Diploma Programme
Programme du diplôme
Programa del Diploma

Markscheme

November 2018

Geography

Higher level and standard level

Paper 2

30 pages

International Baccalaureate
Baccalauréat International
Bachillerato Internacional

Paper 2 markbands

These markbands are to be used for paper 2 at both standard level and higher level.

Level descriptor	AO1 Knowledge/ understanding	AO2 Application/ analysis	AO3 Synthesis/ evaluation	AO4 Skills	Paper 2 Marks 0–10
A	No relevant knowledge; no examples or case studies	No evidence of application; the question has been completely misinterpreted or omitted	No evaluation	None appropriate	0
B	Little knowledge and/or understanding, which is largely superficial or of marginal relevance; no or irrelevant examples and case studies	Very little application; important aspects of the question are ignored	No evaluation	Very low level; little attempt at organization of material; no relevant terminology	1–2
C	Some relevant knowledge and understanding, but with some omissions; examples and case studies are included, but limited in detail	Little attempt at application; answer partially addresses question	No evaluation	Few or no maps or diagrams, little evidence of skills or organization of material; poor terminology	3–4
D	Relevant knowledge and understanding, but with some omissions; examples and case studies are included, occasionally generalized	Some attempt at application; competent answer although not fully developed, and tends to be descriptive	No evaluation or unsubstantiated evaluation	Basic maps or diagrams, but evidence of some skills; some indication of structure and organization of material; acceptable terminology	5–6
E	Generally accurate knowledge and understanding, but with some minor omissions; examples and case studies are well chosen, occasionally generalized	Appropriate application; developed answer that covers most aspects of the question	Beginning to show some attempt at evaluation of the issue, which may be unbalanced	Acceptable maps and diagrams; appropriate structure and organization of material; generally appropriate terminology	7–8
F	Accurate, specific, well-detailed knowledge and understanding; examples and case studies are well chosen and developed	Detailed application; well-developed answer that covers most or all aspects of the question	Good and well-balanced attempt at evaluation	Appropriate and sound maps and diagrams; well structured and organized responses; terminology sound	9–10

Option A — Freshwater – issues and conflicts

1.   (a)   (i)   State the relationship between the discharge and the flood recurrence interval
                       shown on the graph.   **[1]**

                       The relationship is positive **[1]**.

                       OR

                       As discharge increases, the flood recurrence interval increases **[1]**.

        (ii)   Suggest why a logarithmic graph was used to show these data.   **[2]**

                This allows a wide range of values to be shown **[1]** because the data set
                includes a minimum of 1.2 years to a maximum of 60 years for recurrence
                interval **[1]**.

                OR

                The slope of the line indicates the rate of change between the two variables **[1]** and
                allows comparison between different drainage basins **[1]**.

                *Accept other possibilities that indicate that the graph makes the relationship
                clearer **[1]**.*

        (iii)   Estimate the flood recurrence interval for a discharge of 10 000 cumecs.   **[1]**

                45 (years) (*allow 43–47*) **[1]** *Do not penalize incorrect units.*

    (b)   Suggest how changes over time in the amount of water stored as ice in the
           hydrological cycle could:

        (i)   lead to increased river flows;   **[3]**

               *Award **[1]** for each suggested effect due to changes in ice storage and up
               to **[2]** for development/exemplification.*

               For example: The melting of ice could lead to an increase in river flow **[1]**
               and this happens seasonally in cold parts of the world **[1]** and in the future
               climate change could increase melting and river flow even further **[1]**.

        (ii)   affect the size of **one or more** other stores in the hydrological cycle.   **[3]**

               *Award **[1]** for each suggested change in size and up to **[2]** for
               development/exemplification.*

               For example: Melting of ice could lead to an increase in the water stored in
               the oceans **[1]**, which could increase ocean storage above 97 % **[1]**.
               Another change might be runoff from melting ice increasing lake storage **[1]**.

(c)   Examine the environmental impacts of agriculture on water quality.   **[10]**

Responses should show an understanding of any of the following: salinization, agro-chemical runoff, groundwater pollution, eutrophication of watercourses. Credit other valid positive impacts.

As agriculture becomes more intensive, there are greater inputs of chemical fertilizer and irrigation and greater outputs of waste, *eg* manure and chemical fertilizer. These can lead to a variety of types of environmental impacts in different areas.

Good answers may include a structured discussion of the relative importance of a variety of agricultural impacts on water quality. An alternative approach would be to question who or what (land, incomes, ecosystems, local businesses) is impacted, and recognize that some parts of the world may be more seriously affected than others.

At band D, answers are likely to be mainly descriptive and/or look only at one impact.

At band E, expect either a more detailed explanation of a range of impacts or an examination of how some places are affected by different impacts more than others.

At band F expect both.

Marks should be allocated according to the markbands.

2.   (a)   (i)   State the direction of flow of the Phungi Khola river at A.   **[1]**

North West **[1]**

(ii)   Using map evidence, outline **one** reason why the Phungi Khola river is
likely to have seasonal variations in its discharge.   **[2]**

The river flows from the glacier **[1]**, which melts more in the summer **[1]**.

(iii)   Using map evidence, state why river discharge at B is likely to be
significantly higher than at C throughout the year.   **[1]**

*Award **[1]** for stated evidence that two rivers join between the two points /
there is a confluence.*

(b)   Explain **two hydrological** changes that may result from the construction of a
dam in an area such as the Sagarmatha National Park.   **[3+3]**

*In each case, award **[1]** for identifying a change, and **[2]** for further explanation.*

For example: The reservoir behind the dam would function as a water store **[1]**,
which allows control of the flow of water over the year **[1]**, resulting in a more
even seasonal discharge downstream **[1]**.

Other possibilities include:
- less erosion/more deposition downstream
- or more erosion if sediment has been trapped by dam
- increased sedimentation in the reservoir
- increased evaporation
- decreased river flow
- increased storage
- increased infiltration.

(c)　With reference to **one named** river basin, discuss the different strategies used to meet the competing demands on the water supply. **[10]**

Responses will depend on the river basin chosen. The river basin should be named and located.

The competing demands should be outlined and could include farming, industry, domestic supplies, recreation and power supply.

Strategies could include:

At a local scale – reducing demand by water metering, customer advisory services, regulation of the efficiency of water-using appliances, especially in new buildings, water-use restriction (temporary or permanent), leakage detection and repair programmes and pressure reduction.

National scale – dams and reservoirs, transfer of water, zoning, the use of incentives for installation and/or retrofitting of water-efficient equipment, reduction of water use by the water utility, use of reclaimed water (*eg* waste water/grey water) to reduce the need for fresh water supplies.

Good answers may discuss the varying power and/or perspectives of different user groups in relation to how a resolution is arrived at (commercial/human need for water may ultimately take precedence over the needs of ecosystems/wetlands, for instance). Another approach might be to evaluate the importance/success of strategies/actions or look at different scales of approach.

Answers that do not refer to a named river basin and focus on demands only should not move beyond band C.

At band D, expect description of some strategies used to tackle water demand problems in a recognizable river basin.

At band E, expect either more in-depth explanation of strategies, or some critical evaluation of how successful the strategies have been in relation to meeting competing demands.

At band F, expect both.

Marks should be allocated according to the markbands.

Option B — Oceans and their coastal margins

3.   (a)   (i)   Outline the trend in overfished stocks shown on the graph.   **[2]**

Award [1] for recognizing increase and [1] for some valid quantification.

For example: It increases **[1]** from 10 % in 1974 to around 35 % in 2014 **[1]**.

(ii)   Briefly outline **one** consequence of overfishing.   **[2]**

Award [1] for identifying a consequence and a further [1] for development/exemplification.

For example: Unemployment amongst fishermen **[1]**, which may lead to a spiral of decline in the fishing industry **[1]**.

OR

The long-term decline in fish numbers **[1]** reduces the number of breeding fish, so the fish population declines even further **[1]**.

(b)   Explain the occurrence of:

(i)   mid-ocean ridges;   **[3]**

Award [1] for the identification of the type of plate boundary at which they are located/main process involved, and up to [2] for further development/exemplification.

For example: Mid-ocean ridges are found at constructive plate boundaries **[1]** where convection currents in the Earth's interior cause magma to rise to the Earth's surface and diverge **[1]**. The ridges have a series of transform faults caused by tension (pressure) / and the central part of the ridge is lower due to faulting/stretching **[1]**.

A well-annotated diagram would be sufficient for full marks.

(ii)   ocean trenches.   **[3]**

Award [1] for the identification of the type of plate boundary at which they are located/main process involved, and up to [2] for further development/exemplification.

For example: Ocean trenches are found at destructive plate boundaries **[1]** where denser oceanic crust plunges/subducts under less dense continental crust **[1]**. The denser ocean crust descends at an angle of about 45°, creating a deep ocean trench **[1]**.

A well-annotated diagram would be sufficient for full marks.

(c)   Evaluate the effectiveness of strategies to manage conflicting human pressures
       on **one named** area of coastline.   **[10]**

       Conflicting human pressures on a coastline may include demands from
       fishermen, tourists, energy developers, conservationists, water sports
       enthusiasts, local residents, business people, *etc*. Conflicts should be examined,
       eg between water sports enthusiasts and fishermen, or between different types of
       fishermen (commercial versus semi-subsistence). A named and located area of
       coastline should be identified (*eg*, Soufriere Marine Management Area, St Lucia).
       Different management strategies, *eg* zoning, conservation areas, protection
       schemes, habitat restoration, *etc*, should be examined. Accept Great Barrier Reef
       and similar.

       Good answers are likely to consider a number of pressures on a named
       coastline. They are likely to examine the views of several different stakeholders;
       consider the different power of certain stakeholders and examine possible future
       conflicts as a result of environmental change. There should be an evaluation or
       final judgement of the effectiveness of the management strategies used.

       If no area is named, the response should not be awarded marks beyond band C.

       *At band D, expect a description of the conflicting pressures on a named area of
       coastline.*

       *At band E, expect <u>either</u> a more detailed explanation of the conflicting human
       pressures on a named area of coastline and how they may have been resolved,
       <u>or</u> an evaluation of the success of the management strategies.*

       At band F expect both.

       Marks should be allocated according to the markbands.

4.   (a)   Using information on the graph:

           (i)   describe the changes in the strength of El Niño events from 1950 to 1998;   **[2]**

                  *Award [1] for each valid change/trend and a further [1] for
                  development/exemplification.*

                  For example: Some El Niño events are more powerful than others **[1]**: the
                  1982 and the 1998 events more powerful than any other El Niño events
                  since 1950 **[1]**.

                  Accept rising trend [1].

           (ii)   describe changes in the duration of La Niña events from 1950 to 2016.   **[2]**

                  *Award [1] for each valid change/trend and a further [1] for
                  development/exemplification.*

                  For example: Prior to 1978, most La Niña events lasted longer/3–4 years **[1]**,
                  compared to after that date when most were shorter/1–2 years **[1]**.

(b)   Explain **one** economic benefit **and one** environmental benefit of mangrove swamps.   **[3+3]**

Award [1] for the identification of each valid benefit and a further [2] for its development/exemplification.

For example:
Mangrove swamps provide a habitat for many fish species/breeding ground for fish **[1]**, which supports many fishers **[1]** while preserving viable fish stocks **[1]**.

Mangroves provide protection against damage caused by tropical cyclones **[1]** absorbing wave energy / reducing wind speeds **[1]** and protecting against coastal erosion **[1]**.

(c)   Examine the relationships between the oceanic sovereignty rights of nations and exclusive economic zones (EEZs).   **[10]**

Exclusive economic zones (EEZs) are areas in which a coastal nation has sovereignty rights over all of the economic resources of the sea, seabed and subsoil, extending up to 200 nautical miles from the coast. Coastal states are allowed / free to exploit, develop, manage and conserve all resources (fish or oil, gas or gravel, nodules or sulphur) to be found in the waters, on the ocean floor and in the subsoil. Most of the world's oil reserves under the sea occur in some country's EEZ, as do most of the world's fishing areas. Examples of conflicts over sovereignty rights and access to resources in oceans include the South China Sea, the Arctic Ocean, the Falkland Islands, Indonesian fishing grounds, and oil fields off Papua New Guinea. More powerful, richer countries often exploit the resources in the EEZs of poorer countries, ignoring their sovereign rights.

Good answers may examine the complexity of the relationships, *eg* recognizing that sovereignty rights can be claimed over waters other than the EEZs, or more than one state may claim sovereignty over the same area of ocean, *eg* South China Sea. Another approach might be to examine different aspects of sovereignty, *eg* biotic and abiotic resources, and this could involve an examination of sovereignty over the continental shelf.

At band D, expect a description of the relationship between sovereignty rights and the EEZ

At band E, expect either a more detailed explanation or a structured examination of the complexities of the relationship that promote conflict.

At band F expect both.

Marks should be allocated according to the markbands.

Option C — Extreme environments

5. (a) (i) Referring to the photograph, identify landform A and landform B. **[1]**

Award [1] for both of the following correct:
A: pyramidal peak / horn / mountain peak
B: arête / ridge

(ii) Briefly outline how the landform at C was formed. **[3]**

Award [1] for each valid point.

For example: Landform C (corrie/cwm/cirque) formed at the head of a glacier **[1]** by the processes of plucking and abrasion **[1]** leading to deepening/recession **[1]**.

Full credit can be awarded for an annotated diagram.

(b) Explain **two** possible challenges posed by the environment to the economic activities of people living in areas like area D shown in the photograph. **[3+3]**

Award [1] for each challenge and [2] for explanation.

Challenges include: extreme cold in winter, lack of sunshine, surrounding steep slopes, threat of avalanches, stony and thin soils, remoteness, inaccessibility in winter, meltwater run-off in spring and summer.

For example: The area has severe cold weather **[1]** so a short growing season **[1]**, which limits the value of the crops that can be produced **[1]**.

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

Hot, arid areas are characterized by high temperatures and low/variable annual rainfall. Annual rainfall varies between 250 mm and 500 mm, so there is some possibility for farming, especially where water conservation methods are used.

Opportunities are created by:
- nomadism (the traditional way of dealing with insufficient amounts of rainfall and pasture)
- maximizing water availability (*eg* irrigation in areas close to rivers or oases/aquifers; creation of bunds, stone lines, *etc* to trap water; use of desalinization plants for water in high income countries
- improving agricultural practices (*eg* increased use of drought-tolerant species; land enclosure to reduce wind erosion; limiting the numbers of grazing animals; careful choice of crops, cultivation techniques and continuous monitoring; use of fertilizers; irrigating with silt-laden river water to restore soil in badly eroded areas.

Good answers will present a structured response which will explain a wide range of opportunities for hot, arid areas, or some critical discussion of whether one or more opportunities have actually been realized by different groups/stakeholders/perspectives in different places (with varying wealth, technology, *etc*). There may be some discussion on whether opportunities have increased or lessened over time.

At band D, expect a description of some opportunities for agriculture in hot, arid areas.

At band E, expect <u>either</u> a detailed explanation of some opportunities for agriculture in hot arid areas <u>or</u> a structured examination of different agricultural opportunities in varying contexts.

At band F, expect both.

Marks should be allocated according to the markbands.

6. (a) (i) Outline **two** climatic characteristics of a periglacial extreme environment. **[1+1]**

Award [1] each for any of the following, up to [2].

Possibilities include:
- high annual temperature range
- low precipitation
- high wind speeds
- low minimum temperature
- different length of seasons.

(ii) Describe **two** characteristics of permafrost. **[2]**

Award [1] each for any of the following, up to [2].

Possibilities include:
- ground is frozen to considerable depth
- upper layer or active layer seasonally thaws
- continuous, sporadic or discontinuous.

(b) Explain the role of water in **two** weathering processes in hot, arid environments. **[3+3]**

Award [1] for each process identified and a further [2] for explanation.

Possibilities include: exfoliation, granular and block disintegration, freeze-thaw, salt crystal growth, carbonation, oxidation, hydrolysis. Do not credit erosional processes such as sand abrasion.

For example: Freeze-thaw/frost shattering **[1]** occurs in areas where moisture enters the joints and crevices in desert rocks **[1]** and at night the temperature drops below 0°C, causing the water in the crack to freeze and expand **[1]**.

(c)   "Global climate change will create more challenges than opportunities for indigenous populations." Discuss this statement, with reference to one or more extreme environments.   **[10]**

The question is not limited to one area so there may be more than one indigenous population and more than one extreme environment.

Indigenous peoples are among the first to face the direct consequences of climate change, owing to their dependence upon, and close relationship with, the environment and its resources. Climate change may exacerbate the difficulties already being faced in these areas (for example, political and economic marginalization, loss of land and resources, human rights violations, discrimination and unemployment).

However, global climate change may bring increased opportunities.
For example, in the Arctic: increased navigation, lengthened growing season, more opportunities for sedentary agriculture / forestry / tourism / sea fishing / hunting. In hot, arid areas: better grazing potential, more food production and more reliable water supply.

Good answers should progress beyond simply agreeing with or rejecting the statement and will discuss the validity of the statement. For example: the scale of the climate change, the degree to which indigenous population groups have been assimilated into society.

Another approach might be to provide a structured discussion of different kinds of opportunities and challenges found in an extreme environment and arrive at an evidenced conclusion.

At band D, expect some description of challenges and/or opportunities.

At band E, expect either more detailed explanation of challenges and opportunities for indigenous populations or a structured evaluation of the statement.

At band F, expect both.

Marks should be allocated according to the markbands.

Option D — Hazards and disasters – risk assessment and response

7.   (a)   (i)   Outline the distribution of areas in India with lower than normal amounts of rainfall.

[2]

Award [1] for each of the following, up to [2].

- Concentrated in the North and NW
- Central states
- Small areas on E coast / NE

Accept other valid comments.

(ii)   Outline what is meant by a drought hazard.   **[2]**

Award **[1]** for reference to long time scale, and **[1]** for how that manifests as a hazard.

A prolonged deficiency in precipitation **[1]**, resulting in a shortage of water that threatens/causes adverse impacts on vegetation/animals/people **[1]**.

Do not accept: arid areas with little precipitation.

(b)   Explain **two** reasons for the increase in the numbers of people affected by disasters in recent years.   **[3+3]**

Possibilities include:
- more/more intense hurricanes, possibly due to climate change and warmer oceans
- increase in number/magnitude of earthquakes
- population increase and/or urbanization; more people living in hazard-prone urban areas; poor quality housing
- increase in conflicts and wars, resulting in more deaths from droughts, famine and disease.

In each case, award [1] for each valid reason and [2] for further development and/or exemplification.

For example: There has been an increase in the number and magnitude of hurricanes in recent years **[1]**; this may be due to global warming and higher ocean temperatures **[1]**, leading to greater impact on low-lying coastal populations **[1]**.

(c)   Examine the importance of re-assessing risk **and** re-examining vulnerability
      following any major hazard event.   **[10]**

      Risk refers to the probability of a hazard event causing harmful consequences.
      Vulnerability is the potential for environmental and economic damage, injury and
      loss of life in hazard-prone areas.

      Following a major hazard event, it is important to re-assess risk and re-examine
      vulnerability in order to plan and reduce significant impacts associated with future
      events. This allows for possible hazard-reduction measures, such as engineering
      works and improvements in building design. Also important is reducing economic
      and social vulnerability by measures such as poverty reduction, improvements in
      infrastructure and health care and possibly re-locating vulnerable populations.

      Good answers should show an understanding of risk and vulnerability and the
      importance of re-assessing these and planning for future hazard-reduction
      strategies. Candidates should argue which of the two factors is most important
      and recognize the difficulties in implementing strategies.

      *At band D expect a description of risk and vulnerability with reference to a hazard
      event and possible ways of their reduction.*

      *At band E, expect <u>either</u> a more detailed explanation of the importance of
      risk/vulnerability assessment and how these might result in the reduction of the
      impact of future hazard events, <u>or</u> an examination of their relative importance and
      understanding shown of the difficulties of implementing such hazard-reduction
      measures.*

      At band F, expect both.

      Marks should be allocated according to the markbands.

8. (a) (i) Outline the main features of **one** scale used to measure the magnitude of **one named** hazard type. **[2]**

Award [1] for the identification of a suitable scale (eg Richter, Momentum magnitude, VEI, Saffir–Simpson, drought intensity index) and [1] for further development.

For example: the Richter scale is used to measure the magnitude of an earthquake **[1]**. It is a logarithmic scale **[1]**.

(ii) Describe what is meant by hazard risk. **[2]**

Risk is the probability of a hazard event **[1]** causing harmful consequences to people and the environment **[1]**.

(b) Explain **two** ways in which people's vulnerability to a tectonic hazard may be reduced. **[3+3]**

Award [1] for the identification of a suitable way/method, and [2] for further development and/or exemplification.

Possible ways include: land-use planning (zoning); insurance; aid; escape routes, building design, warning systems.

For example: Near active volcanoes, land-use planning **[1]** by drawing maps of areas likely to be affected by lava and ash flows **[1]** and then restricting development and human access to vulnerable areas **[1]**.

Accept tsunamis as a tectonic hazard.

(c)   Examine why some hazard events are more predictable than others.   **[10]**

There are three different aspects to hazard prediction: location, timing and magnitude. These can be examined in relation to a single type of hazard, or more than one type of hazard.

The general location of most hazards can be predicted by examining historical patterns of occurrence, and relationships to physical factors. For example, the location of earthquakes and volcanic activity can be monitored and mapped, and these can be related to processes at plate margins. Patterns of droughts and hurricanes may also be related to atmospheric conditions.

The timing and magnitude of hazards are much harder to predict than location. Volcanic hazards may be easier to predict, for example by using instrumentation to measure ground movements and gas emissions. The time of occurrence and the strength of earthquake hazards are almost impossible to predict with current technology. Although difficult to predict before they have formed, the timing and magnitude of atmospheric hazards such as hurricanes can be predicted with degrees of certainty as they develop.

For all hazards, examination of past records of timing and magnitude of events can help calculate the recurrence intervals of hazard events of a certain magnitude. However, reliability of probability analysis depends on the length and accuracy of previous records; it is often difficult to predict the occurrence of high magnitude/low frequency events.

Good answers will examine the effectiveness of the three elements of hazard prediction with reference to different hazard events. They might examine whether tectonic hazards are more reliably predicted than atmospheric hazards. Accurate prediction depends on collection of accurate data and a full understanding of geophysical and atmospheric processes. This might be easier in some cases than others. However, there will always be an element of uncertainty and risk.

At band D, expect a description of some reasons why some hazard events are more predictable than others.

At band E, expect <u>either</u> a more detailed explanation of why some hazard events are more predictable (which may include methods of prediction and their relative accuracy), <u>or</u> some examination of the concept of predictability.

At band F, expect both.

Marks should be allocated according to the markbands.

Option E — Leisure, sport and tourism

9. (a)   Using **two** different examples, outline what is meant by:

(i)   the catchment area of recreation and sports facilities;   **[2]**

Award [1] for description and [1] for exemplification.

For example: Catchment area is the area from which a facility attracts a population that uses its services **[1]**, *eg* a national sports stadium compared with a local park **[1]**.

(ii)   the range of recreation and sports facilities.   **[2]**

Award [1] for description and [1] for exemplification.

For example: Range refers to the maximum distance that people travel to access the facilities **[1]**, *eg* people travel a longer distance to go to a professional ballet (*eg* at Sydney Opera House) as opposed to an amateur ballet **[1]**.

Also, accept reference to a variety of activities [1] and [1] for further development.

(b)   Explain **two** management strategies to reduce environmental damage from tourism in **one named** rural area.   **[3+3]**

In each case, award [1] for describing a relevant management strategy, and up to [2] for explaining how it reduces environmental damage.

Possible strategies include:
- information and education
- limiting visitor numbers
- restricting access to sensitive areas
- constructing new footpaths or boardwalks
- banning off-road vehicles.

For example: At Imlil, a village in the High Atlas Mountains of Morocco, a waste management plan has been implemented involving the provision of waste collection points **[1]**. By focusing on the recycling of waste, and education to raise awareness of tourists and locals **[1]**, some waste can be recycled and transported to Marrakech for processing **[1]**.

If no appropriate example is given, award a maximum of [4].

(c)   Examine the relative importance of factors influencing the distribution of sports facilities in **one or more named** urban areas.   **[10]**

A range of physical, economic, political and demographic factors affect the distribution of sports facilities. These include: environmental and physical character of landscapes, land values, accessibility, transport links, planning decisions, and socio-economic characteristics. Reference should be made to the location of sports facilities in specific urban areas.

Good answers should consider a range of factors and their relative importance in one or more named urban areas. It might be recognized that patterns of sports facilities are often explained by a variety of interrelated factors. One approach might be to explain the distribution within the framework of different urban land use zones, perhaps comparing the CBD with the rural–urban fringe. It might also be argued that political and planning factors are more important. The physical characteristics of the landscape may also be important, with floodplain areas often occupied by sports fields.

At band D, expect responses that describe how some factors influence the distribution of facilities in a recognizable urban area.

At band E, expect <u>either</u> a more detailed explanation of the factors that have influenced the distribution of facilities in one or more named urban areas, <u>or</u> some attempt to discuss and evaluate their relative importance in specific areas.

At band F, expect both.

Marks should be allocated according to the markbands.

10. (a) (i) Estimate the numbers of tourist arrivals in 2015 for Africa, and for Asia and the Pacific. **[2]**

- Africa: 57 million *(accept 50-70 million)* **[1]**;
- Asia and the Pacific: 270 million *(accept 250 million to 290 million)* **[1]**.

(ii) Outline **one** reason why international tourism data may be unreliable. **[2]**

Award [1] for reason and [1] for further development/exemplification.

Possibilities include:
- inaccurate recording of data
- free movement of people/tourists, *eg* in EU
- poor border controls/porous borders.

For example: Some people are incorrectly recorded as tourists **[1]** as they may be travelling for other purposes, *eg* they are travelling for work primarily **[1]** / they are in transit/between flights **[1]**.

(b) Explain **one** economic factor **and one** political factor that may have contributed to the increased numbers of tourist arrivals for Asia and the Pacific from 2000 to 2015. **[3+3]**

In each case, award **[1]** for identifying a relevant factor and **[2]** for further development and/or exemplification linking to increased numbers.

Possible factors include:
- Economic factors – more disposable incomes; reduced cost of air travel; economic development in receiving countries.
- Political factors – easier border controls; governments supporting tourist developments; political stability.

For example (economic): The growth of international tourism is closely linked to economic development and the general increase in disposable incomes **[1]**. As a result, increasing numbers of people from Europe and N. America are able to afford the cost of long distance travel to Asia/Pacific **[1]**. Also, increasing numbers of better-off people in Asia and the Pacific are able to afford travel to other Asian/Pacific countries for the purpose of tourism **[1]**.

(c)   Examine the cultural **and** political factors that might affect success for countries participating in major international sports. **[10]**

Cultural factors might include length of time the sport has been played in a particular country; increased prominence and support given to sports for disabled people, and for females in sports such as rugby and cricket; publicity from hosting of major international sporting events; role models; willingness to "bend the rules", *eg* doping.

Political factors might include political associations, such as the Commonwealth; government support for particular sports; government funding for sports; migration and settlement; international tournaments; national pride.

Good answers might consider the interrelations between cultural and political factors. Another approach might be to examine the relative importance of the two factors in different place contexts, *eg* low- and high-income countries. While high-income countries may excel in a range of sports, some low-income countries have achieved considerable success in a limited range of sports, due to national pride, political support and national icons.

At band D, expect description of some cultural and/or political factors that might be important in achieving success in some sports.

At band E, expect either a more detailed explanation of both factors, or some examination of what "success" means for individual sports or countries.

At band F, expect both.

Marks should be allocated according to the markbands.

Option F – The geography of food and health

11. (a) (i) Describe the distribution of countries with a calorie intake of less than 2390 kcal per person per day. **[2]**

Award [1] for each valid point, such as:
- most of the countries are in Sub-Saharan/Central and Eastern Africa
- several countries are in S Asia, including India
- there are several outliers, including some countries in SE Asia, Central Asia and South America
- majority of countries in Africa
- majority are between the two Tropics.

Do not credit responses that refer only to entire continents or generalized statements such as "poorest countries".

(ii) Suggest why it is recommended that people should have an intake of between 2850 and 3480 kcal per person per day. **[2]**

Award [1] for each valid statement related to health and/or nutrition.

Example: Below this range is indicative of undernutrition (stunting) **[1]**; above this range may indicate overnutrition (leading to obesity) **[1]**.

Accept a general statement about overall health [1] with this calorie intake.

(b) Explain how **one** environmental factor **and one** political factor can lead to a decline in food production. **[3+3]**

In each case, award [1] for identification of an appropriate factor and [2] for explaining a link to decline in food production.

Environmental causes might include drought or other natural hazards, such as earthquakes, hurricanes, pests and diseases.

Political causes might include military conflict, corruption and political instability.

For example (environmental): prolonged drought (*eg* in Ethiopia) **[1]** has caused soils and watercourses to dry up **[1]**. So, food crops/animals/cattle have died, causing severe food shortages **[1]**.

(c)   Examine the geographic factors responsible for the incidence and transmission of **one named** disease (vector-borne, water-borne or sexually transmitted).   **[10]**

There are a variety of geographic factors, including environmental, demographic, economic and political. The relative importance of these factors will depend on the disease chosen and examples used.

Good responses might consider the incidence of the chosen disease at a variety of scales, and relate this to a variety of different factors. Another approach might be to compare the relative importance of the factors in contrasting place contexts, or to examine how the factors are interrelated (*eg* the way poverty and poor water quality are mutually reinforcing).

Responses at band D are likely to describe some factors that influence the incidence and transmission of the disease.

At band E, expect either a detailed explanation of the factors affecting the incidence and transmission of the diseases or an examination of the complexity and interrelations between the factors.

At band F, expect both.

Marks should be allocated according to the markbands.

12. (a) (i) Describe the relationship between GDP (gross domestic product) *per capita* and life expectancy. **[2]**

Positive relationship **OR** life expectancy increases with increasing GDP **[1]** and **[1]** for further development relating the two factors / some exemplification / recognition of anomalies.

(ii) Outline **one** advantage of using HALE as a measure of a population's health.

Allow [1] for an advantage, and a further [1] for development.

For example: HALE (health-adjusted life expectancy) is good because it gives an indication of the quality of life **[1]**. A better quality of life means a population will live longer/experience fewer health issues **[1]**. **[2]**

(b) Explain how **one** natural barrier **and one** political barrier might limit the spread of disease. **[3+3]**

Award [1] for the identification of a relevant barrier and up to [2] for further development.

Natural barriers include: mountain ranges, large bodies of water and climate.

Political barriers include: migration/border controls, quarantine restrictions, education policy and increasing awareness.

For example: A major natural barrier to the spread of disease is high mountain ranges **[1]**. They often have relatively low populations and experience small amounts of in- and out-migration **[1]**, so there is limited opportunity for diseases to spread from the outside world **[1]**.

(c)   Examine the impacts of international trade agreements **and** trade barriers on the
        availability of food in some countries.   **[10]**

Trade agreements (at a variety of scales) may include the removal of tariffs or
quotas on food imports and exports. In addition, there are other forms of
agreements, *eg* preferential treatment for certain items.

Imports of food and reliable access to international markets help increase the
quantity and variety of food available year-round. Improvements to make
domestic agriculture more productive and profitable may increase exports,
increase farmers' incomes and help alleviate food poverty. Trade barriers, on the
other hand, might discourage the export of food crops to high-income countries,
reducing national and local incomes, increasing poverty and reducing food
availability (there is food but people cannot afford it). Trade barriers help protect
domestic food production, reducing the possibility of dumping "cheap" food from
high-income countries.

Good responses may consider the positive and negative impacts of trade
agreements and barriers on food availability and on local and national
economies, farmers' incomes and possible changes to agriculture. Another
approach might be to examine the way some countries benefit far more than
others from trade agreements and why, or might examine how particular types of
food might become more or less available and the implications of this.

*Responses at band D are likely to describe some impacts of trade agreements
and barriers on food availability.*

*At band E, expect <u>either</u> a more detailed explanation of the impacts, <u>or</u> an
examination of varying contexts, scales, types of food, etc.*

At band F, expect both.

Marks should be allocated according to the markbands.

Option G — Urban environments

13. (a) (i) Outline what is meant by the term "megacity". **[1]**

A city with a population of more than 10 million people **[1]**.

(ii) Using the map, describe the global distribution of megacities in 2015. **[3]**

Award [1] for each valid statement, only one of which may be a quantitative statement.

Possibilities include:
- concentrated/largest number in Asia/Far East
- three in Africa / four in Latin America / few in USA/Europe
- mainly northern hemisphere / eastern hemisphere
- mainly coastal
- none in Oceania/Australasia.

(b) (i) Explain **one** economic reason why large numbers of people have migrated to megacities in recent years. **[3]**

Award [1] for a valid economic reason and up to [2] for development and/or exemplification.

Possibilities include:
- jobs in cities/lack of jobs in countryside
- regional economic disparities.

For example: One of the reasons for the increase is the concentration of rapid economic development in megacities **[1]**. For example, in Southern China industrial and economic growth has provided a large number of job opportunities **[1]**, attracting many migrants from other provinces where jobs are scarce/badly paid **[1]**.

(ii) Explain **one** reason, **other than** migration, why the number of megacities has risen globally in recent years. **[3]**

Award [1] for high rates of natural increase of population and up to [2] for development and/or exemplification, focused on a growing number of cities passing the ten million threshold.

For example: Cities also grow in size because of natural increase **[1]** due to a youthful population **[1]**. Over time, this helps many ordinary cities grow large enough to be classed as megacities **[1]**.

(c). Evaluate the success of strategies of sustainable city management in **one or more** urban areas. **[10]**

Sustainable urban management seeks to improve and maintain the quality of life for current and future populations. Aspects of management include environmental, economic and social factors affecting the present and future wellbeing of the local population without compromising development.

Environmental strategies might focus on issues such as reducing pollution, improving air and water quality, reducing waste and providing green space. Economic strategies might focus on provision of employment, sustainable energy, improving infrastructure and reducing poverty and inequalities. Social strategies could consider factors such as provision of adequate/affordable housing, reduction in deprivation and crime. These strategies are usually interrelated.

Alternatively, responses may be structured around strategies related to housing, pollution and city growth, or around strategies in different urban areas.

Good responses may consider the concepts and aims of sustainable city management and discuss the relative success of several strategies. It might be recognized that such strategies might be easier to achieve in urban areas of high-income countries than in low-income countries, where the scale of growth and poverty levels are much greater.

At band D, expect some understanding of sustainable city management and a description of at least one strategy.

At band E, expect either a greater and more detailed understanding of the aims and success of strategies, or some understanding of why sustainable urban management is difficult to achieve.

At band F, expect both.

Marks should be allocated according to the markbands.

14. (a) Outline:

(i) **two** characteristics of the informal sector; **[2]**

Award [1] for each characteristic outlined.

Possibilities include, but are not limited to:
- unregulated/non-tax-paying
- semi-legal/illegal
- small scale
- lays out the goods on the street.

(ii) the location of the informal sector in urban areas. **[2]**

Award [1] for each characteristic outlined.

Possibilities include:
- often situated at the roadside/people's homes/ near tourist attractions/hotels/restaurants
- located in areas of informal housing/shanty towns
- concentrated in the CBD/at major intersections/transport hubs.

(b) Explain how urban stress might result from:

(i) environmental factors; **[3]**

Award [1] for identification of a factor and a further [2] for explanation of how this might lead to urban stress.

Environmental factors might include depletion of green space, noise and congestion, atmospheric pollution, pollution of water and soil through waste disposal.

For example: Environmental factors include the depletion of green spaces **[1]**, which will result in loss of biodiversity and wildlife habitats **[1]** and might increase the urban heat island effect **[1]**.

(ii) social factors. **[3]**

Award [1] for identification of a factor and a further [2] for explanation of how this might lead to urban stress.

Social factors might include: poor quality housing, high crime rates and deprivation.

For example: Concentration of people in poor-quality housing **[1]** leads to overcrowding **[1]** and excessive demand on urban services/water/sewage **[1]**.

(c) Examine the causes and effects of the movement of retailing in urban areas to
new locations. **[10]**

Most movement of economic activity takes place as a result of movement from
the CBD and other inner city areas towards the suburbs and rural–urban fringe.
However, urban regeneration and development of brownfield sites can also lead
to movement towards deprived inner city areas.

Possible reasons for movement might include:
• relative land values: high in CBD and inner city; movement of space-consuming
  activities such as retail parks
• movement of population: suburbanization / availability of market and of workforce
  in suburbs / decline of population
• transport: good accessibility (road, rail and airports] / accessibility to local and
  more distant markets / high levels of congestion.

Possible effects of movement might include:
• spiral of decline of retailing and poverty in inner areas
• urban sprawl and loss of countryside to urban development
• increase in land values, congestion and pollution in rural–urban fringe
• political pressure for development of retail parks on brownfield sites
• gentrification.

Good answers should examine a range of economic, social, environmental and
political causes and effects of movements of retailing.

*At band D, responses are likely to be descriptive accounts of the causes and
effects of the movement of retailing.*

*At band E, there should <u>either</u> be a greater explanation of a range of causes and
effects, <u>or</u> some examination of the diversity within (limits of) retailing.*

At band F, expect both.

Marks should be awarded according to the markbands.