decay from Saskatchewan with the provinces in eastern Canada representing an anomaly.

Award [1 mark] each for any valid statements.

- (c) **Suggest three reasons why energy efficiency ratios vary within a country or region.** [2+2+2 marks]

Energy ratios depend on numerous factors, including the technology employed in agriculture (*e.g.* glasshouses are much less efficient than open field farming); methods of cultivation (generally, subsistence farming is more energy-efficient than commercial farming); the precise crop(s) grown (*e.g.* growing peas has a lower energy ratio than growing wheat or maize); the climate (energy ratios are often more efficient in warmer, wetter areas, than in cooler, drier areas, because of differences in biological productivity); the soil type (which also results in different yields or levels of productivity).

Award [1 mark] for each reason stated (provided it links to energy efficiency) and [1 mark] for further development.

- (d) **Examine recent changes in agricultural systems that have led to increased food availability in some areas.** [10 marks]

Candidates may interpret the term “agricultural systems” in its narrowest sense, or may adopt a more inclusive definition, to include technological innovations and changes to the area being farmed.

In general, recent changes have tended to increase crop yields, and improve the availability of food. However, these changes may be at the cost of decreasing the sustainability of farming (since they may cause a decline in energy efficiency), or of higher expenditures on other inputs, such as fertilizers.

Food availability is not only a function of how much food is produced or enters the marketplace. It is also related to political factors and economies, and in particular to the relationship between income levels in a society and food prices. Even in an affluent society, some low income groups may not have access to sufficient food. In other areas, the changes in agricultural systems may be focused on raising the production of non-food cash crops at the possible expense of local food crops.

Answers accessing markbands E and F are likely to examine a number of changes in some detail, and refer to examples and case studies.

Marks should be awarded according to the markbands.

Optional Theme G — Urban environments

- 13. (a) Describe the pattern of urban growth since 1979. [4 marks]**

There is a significantly more urbanized area in 2003 compared to 1979.

In 1979 the main urban area was close to the river and since then has grown into the flood plain.

In 2003 the floodplain/lower land has been occupied by urban development. The urban area now extends further north and has increased significantly in the eastern part of the region shown. The urban development is more dense in 2003 as shown by the change in colour. More urban roads/communication are evident in 2003.

Award [1 mark] for each valid point to a maximum of [4 marks].

- (b) Suggest three reasons for the rapid growth of some cities. [2+2+2 marks]**

Suggestions might include rural-urban migration, development of industry/economic development, increased employment opportunities, government policies, increased quality of life in urban areas, improved communication links, increased mechanization and loss of employment in rural areas, natural population increase. Three distinct, developed suggestions should be provided for up to [2 marks] each.

- (c) Examine the factors that determine the socio-economic characteristics and location of residential areas within cities. [10 marks]**

Socio-economic characteristics include demographic, political, social and economic factors, but it is not necessary for candidates to consider all of these in equal depth.

The factors affecting the socio-economic characteristics and location of residential areas include: history (age, quality of buildings); physical geography (geology, drainage, and relief may mean that higher class buildings are built in less hazardous locations); accessibility and transport links; the location of industrial and commercial areas; wealth, ethnicity and family status; the relative importance of urban processes such as suburbanization, urban sprawl, counter-urbanization, gentrification and rural-urban migration; as well as natural population increase. This is not a complete list, and other factors may be equally important, depending on the city or cities in question.

The location of residential areas within a city may be different in economically-poor countries than in richer countries. For example (numerous exceptions aside), the central areas of rich cities may have poor quality housing (inner-city slums), whereas the poorest residential areas in poor cities often tend to be found on the city fringe (shanty towns).

Maps or diagrams may substitute for text.

To reach markbands E/F, candidates should examine a range of factors, and offer sufficient depth by way of data, maps, examples or case studies, to demonstrate a sound understanding of the topic. It is not necessary for candidates to examine all of the factors mentioned in order to obtain full marks.

Marks should be allocated according to the markbands.

14. (a) Describe the differences in fertility shown on the graph. [4 marks]

Slum fertility rates are higher than non-slum fertility rates in all cases [1 mark]. Morocco has the lowest fertility rates in all categories [1 mark], while Chad has the highest [1 mark].

A maximum of [3 marks] should be awarded for description with the remaining [1 mark] reserved for quantification.

(b) Explain three other social differences between slum and non-slum populations. [2+2+2 marks]

Possibilities include health, education, migrant status, ethnicity, age, language, religion, caste. Award [1 mark] for each valid reason with an additional [1 mark] for further explanation.

(c) Evaluate the effectiveness of one or more strategies to control rapid city growth resulting from in-migration. [10 marks]

Answers will depend upon the strategies chosen and their location(s). Examples may include: vertical development, rural development schemes, development of satellite urban areas, government legislative controls, population control *etc.*

Good answers may recognize/quantify the scale of current urbanization trends and may conclude that no strategy (*e.g.* new towns) can fully accommodate continuing in-migration.

Answers which do not have any evaluation should not proceed beyond band D.

Answers that do not make effective reference to examples or case studies are unlikely to go beyond band D.

Marks should be allocated according to the markbands.