

GEOGRAPHY

National 5

Model Answers Booklet



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Section 1: Physical Environments

GLACIATION

a) Explain the formation of a corrie. (6)

Corries are usually found on north or NE facing hollow as these are more shaded, so it is colder and snow lies longer (1). Snow collects and is compressed into ice and moves downhill as a glacier (1), due to gravity (1).

Plucking, when ice freezes on to bedrock, pulling loose rocks away from the back wall, making it steeper (1). Abrasion, when the angular rock embedded in the ice grinds the hollow, making it deeper (1). Frost shattering continues to steepen the sides of the hollow. This happens when melt water enters cracks in the rock, freezes and expands. This forces the crack wider. When this has happened many times the rock will break apart (1).

After the ice melts an armchair shaped hollow is left in the mountainside; this is a corrie (1).

b) Explain the formation of a U-shaped valley. (6)

Snow collects and is compressed into ice and moves downhill as a glacier (1), due to gravity (1). The glacier flows down a v-shaped valley. Interlocking spurs are removed and truncated spurs were left behind as the glacier 'bulldozes' its way downhill. (1)

The glacier erodes the valley by plucking, when ice freezes on to bedrock, pulling loose rocks away from the valley sides, making them steeper. (1) The rocks plucked out assist in abrasion; this is when the angular rock embedded in the ice grinds the valley down, deepening the valley floor. (1) Freeze-thaw action further steepens the sides of the valley. This happens when melt water enters cracks in the rock, freezes and expands. This forces the crack wider. When this has happened many times the rock will break apart. (1)

As the ice melts, a wide u-shaped valley is left behind with steep sides and a flat valley floor. (1)

c) Explain at least 2 land uses that would be suitable for a glaciated upland area you have studied. (6)

TOURISM & RECREATION is a major land use in glaciated upland areas like Loch Lomond & the Trossachs National Park. Tourists are attracted to the natural scenery which includes mountains with glacial features and lochs (1). Ribbon lochs provide opportunities for water sports such as water skiing and canoeing (1). Mountains provide great opportunities for hill walking and rock climbing (1).

Hill sheep **FARMING** is common here too because sheep are hardy and can survive the cold, harsh conditions (1). Sheep are surefooted and can easily handle the steep slopes (1). The slopes are too steep to use farm machinery (1). Flatter areas on valley floors are often marshy which makes it unsuitable for arable farming (1).

d) Explain the conflicts that may occur between at least two different land users in a glaciated upland area you have studied. (6)

In Loch Lomond & the Trossachs National Park, tourists can disrupt farming activities as walkers leave gates open, allowing animals to escape (1). This is inconvenient as farmer then has to spend time rounding them up (1). Tourists' dogs can worry sheep if let off their lead (1). This may cause miscarriage and lead to loss of profit for the farmer (1).

Most tourists travel to National Parks by car; this causes congestion on the narrow roads (1), and makes it difficult for locals to park (1). Tourists walk around the edges of footpaths, widening them, and destroying vegetation and animal habitats (1). Tourists drop litter causing visual pollution (1).

e) Explain how conflicts between at least two different land users may be managed. (6)

To solve the problem of tourists leaving gates open farmers could install 'kissing gates' (1). Signs can be put up reminding owners to keep dogs on leads when rambling to avoid attacks on sheep (1). In Loch Lomond National Park, £60 fines have also been introduced to encourage tourists to keep dogs on leads (1).

To combat traffic congestion, Luss Estates has planned for a new 240-space car park (1). Fixing popular footpaths with local stone so that it is hardwearing and fits in with the natural scenery (1). Fence off badly damaged routes allowing the ground to recover and directing walkers along a different path (1). Removing litter bins will encourage visitors to take litter away with them (1).

COASTS

a) Explain the formation of headlands and bays. (4)

Headlands and bays are found along coastlines where there are alternating outcrops of harder and softer rock (1). Waves erode the areas of softer rock more rapidly to form bays (1).

However, the waves cannot wear away the resistant rock as easily and as quickly so headlands are left protruding out into the sea (1). The headland is now exposed to waves and is more vulnerable to erosion by hydraulic action, which is where waves force air into the rocks and cliffs causing the cracks to gradually widen and break away (1). Abrasion happens when rocks within the waves hit cliff faces and wear them down (1). Headlands are left exposed and stick out into the sea; they protect the bays that shelter between them (1).

b) Explain the formation of a cliff / wave-cut platform. (4)

The sea constantly crashes against a cliff and erodes the base due to hydraulic action (waves force air into the rocks and cliffs causing the cracks to gradually widen and eventually break away) (1) & abrasion (where rock fragments are thrown against the headland wearing it away) (1). Here, a wave cut notch forms (1). Over time, this notch enlarges due to solution (where acid in the sea weathers limestone and chalk), (1) until the cliff above becomes unsupported and collapses due to gravity (1). As a result the cliff appears to retreat backwards (1). Where the material falls into the sea, a wave cut platform is created (1).

c) Explain the formation of a stack. (5)

A Headland with weaknesses such as joints, faults or cracks are eroded by the sea to form caves (1). Erosion takes place due to hydraulic action - waves force air into the rocks and cliffs causing the cracks to gradually widen and eventually break away (1). Abrasion is where rock fragments in the waves are thrown against the headland wearing it away (1). Solution is where acid in the sea weathers limestone and chalk (1). Attrition is where rock fragments are being ground down by friction from wave action into smaller and rounder pieces (1). Over time, erosion on both sides of the headland cuts through the cave's backwall to create an arch (1). Continued erosion of the headland eventually results in the collapse of the arch roof due to gravity, leaving a stack isolated from the headland (1).

No marks for stump formation.

d) Explain the formation of a sand spit. (5) (or sandbar)

Sand spits (long narrow ridges of sand or shingle) form where the coastline changes direction (1). Longshore drift transports sand (1) and deposits it in a sheltered area (1). Deposited sand builds up over time until it is above sea level (1). This deposition continues until the beach extends into the sea to form a spit (1). Sand spits can also develop a hooked or curved end due to a change in prevailing wind/wave direction (1). Salt marshes can develop in an area of calm water behind the spit (1). If a spit stretches right across a bay and joins another headland then a lagoon is left behind, and this feature is called a sandbar (1).

e) Explain at least 2 land uses that would be suitable for a coastal area you have studied. (6)

TOURISM & RECREATION is a major land use in the Dorset coast. Tourists are attracted to coastal areas like the Dorset Coast due to the beautiful natural scenery which includes cliffs, arches, and stacks (1). Tourists can also enjoy scenic walks along the many coastal pathways (1). Due to the proximity of the sea, a variety of water activities can also be undertaken, for example sailing (1).

RENEWABLE ENERGY is a suitable land use here too. Strong prevailing winds (from the South West) approach the coast everyday so wind power can be used (1). The land is also gently sloping with few hills so wind energy will be easier to harness as it won't be blocked by hills (1). In addition, the sea can generate tidal power, and could even be used to cool the reactors of nuclear power plants (1). Since it is very sunny in Dorset there is also lots of opportunities for solar power plants too. (1)

WEATHER

a) Explain the factors which affect average temperature in the UK. (4)

- **Latitude** affects average UK temperatures because places in southern England are warmer as they are nearer the Equator (1); temperatures generally decrease the further north you go because the sun's rays are less concentrated further away from the equator (1).
- **Altitude** is another factor because upland areas are colder as temperatures decrease 1°C for every 100 metres gained in height (1).
- **Aspect** also affects average temperatures, in the northern hemisphere south facing slopes can be warmer because they face the sun (1).
- **Distance from the sea** affects average temperatures too because The North Atlantic Drift keeps the temperatures warmer on the west coast than on the east coast of the UK (1).

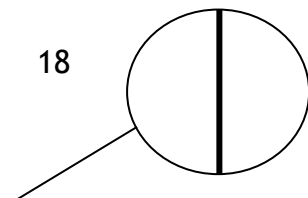
b) Describe how a long period with a tropical continental air mass in summer would affect the people of the British Isles. (4)

Tropical continental air mass will bring hot dry weather in summer which could result in droughts (1). There then might need to be hosepipe bans (1). The dry conditions may cause grass to wither and die causing problems for livestock farmers (1). More outdoor sports can take place, e.g. tennis matches without being rained off (1). More people will be admitted to hospital with heatstroke (1) putting a strain on NHS resources (1).

c) Study Diagram Q3C below. Draw a weather station circle for the conditions. (5)

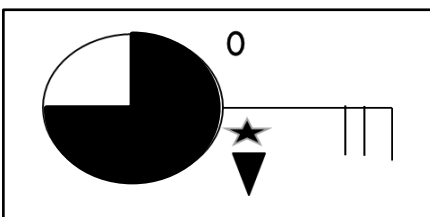
Diagram Q3C: Weather conditions

- Dry
- 18 degrees Celsius
- South West winds
- 1-2 knots
- 1 okta



d) Study Diagram Q3D below, describe the weather conditions present at Glasgow on the 12th February 2019. (5)

Diagram Q3D: Weather conditions



- Snow showers (1)
- 0 degrees (1)
- Easterly winds (1)
- 30 knots (1)
- 6 oktas (1)

e) Explain the differences and similarities between anticyclones in summer and winter. (5)

In both summer and winter, wind speeds are light or calm (1) and winds will circulate in a clockwise direction (1). There are few clouds in the sky at both times of year (1) and, therefore, it is dry and bright at both times of year (1). Anticyclones bring hot weather in summer but very cold weather in winter (1). Cooling of the ground leads to morning mist in summer, but in winter severe frosts are common at night and during the day (1). Heat waves can occur in summer if an anticyclone remains over the UK for a period of time

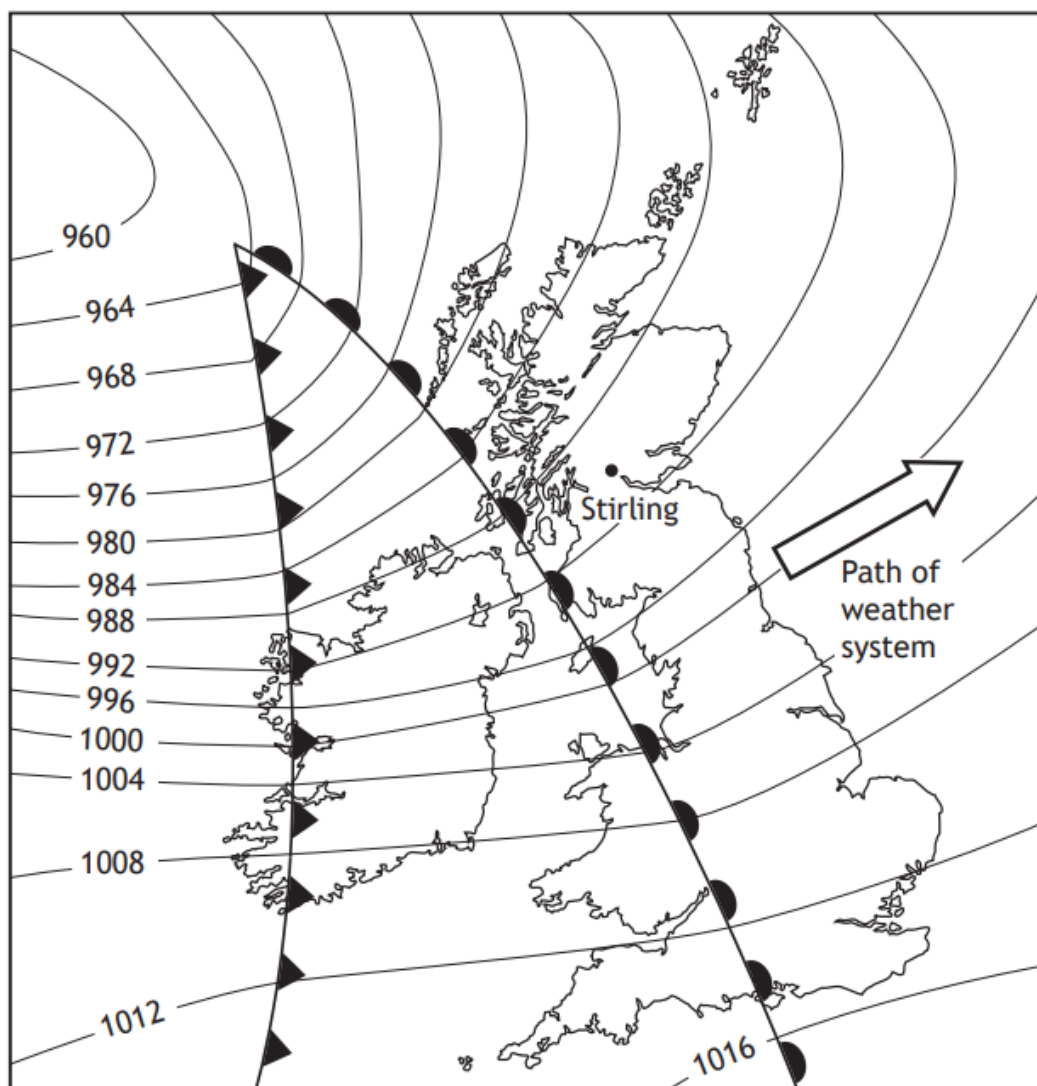
f) Describe the benefits and problems caused by anticyclones in winter. (4)

Benefits of anticyclones in winter are that the cold weather may keep snow in northern areas from melting too quickly - this means ski resorts can remain open (1), increasing business, and making them more money (1). Due to low temperatures more outdoor winter sports can take place, e.g. ice skating (1).

Problems of anticyclones in the winter are that driving conditions will be poor due to increased fog and decreased visibility (1). This may cause congestion and delays to emergency vehicles as cars must drive slowly through hazardous conditions (1). There may be more falls and accidents due to icy conditions (1).

g) Study Diagram Q3G below. Explain the changes that will take place in the weather in Stirling over the next 24 hours. (5)

Diagram Q3G: Synoptic Chart for Monday 16th April 2016



Due to the approach of the warm front, Stirling's air pressure will fall (1) cloud cover will increase (1) and steady rain will fall (1).

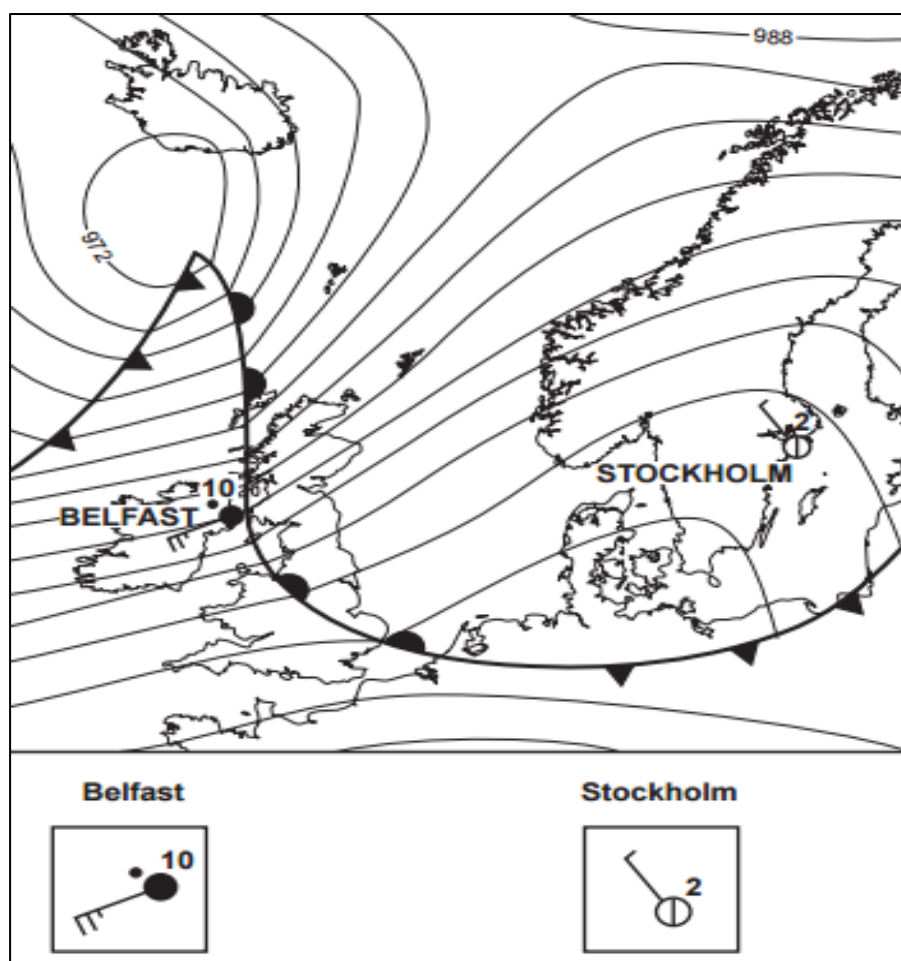
After this Stirling will be in the warm sector of the depression, so temperatures will rise (1) and there will be some cloud cover and occasional showers (1).

Then due to the cold front arriving, cloud cover will increase (1) with cumulonimbus clouds bringing heavy rainfall to Stirling (1). Winds will be stronger as the isobars are closer together (1). Temperatures will drop as the cold front passes over (1).

As the front begins to move away, the sky will become clear (1) rain will stop or reduce to occasional showers (1).

h) Study Diagram Q3H below. Give reasons for the differences in the weather conditions between Belfast and Stockholm in January. (5)

Diagram Q3H: Synoptic Chart for Wednesday 8th January 2020



Belfast has stronger winds (25 knots) than Stockholm (5 knots) because the isobars are closer together (1). Wind direction at Stockholm is NW whereas at Belfast it is SW due to the different alignment of the isobars (1), winds circulate in an anticlockwise direction around a depression but clockwise around an area of high pressure (1).

There are 8 oktas of cloud cover in Belfast because it is close to the warm front (1), whereas Stockholm only has 1 okta cloud cover as there are only very thin high cirrus clouds present (1). Temperatures in Belfast are warmer (8 degrees) than in Stockholm (2 degrees) as it is in the warm sector (1).

In Stockholm it is dry because it is in Stage 1 of a depression (cool sector) (1). However, Belfast is close to the warm front and therefore is experiencing rain instead (1).

Section 2: Human Environments

URBAN

a) Use the Glasgow OS Map. Give map evidence to show grid squares 5865 & 5965 are part of the CBD. (4)

MAPS MAY VARY - GIVE MAP EVIDENCE

Areas 5865 & 5965 are part of the CBD because main roads meet here, e.g. M8 and A814 (1). There are main railway stations, Central Station & Queen Street Station (1). There are several churches/places of worship (1). There is a tourist Information Centre (1), and there is also a Town Hall (1).

b) Use the Glasgow OS Map. Give map evidence to show that grid square 5566 is part of the Inner City area of Glasgow. (4)

MAPS MAY VARY - GIVE MAP EVIDENCE

Area 5566 is an inner city area due to the grid iron street pattern (1) and the high density of housing without many open spaces (1). The long rows of housing are most likely tenements or terraced housing from the 19th century (1). There is evidence of very large irregularly shaped buildings which are most likely factories for industry (1). The inner city often has industry close to rivers and railways to transport goods, and the River Clyde flows through 5566 and there is a railway station at 556665 (1).

c) Use the Glasgow OS Map. Give map evidence to show 6070 is part of the suburbs. (4)

MAPS MAY VARY - GIVE MAP EVIDENCE

Area 6070 is part of the suburbs due to the cul de sacs and crescents (1). It is located at the edge of the city as would be expected of the suburbs (1), there is a school in 6070, and in surrounding grid squares for children of families living in the nearby housing areas (1). There is more open space than would usually be found in either the CBD or inner city (1). There is good transport links to the CBD (railway station and A803) for people to commute to work in the city centre (1).

d) Use the Glasgow OS Map. There is a plan to build a new retail park in grid square 5358. Using map evidence, explain why this area would be a suitable site.

5358 is a suitable site for the new retail park because there is lots of flat land here, which is easier to build on (1). It is also at the edge of the city so the land will be cheap (1). There is a lot of open space so the retail park will have plenty of room for future expansion (1). The nearby main roads like the A726 will allow shoppers and workers easy access to the retail park from within the city (1) and lorries carrying goods to be sold will be able to transport items from other parts of the UK via the M77 (1). 5358 is nearby large residential areas as well (e.g. Barrhead), this will give the retail park a good supply of workers and shoppers (1). 5358 is also far from the CBD so will not increase congestion in the city centre (1).

e) Describe, in detail, how a developed world city you have studied has tried to reduce traffic congestion in the CBD. (6)

In Glasgow the M8 and M74 motorways pass very close to the CBD and take 'through traffic' away from the CBD (1). Creation of pedestrianised streets where cars are banned and it is safer, less polluted and more pleasant to shop or visit attractions (1). Bus lanes allow buses to run quicker so they are more popular and people can leave cars at home (1). One way streets will allow vehicles to go faster (1). Multi storey car parks enable cars to be parked off the road so that traffic can flow freely (1). Glasgow has built the Clyde Tunnel to give traffic another route and avoid congestion occurring at bottlenecks along the Clyde (1). Park and Ride schemes in use, this is where you park your car outside the CBD and use public transport to travel in, e.g. Sheild's Road subway, this results in fewer cars on the road (1).

f) Explain the recent changes that have been made to improve shopping in the CBD of a developed world city you have studied. (6)

Glasgow has added more covered shopping areas (e.g. St Enoch's Centre) so that shoppers are not inconvenienced by poor weather (1). There's many more restaurants, cafes and bars catering to all tastes and budgets of shoppers (1). There's more exclusive designer shops, e.g. the Italian Centre (1). Improved access by train, bus and subway (1). More attractions for recreation, e.g. ice rink, street musicians, Christmas Markets (1). More pedestrianised areas so that shoppers have a safer, less polluted and more pleasant experience (1).

g) Referring to a developed world city, describe in detail the recent changes that have been implemented to improve inner city housing. (6)

In Glasgow's Gorbals area, they have improved housing conditions by pulling down the dilapidated high rise flats that suffered from damp, broken lifts, etc (1), and built new 2-5 storey flats that are more in keeping with the traditional tenement style, decreasing visual pollution (1). Old industrial sites were decontaminated and cleared to make the area safer (1). They also improved employment in the area with a new industrial estate, hotels, colleges and other services to attract young professionals (1). There is an improved environment as houses now have private gardens, parks, street furniture and art to make the Gorbals more pleasant to live in (1). There's even improved services as there are now many shops, a new library, a new leisure centre and a new NHS health centre (1).

h) Referring to a developing world city you have studied, describe in detail the recent changes that have been implemented to manage traffic more effectively. (6)

The authorities in **Mumbai** are trying to improve traffic congestion in various ways. Since the late 1990's, more than 60 flyovers have been built to increase road capacity (1). Since 2008, 37 skywalks have been built for pedestrians; this cuts down on road traffic accidents, easing congestion (1). In 2011 Mumbai installed computer systems and a control centre to monitor traffic and change traffic light signals to improve the flow of traffic (1). In 2014, Mumbai monorail opened to encourage people to use public transport instead of driving (1). Police are being stricter, giving out fines for people not obeying traffic rules (1). Market stalls and hawkers are to be cleared from pavements by police so there is more room for vehicles on roads (1).

i) For Rio de Janeiro, or another developing world city you have studied, describe in detail the housing problems in shanty towns. (6)

The slum of Dharavi, in Mumbai, has a population of 1 million; this creates problems of overcrowding and puts a strain on services (1). Houses are poorly built with scrap materials, e.g. tin roofs, so are unsafe (1). There is a lack of toilets and sanitation is inadequate so diseases spread easily (1). Houses have no electricity or running water (1). Since the people live there illegally and do not pay tax, there is no organised refuse collection so rubbish is dumped everywhere, leading to air pollution (1). The extreme poverty leads to drug use, alcoholism, suicide and other social problems (1). There are very few schools so literacy rates are low and people are uneducated (1).

j) Describe, in detail, methods used by city authorities to improve living conditions in shanty towns. You should refer to a named developing world city you have studied. (6)

The authorities in Mumbai are trying to improve the slums of Dharavi in various ways. The 'Dharavi Redevelopment Project' has ordered large parts of Dharavi to be knocked down (1). Residents who had lived there from before 2000 were entitled new apartments in a high rise complex in the area, complete with electricity and running water (1). The government have improved the shanty towns in areas, providing; more toilets, water pipes and schools, and even reinforced the walls of some houses (1). Some families that have lived in the slums for generations were given the legal right to the land (1). Some residents have formed cooperatives and now organise themselves to make improvements in their communities. These are called self-help schemes (1). A new town, called Navi Mumbai, has been created to house the growing population (1).

POPULATION

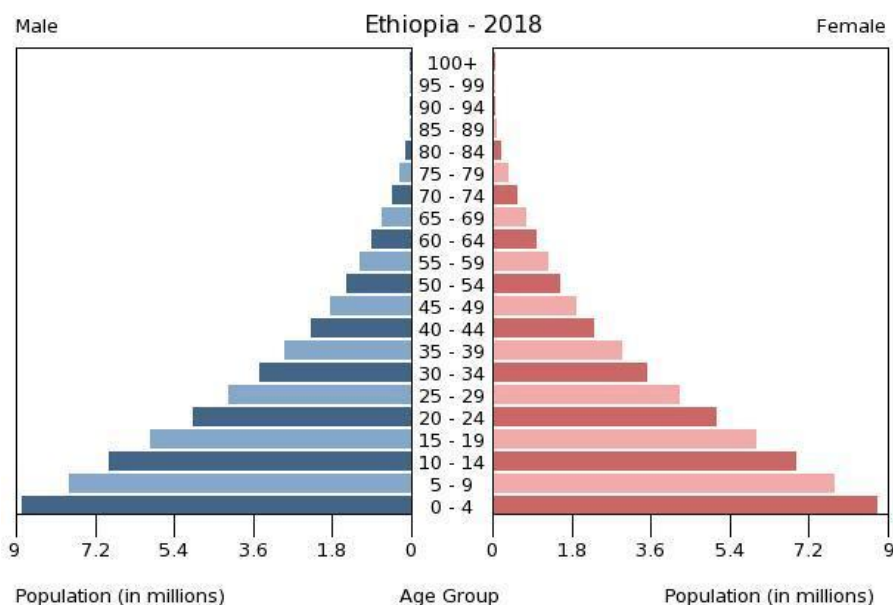
a) Explain why there are areas of different population density across the world. Your answer should refer to both **Physical and Human factors**. (6)

Relief is a physical factor that affects population density because people prefer to live on flat, low-lying areas because it is easier to build on (1). Few people tend to live in mountainous areas because steep slopes make it difficult for machinery to operate (1). People prefer to live in areas with **fertile soils** so that crops can be grown to supply food (1).

Human factors that affect population density are **job opportunities**; cities such as Rio de Janeiro have a high population density as there are a variety of jobs (1). Towns and cities are crowded as people move to cities like London and New York for a variety of **amenities and services** e.g. education, health care, jobs and entertainments (1). Population density in areas like Syria is falling as people are moving away because of prolonged **war and conflict** (1).

b) Describe and explain the shape of the population pyramid for Ethiopia. (6)

Diagram Q5B: Population Pyramid for Ethiopia 2018



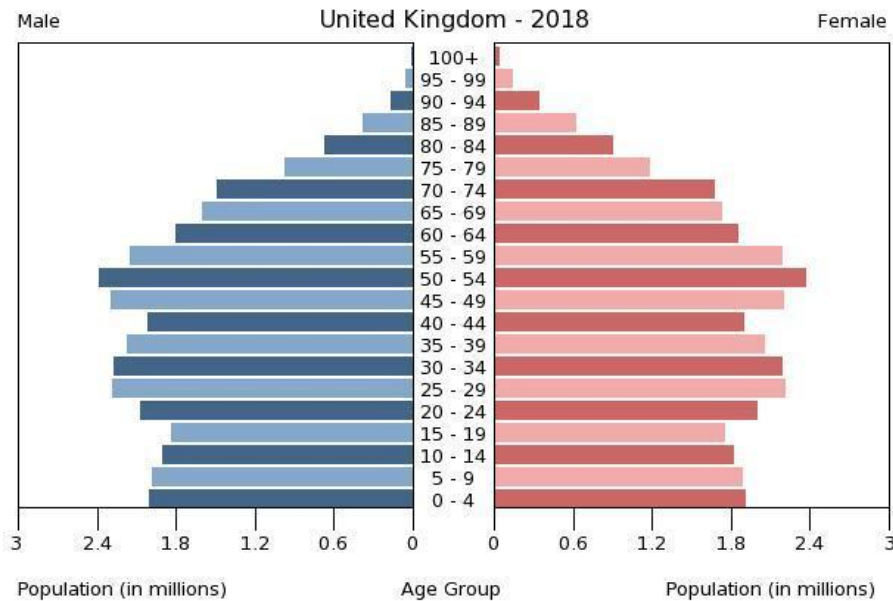
The population pyramid for Ethiopia is pyramid shaped. It has a wide base indicating high birth rates (1). Birth rates are high here because parents have lots of children in the expectation some will die due to high IMR (1) and large families means more people can help with financial support, e.g. children can work the land (1).

It narrows quickly showing high IMR and death rates (1). This is because there is a lack of clean water and good sanitation, which allows disease to spread quickly (1).

The pyramid narrows at 35-40, showing a low life expectancy (1), this is because poor education means people lack basic medical knowledge (e.g. wash hands before meals) that may prevent disease and death (1).

c) Describe and explain the shape of the population pyramid for the UK. (5)

Diagram Q5C: Population Pyramid for UK 2018

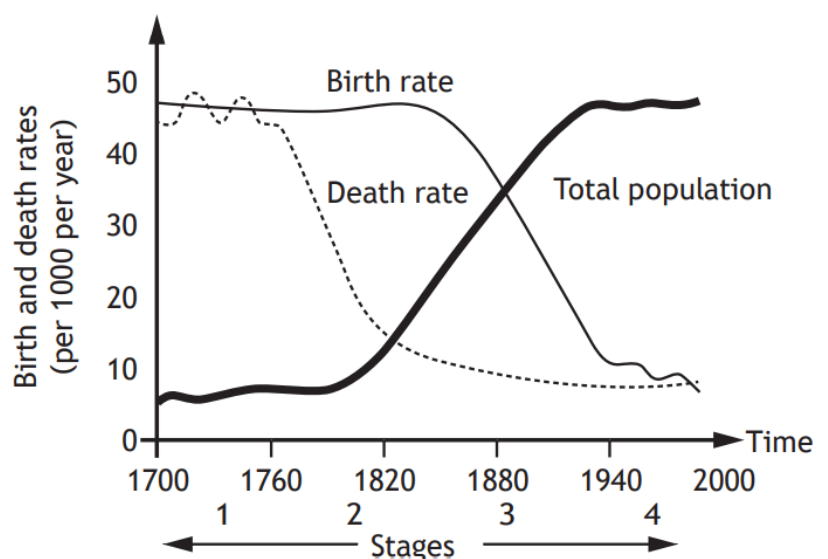


- The population pyramid for the UK is bell shaped. It has a narrow base indicating low birth rates (1). The birth rate is low because free contraception and family planning is widely available (1) and women are more equal and have career opportunities so put off having children until later in life, when they are less fertile (1).
- The width remains constant until the age of 75 due to low death rates (1). This is due to improved food production and storage (e.g. home freezers) which results in a well fed, healthy population (1).
- It starts to narrow after the age of 75 which shows a long life expectancy (1). This is because improved healthcare (e.g. free NHS) and access to expensive drugs allows people to live well into their old age (1).

d) Study the DTM diagram Q5D. Explain the changes in birth and death rates for Stage 3 and 4 of the Demographic Transition Model. (6)

In **Stage 3**, the death rate continues to fall due to improvements in medicine (1) and increased standard of living (1). The birth rate falls rapidly with the growth of family planning (1). IMR decreases so families no longer need to have many children as there is a better chance babies will live (1). Population growth slows at the end of Stage 3 as the birth and death rate reach similar low levels (1).

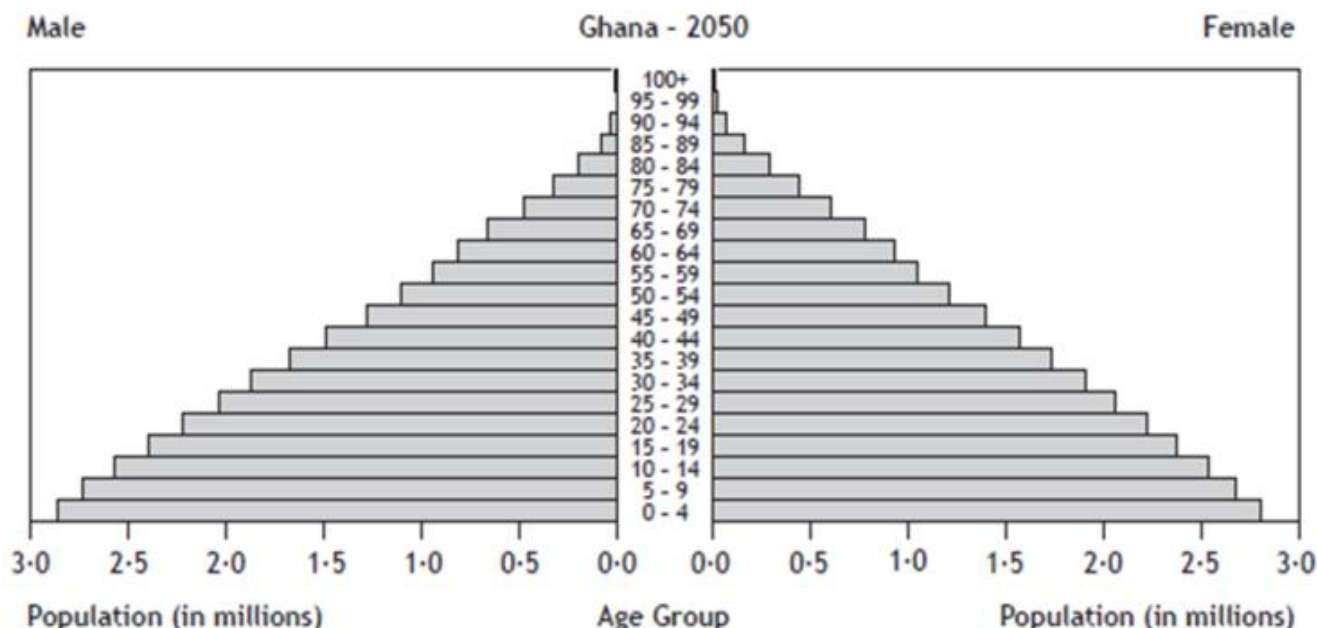
Diagram Q5D: Demographic Transition Model



In **Stage 4**, birth rate continues to decline because women have more job opportunities and better access to contraception so put off having children until later life when they are less fertile (2). The death rate continues to fall due to improved geriatric care, e.g. pensions and care for the elderly, allowing people to live well into old age (1). Population growth is low due to these low birth and death rates (1).

e) Study the predicted population pyramid below for Ghana in 2050. Explain the social and economic problems Ghana will experience in the future. (5)

Diagram Q5E: Predicted Population Pyramid for Ghana 2050



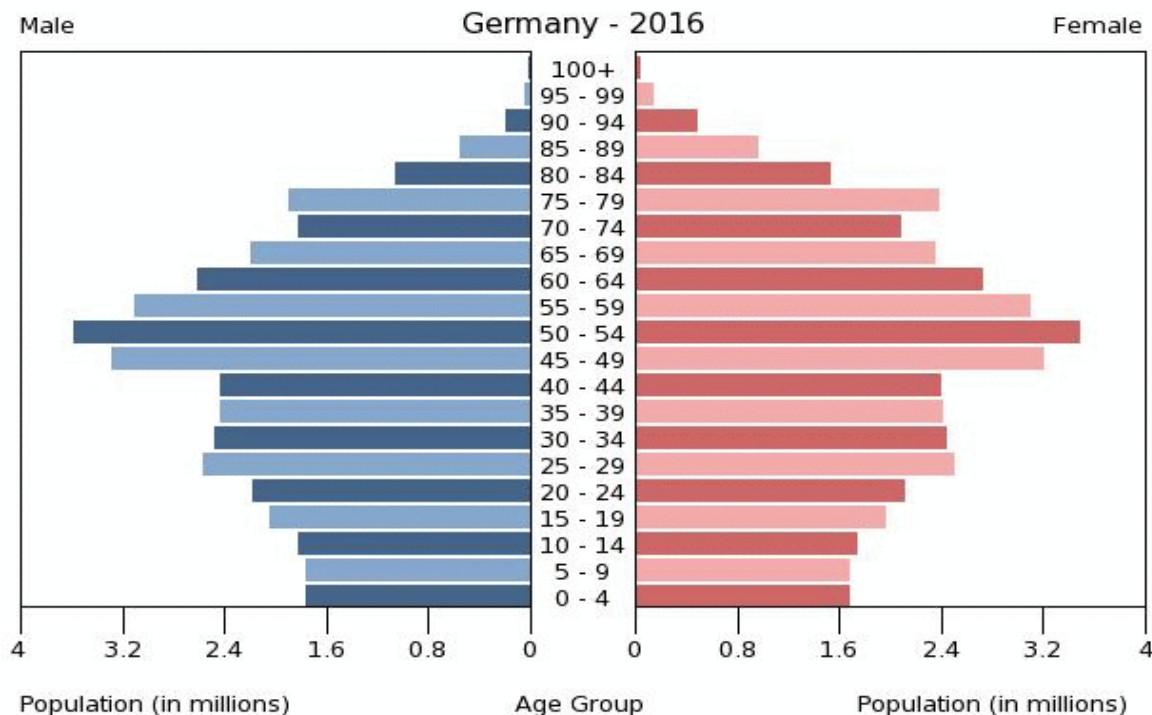
In 2050 Ghana will be overpopulated due to high birth rate (wide base) and the declining death rate (wide middle) (1). The country will begin to experience social and economic problems due to being overpopulated, for example, because there are too many people there will not be enough housing so people will be forced to live in slums (1). There will be a lack of employment opportunities in the future too as there will not be enough jobs to go around (1). The increased population will put a strain put onto already stretched education and health services (1), so the government will have to divert spending from developing infrastructure to these services, keeping Ghana undeveloped (1). There will be too many people and not enough food to feed them; this could lead to a strain on food supplies and even famine (1).

f) Study Diagram Q5E. Explain how Ghana could manage the problems associated with the predicted pyramid. (5)

Ghana could introduce anti-natalist policies to reduce birth rate (e.g. China's 1 child Policy) (1). The government could focus on improving the education of females so they may have careers instead of having large families at a young age (1). The government could offer free family planning and contraception to limit the number of births (1). The Ghana government could raise the age of marriage so that married women have a smaller window of fertility and therefor have less babies (1). The government could encourage couples to have less babies by starting incentives, like giving tax breaks to small families (1).

g) Study the population pyramid below for Germany in 2016. Explain the social and economic problems Germany may experience in the future. (5)

Diagram Q5G: Population Pyramid for Germany 2016



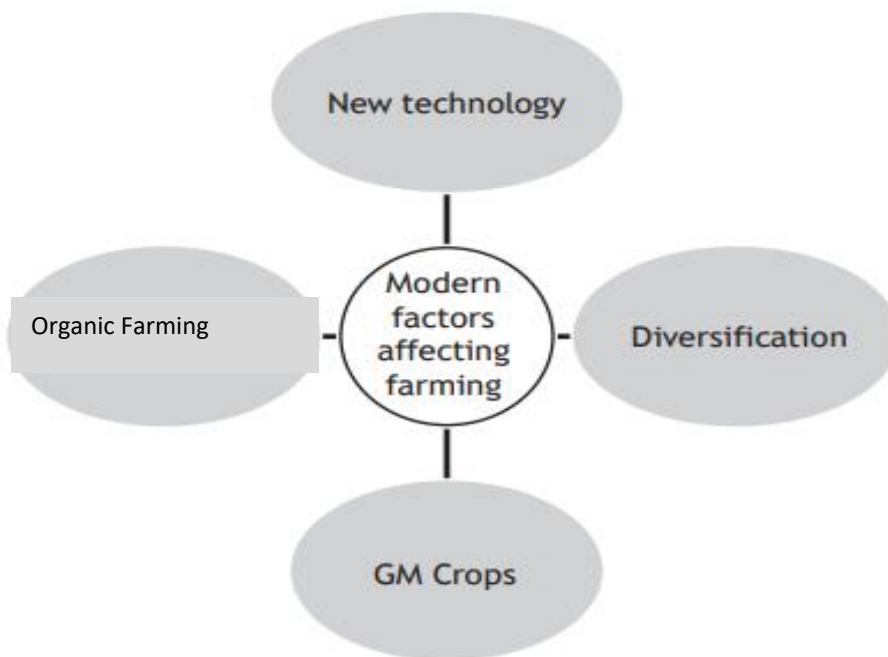
In the future, Germany will experience problem caused by an ageing population, due to low birth rates (shown by narrow base) and the low death rates (constant width and narrows at 80yrs) (1). More medical care and special accommodation will be needed to care for the elderly - this will be very expensive for the government (1), and funding may be taken away from other areas, e.g. education, forcing schools to close (1). There will be fewer babies so schools and maternity wards will have to close, causing mass unemployment for teachers, midwives, etc. (1). This will cost the government million in redundancy pay outs and retraining schemes (1). Low birth rates means a lower number of economically active so fewer working people will have to support a larger ageing population, so the government will have to raise taxes (1). Due to financial pressure, some services for the elderly may have to be cut, e.g. free bus passes, impacting their quality of life (1).

h) Study Diagram Q5G. Explain how the German government could try to solve the problems associated with an ageing population. (5)

Germany's government could try to solve these problems by increasing the birth rate. They could do this by making it more attractive for couples to have children, for example, by giving more tax breaks or benefits for parents (1), or by providing more crèches and child facilities in work places (1), or by increasing the amount of maternity and paternity leave parents get (1). They could also try to encourage economically active immigrants to come and work in the country as they will produce children to also increase the birth rate (1). The government also need to provide for the elderly by encouraging the public to save for their own retirement (1), introduce better pension schemes (e.g. Workplace Pension where you and your employer put money aside) (1), and increase the retirement age to save money on government pensions (1).

RURAL

a) Study the diagram below. Choose at least two of the factors shown and describe in detail how recent developments in farming affect the people and the landscape in developed countries. (6)



Diversification when farmers use other ventures such as farm shops it helps to boost the farmers' income (1) allows farmers to become more independent and less reliant on subsidies (1).

Genetically modified crops (GM Crops) can increase crop yields (1) and improve resistance to disease (1). More tolerant crop varieties could be grown in areas where they couldn't be previously grown (1).

New Technology has made farming easier, e.g. using GPS to manage field operations or animal feeding saves time (1) and poly tunnels with environmental control systems can improve crop yield and quality (1).

b) Explain how recent developments in agriculture in developing countries are helping farmers. (6)

Pesticides reduce disease producing better crops (1) and create a surplus to trade (1).

Fertilisers increase crop yields (1) which lead to better profits for some farmers (1), which in turn can lead to increase in standard of living (1).

Mechanisation means less strenuous work for farmer (1) and is quicker and more efficient than using humans or water buffalo (1).

Section 3: Global Issues

GLOBAL CLIMATE CHANGE

a) Explain the physical causes of climate change. (6)

Variations in solar energy may affect global temperature (1). Variations in the earth's orbit around the sun may cause temperature changes (1). Gas & dust particles released in a volcanic eruption can affect amount of solar energy reaching the earth (1). Changes in ocean currents can affect temperature in different parts of the world (1). Melting ice caps can reduce the Earth's albedo (reflection of incoming solar energy) as more dark land is then exposed (dark areas absorb incoming solar energy). (1) Melting permafrost in Tundra regions release large amounts of Methane, a greenhouse gas (1).

b) Explain the human causes of climate change. (6)

The main contributor is gas released into the atmosphere from cars and burning fossil fuels (1). Cow dung and decaying landfill produce harmful gases such as methane (1) which contribute to global warming (1). Deforestation causes CO₂ levels to rise since there's less trees to absorb it (1), and also burning trees increases the amount of CO₂ in the atmosphere (1). CFCs previously used as coolants in fridges, freezers and air conditioners are another cause of climate change (1).

c) Describe, in detail, the local and global effects of climate change. (6)

Warmer temperatures will lead to sea level rise because of melting ice caps (1); this is likely to cause significant flooding in many areas, such as Eastern England (1); people may have to be evacuated because of the danger of flooding (1). In already hot parts of the world, such as Ethiopia, climate change may result in more frequent droughts (1), affecting people's ability to grow food and leading to more famines (1). Due to the rise in temperatures, UK farmers may be able to grow more soft fruits, such as strawberries (1). Warmer temperatures will also change the habitats of many different wildlife species (1), causing a rise in the malaria-carrying mosquito in North Africa for example (1).

d) Describe, in detail, the local, national and international strategies used to manage climate change. (6)

People are encouraged to walk, cycle, or use public transport rather than fossil-fuel powered cars (1). People use smaller more energy-efficient cars or electrical cars, helping to reduce fossil fuel emissions (1). Educate people to switch off lights, power sockets, phone chargers and TVs when not in use (1). Recycle and reuse plastics and oil-based products so less is sent to landfill (1). The government are using more renewable energy, e.g. solar, wind and wave power (1). Government Policies such as 'Helping Households to cut their Energy Bills' encourages the use of 'Smart Meters' improving energy efficiency. Many governments signed the Kyoto Protocol, committing them to reducing greenhouse gas emissions (1).

HEALTH

DEVELOPED WORLD DISEASE: HEART DISEASE

a) Explain the causes of either heart disease OR cancer OR asthma. (6)

Lifestyle factors are the main cause of heart disease. Many people do not take enough physical exercise which is necessary to keep the heart healthy (1). Poor diet also leads to heart disease (1). Too much saturated fat can cause hardening or blocking of the arteries (1). Many people do not eat enough fruit or vegetables; this can contribute to heart disease (1). Smoking can increase the risk of heart disease (1). High stress levels also contribute to heart disease (1). Hereditary factors can also increase your likelihood of suffering from heart disease (1).

b) Explain the social and economic impact of heart disease. (6)

Heart disease has a serious effect on sufferer's families as if they cannot work they may lose income (1). If a serious stroke has occurred then family members may have to leave their jobs or education to become a full time carer (1). With more cases of heart disease, life expectancy for the country may decline (1). There will also be increased strain put on the NHS as more people need to access medical resources, like the ambulance service (1). The government will then have to spend more on healthcare and medical resources to treat people for heart disease (1); this will mean that money is then diverted from other services, like education (1). A lot of money is spent on medication such as blood pressure tablets for middle aged and elderly people (1).

c) Explain how either heart disease OR cancer OR asthma may be managed. (6)

There are various government policies that aim to manage heart disease in the UK. Stop smoking as chemicals in tobacco cause narrowing of the arteries, which can lead to a heart attack (1). Laws in the UK banned smoking in public places to reduce the chance of damage from secondary smoke (1). Education programmes and TV adverts raise awareness of the causes of heart disease (1). Regular exercise helps control weight and reduce chances of developing other conditions that put a strain on the heart, such as high cholesterol (1). Eating a healthy diet can reduce the risk of heart disease, e.g. lots of fruits & veg, can prevent the build-up of fatty deposits around the heart (1). Medical advances in drugs and heart surgery can help control heart disease (1).

DEVELOPING WORLD DISEASE: MALARIA

d) Explain the causes of a water-borne disease you have studied. (6)

A variety of physical factors cause malaria to spread, for example, temperatures must be between 15-40°C (1) and the climate must be tropical, e.g. hot and wet, for the disease to thrive (1). The presence of the female anopheles mosquito is needed as this is the vector for the transmission of the disease (1). The mosquito also requires areas of stagnant water where she can lay her eggs and the larvae can hatch (1).

Human factors also cause the spread of malaria, for example, human settlements act as a blood reservoir for the mosquito to obtain its blood meal (1) and the buildings provide shade for the mosquito to rest while it digests (1). Exposed bare skin, particularly at dusk and dawn when the mosquito is at its most active, also makes people more likely to be bitten (1).

e) Explain the social and economic impacts of a water-borne disease you have studied. (6)

Malaria has a very serious effect on sufferer's families as if they cannot work they may lose income (1), income may be so low that they cannot afford sufficient food and so malnutrition and hunger can also be a problem (1). As adults become ill, older children will leave school to try and earn money to care for their family (1), so literacy rates will decrease (1).

The whole economy of a malaria affected country can suffer because of low productivity, as much of the workforce is frequently off sick (1). Crops may be left to spoil in the fields because farm workers are too ill to gather them in (1). Very few tourists want to visit the country because of the threat from malaria, further hitting the country economically (1).

f) Explain the strategies that can manage the spread of malaria. (6)

To kill the mosquito, insecticides like DDT and Malathion have been used on fields (1).

Eucalyptus trees have planted to drain stagnant water so there are less breeding sites for the mosquito. Fish have been introduced into paddy fields; these will eat larvae before they hatch into mosquitos (1). BTI bacteria can be grown inside coconuts and then thrown into stagnant water to destroy stomachs of the larvae - killing them (1). Teaching people to use insecticide treated bed nets will stop the mosquito from biting people as they sleep (1). There is no vaccine but drugs like Malarone and Chloroquine can be used to treat malaria (1).

WORLDWIDE DISEASE: HIV/AIDS

g) Explain how a worldwide disease you have studied is spread. (6)

HIV/AIDS is spread through the exchange of bodily fluids in one of the following ways: through the transfusion of contaminated blood (1), through use of contaminated needles/ sharing a needle with an infected person (1) or through unprotected sex with an infected person (1). It can even be spread from mother to child either in the womb or by breast feeding (1). In countries where there is less health education, many people are unaware of the causes of AIDS and how the risk of infection can be reduced so more infection occurs (1). War and conflict accelerate the spread of AIDS because of the higher incidence of rape (1).

h) Explain the social and economic impact that HIV/AIDS may have on a country where it is prevalent. (6)

HIV/AIDS has a very serious effect on sufferer's families as if they cannot work they may lose income (1), income may be so low that they cannot afford sufficient food and so malnutrition and hunger can also be a problem (1). As adults become ill, older children will leave school to try and earn money to care for their family (1), so literacy rates will decrease (1).

The whole economy of a HIV/AIDS affected country can suffer because of low productivity, as much of the workforce is frequently off sick (1). Crops may be left to spoil in the fields because farm workers are too ill to gather them in (1). Few tourists will want to visit the country because of the risk from HIV/AIDS, further hitting the country economically (1).

i) Describe, in detail, how a worldwide disease you have studied may be managed. (6)

There is no cure for AIDS but there are strategies that can control the disease. For example, ARV (Anti-Retroviral) drugs which slow down the effects of the HIV virus (1). There are also drugs which stop the disease passing from pregnant mothers to their babies (1). It is also important for people to be tested, as many do not know they are carrying the disease (1). To prevent the disease from spreading, health education programmes can be introduced, to encourage safe sex, for example (1). In South Africa there are education campaigns that use radio, TV soap operas and dramas to educate people who cannot read (1). Making contraception free and giving out free condoms would also help stop the spread of HIV via unsafe sex (1).