Exam practice – answers

Option A Freshwater – Drainage basins

(a) (i) State the water withdrawal, as a percentage of total available water, in China and in India in 1995 and 2025. (2 marks)
China: 1995 10–20%, 2025 20–40%
India: 1995 20–40%, 2025 more than 40% [2 marks]

(ii) Describe the pattern of water withdrawal in 1995. (3 marks)
Award [1 mark] for each valid point. Reserve [1 mark] for quantification/use of examples. For example:
The pattern of water withdrawal is highest in northern latitude subtropical and temperate areas [1 mark], e.g. the Middle East and North Africa (MENA), south Asia and parts of southern Europe and the USA [1 mark]. The highest withdrawals are in MENA [1 mark]. Only South Africa in the southern hemisphere has a withdrawal rate of over 10% [1 mark].

(iii) Outline two changes to withdrawals of over 40% between 1995 and 2005. (2 marks)
A greater number of countries/areas are projected to have withdrawal rates of over 40% of available water in 2025 [1 mark] including the MENA region, south Asia (e.g. India) and South Africa [1 mark].

(iv) Explain why access to freshwater is important to humans. (3 marks)
Award [1 mark] for each point that is explained. For example:
Access to freshwater is important as it is necessary for cooking, drinking and cleaning [1 mark], it reduces the risk of disease, it is needed to grow crops and to rear livestock [1 mark]. For example, water is important for growing crops – where there is insufficient rainfall, irrigation water may be needed [1 mark].

(b) Either

Examine the view that the cost of dams outweighs their potential benefits. (10 marks)

Dams provide many benefits, e.g. a source of water, the potential for irrigation, as a source of HEP, improved navigation, flood control, and opportunities for recreation and tourism. The cost of dams includes the financial costs of building them, the relocation of people whose homes are submerged by the reservoir/lake, the loss of biodiversity, the increase in evaporation losses, clear-water erosion downstream of the dam, the trapping of sediments/nutrients behind the dam, and the increased potential for earthquakes.

Good answers will discuss both costs and benefits. Candidates may consider the size of dam involved, the potential impact of climate change and/or large dams that affect international drainage basins.

For 5–6 marks, expect a general description of the costs/advantages of dams or a more detailed description of either the costs or the benefits.

For 7–8 marks, expect either a more detailed description of both the costs and the advantages of dams, with supporting evidence, or an examination of the reasons why costs and benefits vary.

For 9–10 marks, expect both.

Or

Examine the role of human activities in increasing flood risk. (10 marks)

Human activities that increase flood risk include living in flood plains, creating impermeable surfaces, reducing vegetation cover, increasing drainage density (drains, sewers, gutters, ditches) and creating obstructions in channels (bridges).

Good answers are likely to cover flood frequency and magnitude. They are also likely to explain how changes in drainage basin hydrology lead to an increase in flood risk. Good answers will have supporting evidence.

For 5–6 marks, expect some description of one or more human activities that increase flood risk.

For 7–8 marks, expect either a more detailed description of the human activities that increase flood risk, with supporting material, or an examination of the role of human activities that lead to increased flood risk.

For 9–10 marks, expect both a detailed description and an explanation of a range of factors that lead to increased flood risk.
Option B Oceans and coastal margins

(a) (i) Identify the landform shown on the map. (1 mark)
A spit. [1 mark]

(ii) Explain how it has been formed. (3 marks)
Award [1 mark] for each valid point. For example:
Material is transferred by waves from south to north due to longshore drift [1 mark]. Swash moves material up the beach at an angle (in line with the prevailing wind), while the backwash takes material down the beach at right angles to the shore, as it is the steepest gradient [1 mark]. The result is the transfer of material along the beach [1 mark]. Wave refraction causes the unattached end of the spit to become curved landwards [1 mark].

(iii) Outline the conflicting pressures on managing a coastal area, such as that shown on the map. (6 marks)
Award [1 mark] for each conflict identified, and a further [1 mark] for the development of the conflict. For example:
There are many potential conflicts between different users, and among the same users. Some tourists may wish to enjoy the beach for a quiet family day out/holiday whereas some may wish to use it for water sports [1 mark]. Some people may use the beach to walk their dogs. Nature conservationists may wish to preserve/conserve wildlife [1 mark]. Some fishermen may be in conflict with water sports enthusiasts [1 mark] as they believe that the noise/vibrations from motor boats disturbs the fish, and ruins their “sport” [1 mark].

(b) Either

Examine the view that the ocean requires more global management than local management. (10 marks)
Issues relating to the management of oceans include the use of abiotic and biotic resources, ocean pollution and international security. The focus is on oceans rather than ocean margins, although there may be some overlap. Possible themes include oil and natural gas mining; overfishing; pollution by chemicals, oil, plastics and radioactive waste; and territorial disputes/international security.

Good answers are likely to consider a range of management issues, and to assess the role of global/international management schemes, such as the EU’s Common Fisheries Policy, as well as local/national schemes such as land-use zoning or the development of aquaculture. Good answers are likely to show that global and local management schemes may overlap, especially in smaller oceans/seas.

For 5–6 marks, expect a description of at least one global management policy. Strong description of only ocean margin (i.e. the coastline rather than the open ocean) schemes should be kept to this band.

For 7–8 marks, expect either a detailed description of at least one global management scheme, with supporting evidence, or a structured examination of global and local management schemes.

For 9–10 marks, expect both.

Or

Evaluate the costs and benefits of two or more named and located coastal protection strategies. (10 marks)
Coastal protection schemes include hard engineering schemes, such as cliff-base schemes (e.g. groynes, sea walls and gabions) and cliff-face schemes (e.g. cliff drainage and regrading), as well as soft engineering schemes such as beach nourishment and managed retreat.

Benefits include cliff stabilization, decreased erosion, removal of excess water, deflection of waves, reduction of wave energy striking the shoreline. Costs include the financial cost of building and maintaining the structures, transfer of energy further along the coast, limited lifespan of structures, and the ineffectiveness of some measures against nature.

Good answers are likely to cover two or more measures of coastal protection, and assess their relative costs and benefits. They will also use named and located examples.

For Band C (5–6 marks), expect a description of the costs and benefits of one or more coastal management schemes.

For Band D (7–8 marks), expect either a detailed description of the costs and benefits of one or more coastal management scheme, or an evaluation of coastal management schemes.

For Band E (9–10 marks), expect both a detailed description of the costs and benefits of a coastal management scheme and an evaluation of coastal management schemes.
**Option C Extreme environments**

Study the 1:50,000 map extract of Zermatt and the Gorner Glacier.

(a) (i) **Locate and identify two features resulting from glacial erosion.** (2 marks)

Award [1 mark] for each correctly named and located factor. For example:

- The Matterhorn is an example of a pyramidal peak [1 mark].
- Zermatt valley is an example of a glacial trough. [1 mark].

(ii) **Identify the map evidence that suggests tourism is important in this area.** (2 marks)

Award [1 mark] for each piece of correct evidence, including the map reference. For example:

- Evidence for tourism includes the railway from Zermatt (2496) to Gornergrat (2692) [2 marks].

(b) **Explain three reasons why the area in the map can be considered an extreme environment.** (2 + 2 + 2 marks)

Award [1 mark] for each correct reason and a further [1 mark] for the development/ exemplification, e.g. named features/map references. For example:

- The area has many glaciers, e.g. the Gorner glacier in 2591 [1 mark] – they are impossible to live on and cannot be used for food production [1 mark].
- The area is high and steep, e.g. Zmutt in square 2195 [1 mark], and transport is mainly limited to the valleys [1 mark]. The area has limited farmland on which to produce food.

(c) Either

**“Mineral resources in extreme environments rarely bring benefits to those who live there.” Discuss this statement.** (10 marks)

There are many mineral resources in extreme environments including oil, natural gas, copper, uranium and gold. Many of the people who inhabit extreme environments live in indigenous communities, with low population densities. Most of the indigenous communities are not materially wealthy. The extraction of mineral resources is made more expensive in extreme environments because of the nature of the environment (too hot, too cold, limited water supply). Therefore, resource TNCs may have to develop the resources, as indigenous populations cannot afford to do so on a large scale.

Good answers are likely to consider the economics of mineral extraction as well as the difficulties of the natural environment. The benefits that mineral resource development brings include employment, investment and infrastructural developments. However, many of the workers used are from outside the region. Candidates may examine the rise of resource nationalism.

For Band C (5–6 marks), expect a description of some of the benefits of mineral resource development in extreme environments.

For Band D (7–8 marks), expect either a more detailed description of the benefits of mineral resource development, with supporting examples, or a critical discussion of the statement in relation to indigenous populations, including, for example, the rise of resource nationalism.

For Band E (9–10 marks), expect both.

Or

**“Agricultural development in hot, arid environments inevitably leads to desertification.” Discuss this statement.** (10 marks)

Agriculture in hot, arid areas is limited by the lack of water. Traditional agriculture in hot, arid areas is nomadic pastoralism. In many areas, over-grazing and trampling by herds has led to desertification. Over-cultivation can also lead to wind and water erosion, and desertification. Some forms of agriculture are more sustainable, e.g. the production of drought-resistant fodder crops and the development of essential oils. Moreover, in areas where there is a supply of water (exotic river, oasis, desalination) agriculture is possible.

Good answers are likely to explain how agricultural practices lead to desertification. Good answers are likely to show how desertification is a feature of HICs as well as LICs. Good answers will show that there are alternatives to desertification, and that it is not inevitable.

For Band C (5–6 marks), expect a description of how agricultural practices can lead to desertification.

For Band D (7–8 marks), expect either a more detailed description of desertification, with reference to one or more named and located hot, arid areas or a critical discussion of the inevitability of desertification/alternatives to desertification.

For Band E (9–10 marks), expect both.
Option D Geophysical hazards

(a) (i) **Describe the global variations in the flow of heat from the Earth’s interior.** (3 marks)

Award [1 mark] for each valid description and reserve [1 mark] for quantification.

For example:

The highest rates of flow of heat (150–450 mW m\(^{-2}\)) from the interior appear to be by mid-ocean ridges [1 mark], e.g. the Mid-Atlantic Ridge, the East Pacific Rise and the Mid-Indian Ridge [1 mark]. In contrast, there are parallel bands of very low flows of heat [1 mark], e.g. along the east coast of South America, the east coast of North America and much of the western Pacific [1 mark].

(ii) **Explain one impact of rising heat in some parts of the Earth.** (2 marks)

Award [1 mark] for a valid impact, and a further [1 mark] for the development/explanation. For example:

At a mid-ocean ridge, convection currents cause magma to rise [1 mark] and this may cause plates to move apart, e.g. the Eurasian and North American plates moving apart [1 mark] caused by the rising magma along the Mid-Atlantic Ridge. Similarly, rising heat at hot spots, such as at Hawaii [1 mark] may lead to the formation of volcanoes, such as Mauna Loa, and volcanic eruptions [1 mark].

(iii) **Using examples, explain the relationship between hazard magnitude and frequency.** (5 marks)

Award [1 mark] for each explanation of the relationship between hazard magnitude and frequency, and a further [1 mark] for development/exemplification for each reason. For example:

High-magnitude events generally have a low frequency/low-magnitude events have a high frequency [1 mark], and so damaging events such as the 2004 South Asian tsunami or the 2010 Haitian earthquake are relatively infrequent [1 mark]. Extreme events are, by definition, extreme or rare (infrequent) whereas “normal”/average events are much more common. However, the magnitude of large-scale events can be much greater than smaller events, e.g. the Richter Scale and the Moment Magnitude Scale are logarithmic [1 mark] meaning the events that are 1.0 higher on these scales are ten times greater in magnitude [1 mark], and as the VEI Scale increases by 1, the volume of material emitted increases tenfold [1 mark].

(b) **Either**

“The impact of geophysical hazards depends less on the natural hazard and more on human factors.” Discuss this statement. (10 marks)

The impact of geophysical hazards depends on many factors, including type of hazard, predictability, magnitude of the event, frequency of the event, level of preparation, state of the buildings and level of development. Some hazards come with little warning, e.g. earthquakes and tsunamis, whereas others may be more predictable/slow onset, e.g. volcanoes.

Good answers are likely to consider the impact of geophysical hazards in differing locations, e.g. high-income countries and low-income countries, urban–rural, time of day/week, infrastructural developments, and level of preparation. Good answers are also likely to provide named and located examples, and contrast the impacts in different locations.

For Band C (5–6 marks), expect a description of the impacts of geophysical hazards in differing locations.

For Band D (7–8 marks), expect either a more detailed description of the impacts of geophysical hazards in differing locations or a critical discussion of the role of human factors.

For Band E (9–10 marks), expect both.

**Or**

“Geophysical hazards cannot be controlled – they can only be managed.” Discuss this statement. (10 marks)

Some geophysical hazards can be controlled – up to a point. Lava flows can be diverted or sprayed with water, but pyroclastic flows cannot be contained. The impacts of earthquakes and tsunamis can be prepared for, but only up to a certain magnitude or wave height. It is possible to prepare for some landslides through cliff drainage and slope
stabilization. These are examples of managing an
event rather than controlling/preventing the event.
Good answers are likely to make the point that
geophysical events will continue to occur, and that,
over time, there will be more people at risk from
them. Good answers are likely to discuss a range of
measures that can be used to manage geophysical
events. Good answers are likely to mention that
the scale of geophysical events may be more
powerful than the capacity of schemes to manage
them.

For Band C (5–6 marks), expect a description of the
impacts of measures used to manage geophysical
hazards.

For Band D (7–8 marks), expect either a more
detailed description of the impacts of measures
used to manage geophysical hazards, including
named and located examples, or a critical
discussion of the reasons why some geophysical
hazards cannot be controlled, e.g. scale, power.

For Band E (9–10 marks), expect both.

Option E Leisure, tourism and sport

(a) (i) **Suggest two ways in which these tourists may be affecting the environment due to their methods of transport.** (2 marks)

Award [1 mark] for each valid point up to a maximum of 2 marks. For example:
The tourists have clearly driven to the beach by car. The cars compress the sand,
destroy grasses such as marram [1 mark], access roads have to be built to allow them
to get to the beach [1 mark], and they give off greenhouse gases and pollutants when
they are driven [1 mark].

(ii) **Comment on the impact of these tourists on the carrying capacity of the beach.** (2 marks)

Award [1 mark] for each valid point or for some detail on the type of carrying
capacity. For example:
The tourists are reducing the perceptual carrying capacity of the beach – some
people will find this beach unpleasant due to the presence of the cars [1 mark].
Although there is space for more cars on the beach, once a second row of parked
cars is formed, people do not have a clear view of the sea [1 mark].

(b) **Explain two ways in which tourism on this beach could be managed.** (3 + 3 marks)

Award [1 mark] for a valid way/method of managing tourism on this beach, and a further
[2 marks] for the development/exemplification. For example:
A car park could be built at the back of the dunes or at the end of the dunes [1 mark] and
this would reduce the amount of compaction, building of access routes [1 mark], emissions of
NOx and greenhouse gases [1 mark].

Land-use zoning could be used to separate different users [1 mark]. This would mean that
families wanting a beach holiday would be separated from those involved in water sports
or in dog walking [1 mark]. Conservationists would be happy if there were nature reserves – ideally as far away from tourist hot spots
(and the facilities that they need, e.g. car parks, cafés, toilets) as possible, to reduce pressure on the reserve [1 mark].

(c) **Either**

‘Participation in sport is as much a gender issue as it is a development issue’. Discuss this statement. (10 marks)

There are important gender differences in participation in sport, as well important differences
in terms of wealth. There are also other differences such as age, family life cycle, level of education, etc. Gender differences in participation in sport
can be found in HICs, such as the UK and the USA, as well as NICs/LICs. Some cultures make it
more difficult than others for women and girls to participate in sport, notably Muslim women, who
have less chance of participating in mixed-gender sports. Sport is also a development issue. Some
sports are expensive to participate in, and some sports require particular facilities.

Good answers are likely to comment on gender
inequalities in sport, and perhaps even the prize
money for sporting events, such as the unequal
prize money in Tennis Opens. Good answers
are likely to realize that there are certain social
pressures on women – even in HICs and NICs –
where more women are carers for their children
and elderly relatives, and so have less free time.
Good answers are likely to comment on the
relationship of sport and development – many poor
communities cannot afford sporting facilities and so
their options are limited.
For Band C (5–6 marks), expect a description of inequalities in gender participation in sport.

For Band D (7–8 marks), expect either a more detailed description of inequalities in gender participation in sport or a critical discussion concerning participation in sport and development issues.

For Band E (9–10 marks), expect both.

Or

Examine the view that the potential for tourism and/or sport as a means of economic development is extremely limited. (10 marks)

Many countries see sport and/or tourism as a potential source for economic development. This includes small islands in the tropics, and large urban areas in HICs, e.g. London, Barcelona. Tourism is beneficial as it brings in foreign income, it produces more revenue than agriculture (for LICs). There are many multiplier effects including support for local farm produce, local accommodation, taxi firms, local restaurants and bars. However, tourism is subject to changes in fashion, currency fluctuations, the impact of terrorism, economic leakage, and the nature of the jobs created may be part time, seasonal and low paid.

Good answers are likely to cover a range of the advantages of tourism and/or sport for economic development. Good answers may consider the pros and cons of hosting large sporting events such as the World Cup or the Olympic Games. Good answers will seek balance between advantages and disadvantages. Good answers will also use a range of supporting examples from countries at different stages of development.

For Band C (5–6 marks), expect a description of the advantages of tourism and/or sport for economic development.

For Band D (7–8 marks), expect either a more detailed description of the advantages of tourism and/or sport for economic development, with supporting material, or a critical examination of the advantages and disadvantages of sport as a means of economic development.

For Band E (9–10 marks), expect both.

Option F Food and health

(a) Compare the trends for the decline in under-5 mortality rates for malaria and diarrhoeal diseases. (4 marks)

Award [1 mark] for each valid point. Reserve [1 mark] for quantification. For example:
The U-5 mortality rate for measles dropped rapidly [1 mark] from about 28‰ in 2000 [1 mark] to around 17–18‰ in 2005 and about 11‰ in 2010. It then decreased more slowly to about 9‰ in 2015 [1 mark]. In contrast, the U-5 mortality rate for diarrhoeal diseases declined more slowly at first [1 mark] from about 21‰ in 2000 to about 17‰ in 2005, and then more rapidly between 2005 and 2010, and then again more slowly, finally ending up at about 8‰ in 2015 [1 mark].

(b) Briefly explain three reasons for the changes in death rates between 2000 and 2015. (6 marks)

Award [1 mark] for each valid reason and a further [1 mark] for development/exemplification. For example:
Improved access to clean water and sanitation [1 mark] led to a reduction in diseases such as diarrhoea and cholera [1 mark]. Improved nutrition/a more diverse diet [1 mark] led to healthier children, who were more able to fight off infection [1 mark]. Greater access to health care [1 mark] means that more people can be treated if they become ill [1 mark].

(c)

Either

Evaluate the efforts made to contain one infectious disease. (10 marks)

Infectious or contagious diseases are those that can be spread from person to person. Malaria is an example of a disease that is spread by insects, while cholera is spread through infected water. There have been many attempts to stop the spread of malaria. Preventative methods include long-lasting insecticidal nets and indoor residual spraying with insecticides, including DDT. Other measures include draining wetlands and the ongoing attempts to develop a vaccine for malaria.

Good answers are likely to state a range of potential methods for containing an infectious
disease. Good answers are likely to show changes in the transmission rate and death rate over time. Good answers are likely to highlight the problems in trying to contain a disease, such as increasing resistance of insects to insecticides; the spatial and temporal distribution of wetlands, and the difficulty in draining them; the cost of the measures required; and the decline in treatment when it seems that it has been successful. Other good candidates may examine the impact of global warming on population distribution and the distribution of the insects.

For Band C (5–6 marks), expect a description of some of the methods used to contain a named disease.

For Band D (7–8 marks), expect either a more detailed description of some of the methods used to contain a named disease, with supporting evidence of their success or otherwise, or a critical evaluation of the factors that affect the success or failure of an attempt to contain disease.

For Band E (9–10 marks), expect both.

Option G Urban environments

(a) (i) Identify the type of city that grew most between 2000 and 2014, and state its growth rate. (1 mark)

Medium-sized cities of 1–5 million, the highest growth rate was over 10%.

(ii) State the continent in which city growth was most rapid and least rapid. (1 mark)

City growth was most rapid in Asia, and also Asia experienced the highest levels of negative growth in cities.

(iii) Identify the continent that experienced the most decline in cities under one million residents. (1 mark)

Asia.

(iv) Briefly explain one reason why cities would decline in population. (2 marks)

Award 1 mark for a reason why cities decline, and a further 1 mark for development/exemplification. For example:

Cities may decline if their economic base is removed, e.g. Detroit and the decline of the car manufacturing industry; or, cities may decline following natural disasters or repeated natural disasters, e.g. New Orleans following Hurricane Katrina/Christchurch, New Zealand following earthquakes in 2010/2011.

Or

Examine the challenges faced by contemporary approaches to food production. (10 marks)

Contemporary approaches to food production include genetically modified food, vertical farming and in vitro food production. Genetically modified food has received criticism that suggests it might not be safe for humans, that it poses a risk to wildlife, and that it is only produced in a handful of countries. Vertical farming has been found to be expensive and to use greenhouse gases. They require high-tech solutions to get the best from crops. In vitro food production is extremely expensive. Currently it is only practised in high-income countries.

Good answers will show that there are many challenges facing contemporary food production. One is the cost. Currently, most contemporary food production is practised in HICs, and will need to be made much cheaper if it is to succeed in NICs and LICs. Good answers will also show that the public are wary about GM food – there are believed to be health risks and risks to ecosystems. Good answers might question the role of agricultural TNCs – do their motives relate to producing food for the world’s population or making a financial profit? Good answers might also question the scale of contemporary food production – in vitro food production and vertical farming currently do not produce quantities sufficient to feed large numbers of people for example.

For Band C (5–6 marks), expect a description of some of the methods of contemporary food production.

For Band D (7–8 marks), expect either a more detailed description of some of the methods of contemporary food production, with supporting evidence, or a critical examination of the challenges facing contemporary food production.

For Band E (9–10 marks), expect both.
(b) Explain the changing location of retailing in urban areas. (5 marks)

Award [1 mark] for each reason why cities continue to grow, and a further [1 mark] for development/exemplification. For example:
Cities continue to grow due to the economic opportunities – whether real or perceived – that they offer [1 mark]. Cities also provide a greater range of services, e.g. education, health care, recreation/leisure – and these also attract people [1 mark]. Due to their large populations, cities are attractive markets for TNCs/retailers, and these like to invest there [1 mark], which in turn attracts more workers/customers, leading to a multiplier effect [1 mark]. The need for more housing/utilities etc. provides demand for more jobs – again a multiplier effect [1 mark].

(c)

Either

“Eco-cities and smart cities offer great opportunities for high-income countries.”

Discuss this statement. (10 marks)

A “smart city” is one that uses advanced technology in its economy, environment, for its people, living conditions, governance and mobility. An “eco-city” is one that attempts to be sustainable in terms of energy, transport, housing, etc. Smart cities/eco-cities can be quite small, e.g. Bedzed in the UK, or they can be large scale, e.g. Songdo in South Korea.

Good answers are likely to discuss the advantages of smart cities and eco-cities. Good answers are likely to outline the disadvantage (which is mainly the cost) of smart/eco-cities. Good answers may outline the criticism of smart cities/eco-cities, i.e. that they do not achieve enough at a national level, and that the funds could be used to alleviate poor-quality housing. Good answers may argue that the benefits do not just have to be for HICs.

For Band C (5–6 marks), expect a description of smart cities and/or eco-cities.

For Band D (7–8 marks), expect either a more detailed description of the impacts of urban growth on the natural environment, with supporting evidence or a critical examination of the factors affecting the impacts of urban growth on the natural environment.

For Band E (9–10 marks), expect both.

Unit 1 Changing population

(a) (i) Define the term “dependency ratio”. (1 mark)

The dependency ratio is the proportion of the non-workers (i.e. children and elderly) to the working population (i.e. workers). [1 mark]

(ii) Compare the dependency ratio of asylum seekers with that of the general population. (4 marks)
Award [1 mark] for a correct difference identified and a further [1 mark] for a development/exemplification of the point. For example:

The dependency ratio for the general population is generally much higher than that of the asylum seekers [1 mark] as high as 60% in Italy, compared with 10% for asylum seekers [1 mark]; the exception is Sweden where the dependency ration for asylum seekers is 80% compared with about 65% for the general population [1 mark].

(iii) Suggest reasons for the differences you have outlined. (4 marks)
Award [1 mark] for a correct difference identified and a further [1 mark] for a development/exemplification of the point. For example:

Most asylum seekers are likely to be young adults with or without children, but there will be relatively few elderly [1 mark] as the journey may be too difficult for the elderly [1 mark].

Most asylum seekers are likely to be adults [1 mark], as they may be looking for work as well as asylum [1 mark].

The low rates of dependents in some countries may reflect tough immigration policies [1 mark] that do not allow children or the elderly to enter the country [1 mark].

(b) (i) Outline the meaning of the term “family planning”. (1 mark)
The ability to control the size of a family/number of children that a couple have. [1 mark]

(ii) Describe the inequalities in access to family planning, as shown on the infographic. (2 marks)
Most of the women that have unmet needs for modern contraception (73%) come from the world’s poorest countries [1 mark] – this shows that they are at a disadvantage to women in richer countries [1 mark].

(iii) Outline the economic benefits of family planning. (3 marks)
Award [1 mark] for each valid benefit. For example:

People with smaller families have lower health-care and education costs [1 mark]; they tend to live longer lives, so the length of their working life is longer [1 mark] and their potential earnings are greater [1 mark].

(iv) Explain two reasons why family planning may lead to economic benefits for a family. (2 + 2 marks)
Award [1 mark] for each valid reason and a further [1 mark] for a development/exemplification of the reason. For example:

People using family planning have smaller families [1 mark], which means they have more resources to spend on their children’s education /more money to spend on their child’s health needs [1 mark]. Over time, there is an increase in the adult population, but a decrease in the number of dependent children [1 mark], so there is a demographic dividend, with a higher proportion of the population in the workforce [1 mark].

(c) Either
“No population policy has ever been successful.” Discuss this statement. (10 marks)

Population policies include pro-natalist policies (in favour of increasing the number of children), anti-natalist (reducing the number of children), as well as migration policies (allowing/refusing the entry of migrants/asylum seekers into a country. The success of a policy depends upon its aims. The policy most likely to be discussed is China’s one-child policy (later amended to a two-child policy), but there are many others, e.g. France, Singapore, Russia and various migration policies.

Good answers are likely to state the aims of the named policy and the methods used to achieve those aims. They are also likely to comment on the results of the policy – to what extent did it achieve
its aims – and outline the negative consequences of the policy. Good answers are likely to suggest reasons why it may or may not have succeeded in its aims. Good answers are likely to consider the stakeholders involved, and their different aims.

For Band C (5–6 marks), expect a description of a population policy.

For Band D (7–8 marks), expect either a more detailed description of a named population policy, with supporting evidence, or a structured discussion that considers the factors that affected the success of the population policy.

For Band E (9–10 marks), expect both.

Or

**Examine the importance of the demographic dividend. (10 marks)**

The demographic dividend is the increase in the proportion of adults in a population. It occurs when fertility rates decline, and it favours faster economic growth. The demographic dividend leads to an increased labour supply, and a reduced dependency ratio. There is also the potential to increase savings. The decline in fertility reduces the health burden on women. Parents have more resources to invest in their children’s education and health. The increase in income should lead to an increase in spending, thereby improving the local economy. Nevertheless, not all countries experience a dividend – there might not be the investment in the country that is necessary. Moreover, some countries may enter into some form of recession, and so the benefits of a dividend may be temporary.

Good answers will explain how the demographic dividend occurs. They will examine the potential benefits of the demographic dividend. Good answers will also examine the conditions needed for a demographic dividend, and why some countries do not experience a demographic dividend. They will also consider the temporal scale of the demographic dividend, and whether it is reversible.

For Band C (5–6 marks), expect a description of the demographic dividend.

For Band D (7–8 marks), expect either a more detailed description of the demographic dividend, with the use of supporting details, or a structured examination of the factors that lead to a successful long-term demographic dividend.

For Band E (9–10 marks), expect both.

**Unit 2 Global climate – vulnerability and resilience**

(a) (i) **Describe the change in albedo as ice melts and is replaced by soil/bare rock.** (2 marks)

Award [1 mark] for each change. For example:

As ice melts and is replaced by bare rock, there is a change in colour/albedo [1 mark] and the dark surface absorbs more insolation [1 mark] leading to a rise in temperature [1 mark].

(ii) **Distinguish between the greenhouse effect and global warming.** (2 marks)

Award [1 mark] for each valid point. For example:

The greenhouse effect is a natural effect [1 mark], in which certain gases (water vapour, carbon dioxide, methane and chlorofluorocarbons (CFCs)) allow short-wave radiation from the sun to pass through the atmosphere and heat up the Earth, but trap an increasing proportion of long-wave radiation from the Earth [1 mark]. This radiation leads to a warming of the atmosphere. In contrast, global warming is the increase in temperatures around the world that has been noticed since the 1960s, and in particular since the 1980s [1 mark], largely as a result of human activities [1 mark].

(iii) **Using examples, distinguish between methods of adaptation and mitigation in relation to climate change.** (3 + 3 marks)

Award [1 mark] for a definition of each term and a further [2 marks] for development/exemplification. For example:

Adaption refers to initiatives and measures to reduce the vulnerability of human and natural systems to climate change [1 mark]. Measures include building sea walls to cope with rising sea levels and coastal flooding [1 mark], building more
dams and water storage facilities to cope with drought [1 mark], developing more drugs to deal with new varieties of disease [1 mark], etc.

Mitigation refers to attempts to reduce the causes of climate change [1 mark]. Mitigation to reduce the consumption of greenhouse gases include reducing energy consumption, reducing emissions of nitrous oxides and methane from agriculture, using alternatives to fossil fuels and/or geo-engineering [1 mark]. Mitigation strategies to remove carbon dioxide include protecting and enhancing carbon sinks through land management, using biomass as a fuel source, using carbon capture and storage, and/or enhancing carbon dioxide absorption by the oceans [1 mark].

(b) (i) **Outline the likely changes in crop production in sub-Saharan Africa, if there is a temperature increase of 2°C.** (2 marks)

Wheat production is predicted to decline by between 10% and 17%, maize by 5–22% and sorghum by 15–17% if temperatures increase by 2°C.

(ii) **Suggest two reasons for the changes you have identified in (i).** (2 marks)

Award [1 mark] for each valid reason. For example:

Reasons for the decline in productivity include a reduction of the cropping area of between 40% and 80% [1 mark]; increased drought (water stress) [1 mark] and unusual summer heat extremes [1 mark].

(iii) **Explain two reasons why there could be a decrease in biodiversity in sub-Saharan Africa due to climate change.** (2 + 2 marks)

Award [1 mark] for each valid reason and a further [1 mark] for development/exemplification. For example:

Decreased biodiversity could result from an increased loss of savanna leading to less habitat for plants and animals [1 mark] and so less area for top carnivores to catch their prey [1 mark]; increased drought could lead to less water availability [1 mark] and less food supply throughout the whole of the food chain [1 mark] thereby having an impact in biodiversity, especially in the higher trophic levels, as they require a substantial amount of food from lower trophic levels [1 mark].

(iv) **Explain one social problem that could result from climate change in sub-Saharan Africa.** (2 marks)

Award [1 mark] for the identification of the problem and a further [1 mark] for its development. For example:

Climate change in sub-Saharan Africa may cause many farmers to give up farming and to migrate to urban areas [1 mark]. As farmers produce less food, they will receive less money and become impoverished. It is likely that they may look for alternative employment in nearby urban areas [1 mark]. Climate change may lead to malnutrition and poor performance by children at school [1 mark]. With less food production, malnutrition is more likely. Malnourished mothers are more likely to give birth to underweight children. Malnourished children do less well in school, and so their life chances are badly affected [1 mark].

(c) **Either**

“Climate change is a vast global experiment with very uncertain outcomes for human and biological communities.” **Discuss this statement.** (10 marks)

Climate change is undoubtedly happening. More scientists would agree that change is occurring, although there is less agreement on how fast it is happening, and how far it will go. In addition, there are plans to reduce climate change (mitigation), but it is unclear how successful these will be. Thus the outcomes – environmental, social, economic and political – are very unclear. The degree of climate change depends on the scale of human activities, both in causing climate change and in attempts to mitigate it.

Good answers will describe and explain the causes and consequences of climate change. They will discuss the scale of the changes and the uncertainties regarding the potential mitigation strategies. Good answers will also discuss the
impacts on human communities as well as on biological communities. Good answers are also likely to discuss the timescales involved.

For Band C (5–6 marks), expect a description of the consequences of climate change for human communities and biological communities.

For Band D (7–8 marks), expect either a more detailed description of the consequences of climate change for human communities and biological communities, with supporting evidence, or a structured discussion of the factors that make the outcomes uncertain.

For Band E (9–10 marks), expect both.

Or

Examine the effects of global climate change on communities and natural systems. (10 marks)

Climate change has many impacts on communities and natural systems. It can affect communities directly (e.g. through extreme weather) or indirectly, through changes in the length of the growing season. Climate change has impacts on communities through agriculture, water supply, the incidence of extreme weather events, patterns of disease, migration and economic impacts such as in the tourist sector. Climate change has major impacts on the hydrosphere, sea ice, glaciers and ice caps, oceans and biomes.

Good answers are likely to describe the impact of climate change on a range of human activities and natural systems. They are likely to examine the positive aspects of climate change as well as the negative aspects. Good answers are likely to examine the scale of climate change, and to identify peoples and places most at risk of climate change.

For Band C (5–6 marks), expect a description of the likely impacts of climate change on communities and natural systems.

For Band D (7–8 marks), expect either a more detailed description of the likely impacts of climate change on communities and natural systems, with supporting evidence, or an examination of the factors that influence the scale of the impacts of climate change.

For Band E (9–10 marks), expect both.

Unit 3 Global resource consumption and security

(a) (i) Define the term “recycling”. (1 mark)

The processing of household and industrial waste so that the material can be reused. [1 mark]

(ii) Suggest what is meant by the term “remanufacture”. (1 mark)

The reuse of manufactured goods, so that new raw materials are not needed for the production of goods. [1 mark]

(iii) Describe the changes in recycling, remanufacture and refurbishment between the Status quo model to the Transition scenario. (3 marks)

Award [1 mark] for each valid point/ reserve [1 mark] for quantification. For example:

In the Status quo model, most of the material is recycled (63%) [1 mark], and a further 8% is remanufactured. Fifteen per cent is unaccounted for or sent for landfill, and 14% is exported to the EU. In contrast, in the Transition scenario, only 44% is recycled [1 mark], but 26% is refurbished (compared to 0% in the Status quo model) and 5% is remanufactured (compared with 8% in the status quo model) [1 mark].

A similar amount is exported to the EU (14%) [1 mark], but less is unaccounted for or ends up in landfill. [1 mark]

(iv) Outline the potential benefits of the Transition scenario over the Status quo model. (4 marks)

Award [1 mark] for each valid benefit and a further [1 mark] for development/exemplification. For example:

There is less going to landfill, so less land is needed for waste disposal [1 mark] and the chances of leaching/release of methane from landfill is reduced [1 mark]. Over one-quarter of light commercial vehicles are refurbished – this extends their useful life and reduces the amount of waste generated [1 mark]. Refurbishment may add new improved features to the vehicles and make them more attractive to users [1 mark]. Recycling requires energy, so the
reduction in recycling reduces the amount of energy used [1 mark].

(b) (i) Identify three products that are made from textiles. (1 mark)
Fibre, stuffing and cloth (yarn). [1 mark]

(ii) Outline two ways in which the textiles can be reused and recycled (2 + 2 marks)
The cloth can be recycled to make new clothes from old clothes [1 mark], and the stuffing can be reused many times to stuff seats. [1 mark]

(iii) Suggest two ways in which leakage is minimised. (2 marks)
Award [1 mark] for each valid point. For example:
Leakage is minimized as most of the material is recycled or reused [1 mark], e.g. recycling of cloth/reuse of stuffing. Leakage is also reduced by using waste material to produce energy (biogas) or its restoration and use in farming [1 mark].

(iv) Explain how textiles can contribute to the energy sector. (2 marks)
Award [1 mark] for each valid point. For example:
After anaerobic decomposition/composting, some natural gas is produced. This can be used as an energy source [1 mark]. Landfill can also be used to produce natural gas (energy from waste) [1 mark]. Some waste can be used in farming as a fertilizer, and so reduce the need for energy to be used to produce chemical fertilizers [1 mark].

(c)
Either

Discuss the value of the nexus approach with respect to food security. (10 marks)
The water-food-energy nexus refers to the very close links between these three sectors and the ways in which changes in one sector have an impact on one or both of the other sectors. The nexus approach stresses the need for stewardship of these resources. Food security is about having sufficient, safe and nutritious food at all times, to support an active and healthy lifestyle. Food production is the world’s largest single user of water, accounting for about 70% of water usage. In turn, food production may affect water supply through water extraction, water pollution (eutrophication, salinization) and land-use changes. Energy is required for the extraction, transport and distribution of water, and for the creation of hydrological schemes such as dams and irrigation networks. Energy is needed for farming: for ploughing, for producing chemical fertilizers, for machinery and for harvesting, transport, etc. Agriculture accounts for about 30% of global energy use.

Good answers are likely to stress the interaction of food production, energy use and water. They are likely to consider different farming systems and their needs for water and energy. Good answers are likely to discuss the impact of increasing agricultural production on energy sources and water sources, and assess competing demands for water and energy. They are likely also to address the needs of balancing the demand for water and energy supplies. Good answers are likely to discuss the increasing need/demand for food production.

For Band C (5–6 marks), expect a description of the nexus approach and food security/food production.

For Band D (7–8 marks), expect either a more detailed description of the nexus approach and food security/food production, including support, or a structured discussion of the factors affecting the nexus approach and/or food security, e.g. population growth, increasing standards of living, competing demands for water and energy etc.

For Band E (9–10 marks), expect both.

Or

“The circular economy is the most effective way of planning resource use for the future.”
Discuss the implications of this statement. (10 marks)
A circular economy is one that preserves natural capacity, optimizes resource use and reduces loss through managing finite stocks and renewable flows. It is an economy that restores and regenerates resources, and keeps products, materials and components at their highest utility and value at all times. A circular economy aims to rebuild capital, whether it is financial, manufactured, natural, social or human. In a completely circular economy, consumption only occurs in bio-cycles, in which resources can be
recovered and restored. There are three principles behind the circular economy:

- Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows.
- Optimize resource yields by circulating products, materials and components – this means designing for recycling and remanufacturing of products.
- Develop system effectiveness by eliminating negative externalities such as pollution and climate change.

Good answers are likely to describe the circular economy and outline its advantages. They are also likely outline the difficulties in implementing the circular economy (cost, mindset). Good answers are likely to comment on population trends and resource consumption and suggest the likely impacts of current types of consumption on the world’s resources if a circular economy does not develop.

For Band C (5–6 marks), expect a description of the circular economy.

For Band D (7–8 marks), expect either a more detailed description of the circular economy, including support, or a structured discussion of the benefits of the circular economy compared with the linear economy.

For Band E (9–10 marks), expect both.

**Unit 4 Power, places and networks**

(a) Using examples, explain the geographic pattern of one or more illegal flows. (12 marks)

Illegal flows include trafficked people, counterfeit goods and narcotics. Trafficking of people has a global scope. It can be domestic or international. Most trafficking is within a region, and victims are generally from a poorer country and trafficked to a richer country. Counterfeit goods are also a worldwide problem, and their distribution and trade is often a highly organized system. The trade in counterfeit goods has been linked to money laundering, illicit drugs and corruption. The flow of drugs involves cultivation, manufacture, distribution and sales of drugs.

Good answers are likely to describe one or more illegal flow. Good answers may link flows to core-periphery movements. They are likely to suggest reasons for such flows, and may examine changes in the flows partly in response to attempts to manage them.

For Band C (4–6 marks), expect a description of the geographic pattern of one or more illegal flows.

For Band D (7–9 marks), expect either a more detailed description of the geographic pattern of one or more illegal flows or a structured explanation of the factors that influence illegal flows (power, possibilities, place, poverty, inequalities).

For Band E (10–12 marks), expect both.

(b) Examine how global interactions can lead to increased inequalities. (16 marks)

Global interactions may include many economic and social flows such as trade, aid, remittances, FDI and movement of labour. Global interactions may lead to a “race to the bottom” whereby the exploitation of labour leads to increased inequalities between core and periphery. In addition, the migration of young, innovative workers from the periphery to the core, and the relocation of polluting industries and the export of waste from the core to the periphery may reinforce global inequalities. Structural adjustment policies may open up the economies of periphery and semi-periphery countries to those of the core.

On the other hand, increased trade has reduced the number of people living in poverty, and MDG 1 was the most successful of the MDGs. Remittances sent to migrants’ families at home may help to reduce inequalities. Greater access to ICT may enable some people to improve their economic position, and thereby reduce inequalities.

Good answers are likely to examine how global interactions can increase global inequalities. They are likely to be balanced, and show how global interactions can reduce inequalities. Good answers are likely to have supporting evidence. Good answers are likely to consider different perspectives and examine the factors that increase/decrease inequalities.

For Band C (5–8 marks), expect a weakly evidenced account of one or two ways in
which global interactions can lead to increased inequalities.
For Band D (9–12 marks), expect either a more detailed description of one or two ways in which global interactions can lead to increased inequalities, with support, or a structured examination of the factors (power, possibilities, place) that influence the impact of global interactions.
For Band E (13–16 marks), expect both.

Unit 5 Human development and diversity
(a) Examine the progress in reducing gender inequalities. (12 marks)
Gender inequalities refer to the inequalities that exist between men and women, boys and girls. The UN’s Gender Inequality Index measures gender inequalities in terms of reproductive health, gender empowerment and economic status. According to the UN, women make up a disproportionate number of the world’s hungry, have limited political impact in negotiations and peace agreements, are more likely to die in natural hazards than men, earn less, and do more unpaid work, including family care. Nevertheless, some progress has been made – mainly in terms of education – whereas major inequalities persist in administrative, managerial and ministerial occupations.
Good answers are likely to outline existing gender inequalities. They are likely to examine progress in reducing inequalities in some sectors. Good answers may examine the factors that enable/reduce attempts to improve gender equality such as the role of women in society, poverty in a country, war and civil unrest, any legislation promoting gender equality and the number of women in the government.
For Band C (5–8 marks), expect a description of gender inequalities.
For Band D (9–12 marks), expect either a more detailed description of gender inequalities, including support, or a structured examination of the reasons for gender inequalities.
For Band E (13–16 marks), expect both.

(b) Examine the reasons for the rejection of globalized production. (16 marks)
Critics of globalized production argue that it leads to increased cost of transport (air miles), higher costs of inputs, smaller profit margins (especially for suppliers or small-scale producers), increased environmental costs (e.g. soil erosion, decreased water quality), and discourages local producers. Critics also argue that workers are unfairly treated (e.g. low wages, poor working conditions) and that it leads to resource depletion.
Good answers are likely to examine a range of reasons for the rejection of globalized production. They are likely to consider the view that many people benefit from globalized production. Good answers are likely to identify a variety of stakeholders/different views of globalized production. Good answers are likely to consider recent changes in policies regarding nationalism and protectionism.
For Band C (5–8 marks), expect a description of the reasons for the rejection of globalized production.
For Band D (9–12 marks), expect either a more detailed description of the reasons for the rejection/acceptance of globalized production (do not expect balance) or a structured examination of different factors that influence the rejection of globalized production.
For Band E (13–16 marks), expect both.

Unit 6 Global risks and resilience
(a) Examine the geopolitical and economic risks as a result of new technology. (12 marks)
Geopolitical and economic risks include cybercrime (hacking, identity theft and the implications of surveillance for personal freedom. There are increased risks to supply chains, and the use of drones and 3D printing also bring risks for personal safety. There has been a rise in nationalism and increased geopolitical risk in recent years (e.g. Russia and Ukraine).
Good answers are likely to examine a range of geopolitical and economic risks. They are likely to identify some of the benefits of new technology, and to consider the management of these new technologies (e.g.: Who decides? Who manages? Who is managed?).
For Band C (6–6 marks), expect a description of the geopolitical and economic risks associated with new technology.
For Band D (7–9 marks), expect either a more detailed description of the geopolitical and economic risks associated with new technology, including detailed support, or a structured examination of the factors that promote risk rather than benefits (e.g. anti-globalization sentiment).
For Band E (10–12 marks), expect both.

(b) Examine the success of international civil society in raising awareness and finding solutions to the risks associated with global interactions. (16 marks)

There are many international civil societies, e.g. World Wide Fund for Nature (WWF) and Oxfam, that attempt to raise awareness and find solutions for the risks associated with global interactions. WWF, for example, is mainly associated with environmental issues, whereas Oxfam focuses mainly on social and economic justice. Both organizations have been very successful in raising awareness of their respective issues. However, despite over 50 years of effort by WWF, and over 70 years of effort by Oxfam, no permanent solution has yet been found for these issues.

Good answers are likely to describe the interests of one or more international civil society. They are likely to consider how successful the international civil society has been in raising awareness of the risks. Good answers are likely to consider the solutions that the international civil society has proposed. Good answers are likely examine the factors that enable/hinder the implementation of these solutions (e.g. power, place, population growth, inequalities, rising standards of living, consumer culture, etc.).