Mark Scheme (Results)

Summer 2024

Pearson Edexcel GCSE
In Geography A (1GA0_02)
Paper 2 The Human Environment

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question 1 – Changing Cities

Question number	Answer	Mark
1(a) (ii)	**C** Libya <u>Incorrect responses:</u> Options A, B and D are not correct as these countries had a smaller increase in urbanisation between 1970 and 1985.	**(1)**

Question number	Answer	Mark
1(a) (ii)	**C** 69% <u>Incorrect responses:</u> Options A, B and D are not the correct % for Mongolia in 2010	**(1)**

Question number	Answer	Mark
1(a) (iii)	Award 1 mark for each possible reason why Albania has had an increase in urbanisation, up to a maximum of 2 marks. Industrialisation (1). Rural to urban migration (1). Natural increase (1) Death rates fall / people living longer (1) Rising birth rates (1). Levels of (economic) development in urban areas are increasing (1). Education has improved (1). Job opportunities (1). Decrease in infant mortality (1). **Do not credit 'population increase'** **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
1(b)	**D** re-urbanisation <u>Incorrect responses:</u> Options A, B and C are not correct as these key terms are not defined by, "the movement of people back into urban areas where populations had previously declined".	**(1)**

Question number	Answer	Mark
1(c) (i)	Award 1 mark for each descriptive statement, up to a maximum of 3 marks. 1 mark (max) available for the use of numerical data to support a descriptive statement or to make a separate point. Max. 2 marks if no numerical data used to support a descriptive statement. More reasons were linked to push factors (1) e.g. 60% were pull factors (1) The main push factor was 'low paid jobs in their country' (1) with 35% of the vote (1) The least common push factor was 'corrupt government' (1) with just 5% of the vote (1) No 'physical' reasons were given / all of the reasons were 'human' (political, social, or economic) (1) **Accept any other appropriate response**	**(3)**

Question number	Answer	Mark
1(c) (ii)	Award 1 mark for a positive impact of migration, and 1 mark for further explanation, up to a maximum of 2 marks. Gaps in the labour market are filled (1) which can boost the economy / relieve the strain on under-staffed services (1). Increased pool of labour / number of people in employment / job opportunities (1) which increases the amount of taxes paid / economic growth (1). Increased amount of consumers / demand for products / specific jobs (1) which can increase profits in shops / reverse the decline in retailing in some CBD areas (1). Greater diversity (types of shops / products sold / buildings) (1) which promotes equality / a broader understanding and appreciation of different cultures (1). **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
1(d)(i)	Working to show: The calculation of the median, by taking the mean of the 3rd and 4th values: 5.1+7.1, divided by 2 (1) = 6.1 (1) Maximum of 1 mark if the correct answer is given without any working shown.	**(2)**

Question number	Answer	Mark
1(d)(ii)	Working to show: 263700 (new value) - 249500 (initial value) / 249500 (initial value) x 100 (1) **OR** 14200 /249500 x 100 (1) = 5.7 (written to one decimal place) (1) Maximum of one mark if no working out is shown, or if the answer has not been written to one decimal place.	**(2)**

Question number	Answer	Mark
1(e)	Award 1 mark for identifying a cause of deindustrialisation (1), and 1 mark for further explanation about why this leads to industry closing / reduction in industrial capacity in UK cities (1). Globalisation (1) which has led to cheaper imports entering the UK (1). Firms are offered incentives to locate away from urban areas (1) because of new transport links / lower rents (1). Development of new technologies in other countries / outdated machinery in the UK (1) meant that some UK factories could not keep up with production methods / unable to produce goods as cheaply / quickly as in other parts of the world (1). Improved transport infrastructure (1) meant that cheaper imports from other countries / are moved around the world more easily (1). Cheaper labour / production costs abroad (1) meant that firms relocate overseas so they can make higher profits / produce cheaper goods (1). Shifts in consumer demand for a particular product (1) which means that the goods manufactured by a factory are no longer sold (1). Containerisation (1) has led to the closure of industry at some ports as the port was not big enough for the ships (1). New environmental policies / laws about pollution (1) made it no longer economically viable to keep a factory open (1). Growth of online shopping (1) fewer customers going into high street shops, resulting in them closing down (1). **Accept any other appropriate response**	**(4)**

Question number	Answer	Mark
1(f) (i)	**D** large area of flat land for building on <u>Incorrect responses:</u> Options A, B and C are incorrect as these are not site factors influencing the location of Lima but are human factors that arose following the development of this city.	**(1)**

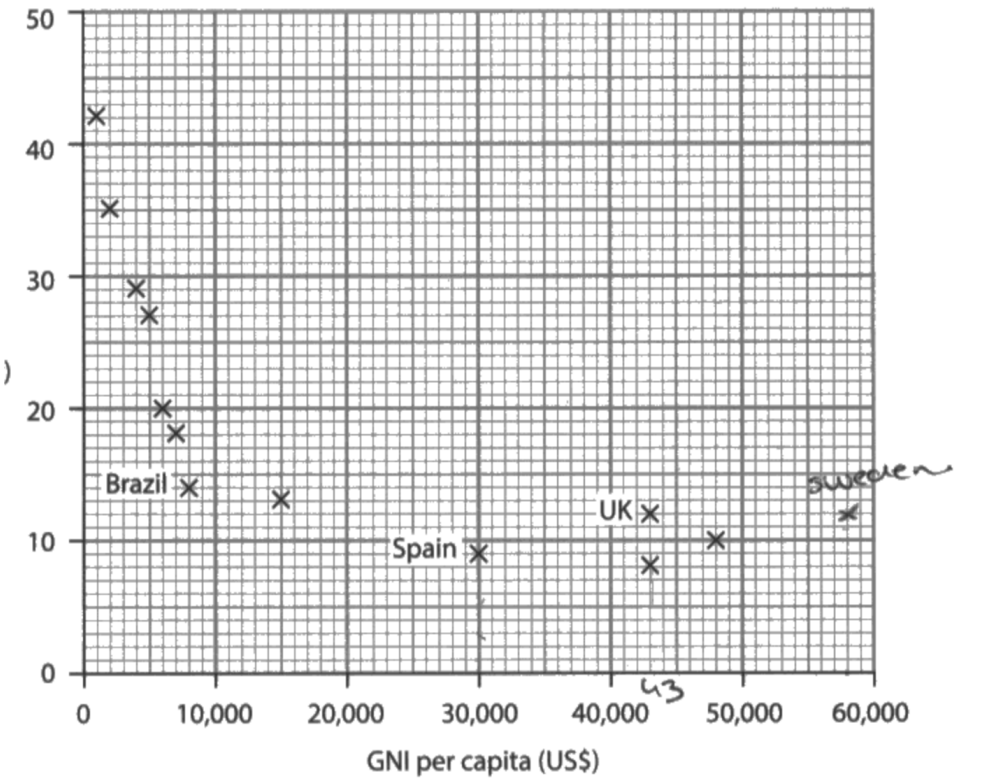
Question number	Answer	Mark
1(f) (ii)	Award 1 mark for identifying a feature of Lima's site on Figure 1d (1), and a further 1 mark for explanation about why this could be a disadvantage for the city, up to a maximum of 3 marks. Lima is located on the coast / next to the sea (1) which could lead to buildings being flooded / cliffs eroding (1) which could lead to (costly) damage to infrastructure (1). Lima is located on top of cliffs (1) which could be unstable / prone to erosion (1) which could require significant investment to maintain their position (1). The city is located above sea-level / on top of high cliffs (1) which means that the sea is inaccessible (1) making it hard to develop a port / to trade with other countries (1). Lima has a low annual rainfall / several months less than 1mm (1) which can lead to water shortages (1) which will have become a significant issue due to its rapid population growth since 1950 (1). The city is located near to the coast (1) which limits room/direction for it to expand (1) which might lead to very high land costs for the available land (1). **Accept any other appropriate response.**	**(3)**

Question number	Indicative content
1(g)	**AO2 (4 marks)/AO3 (4 marks)** **AO2** • The concept of 'quality of life' includes social (e.g., healthcare and housing), economic (e.g., unemployment and industrial growth) and environmental (e.g., air/water pollution and waste disposal) characteristics. • Major cities in developing/emerging countries are faced with a number of challenges that affect quality of life; in particular, the need to develop infrastructure and services such as water, sewage, drainage and waste collection; Environmental issues such as increased air pollution due to a growing number of car users and/or industries, affect the quality of life in major cities and require careful management; Social and economic issues such as the spread of disease, crime, unemployment and education need to be managed. • Quality of life can be improved through top-down / 'government-led' policies (e.g., investment in improving transport, education, and waste disposal). • In general, a significant advantage of top-down approaches that are influenced by government policy (versus 'bottom-up approaches) is that they often have a long-term plan attached to them to ensure the project is sustainable. • Another advantage of government policies to improve quality of life is that greater amount of funding / capital is available (compared to localised projects), which means that are greater proportion of people living in the city are likely to benefit. • Government policies can be successful in improving quality of life because the causes of challenges such as air and water pollution need to tackle on a large- scale and require major funding and cooperation for any impact to take place. • Relying on government policies to improve quality of life also has its disadvantages; for example, corruption may exist within some governments with nepotism and/or misspending of funds may occur. **AO3** Evaluation will depend on the specific case study, but may include: • The quality of life in some areas of major cities is low and the reasons for this vary – and these reasons are a combination of social, economic, environmental, and political factors. • The impact of a policy to improve the quality of life vary and are influenced by factors such as the level of development of a country, government stability and international relations with other countries. Some countries have greater economic power and influence to prioritise urban improvements. • The advantage of some approaches is the consequential effect on other aspects of quality of life, e.g., by improving access to clean drinking

Question number	Indicative content	
	water, the spread of disease is limited, residents experience better health and can go out to work. • A drawback of some government policies is that they rely on external funding, and if these funding stream dry up, the project / policy may be put on hold or come to an end. • A weakness of some attempted top-down approaches is that they do involve many stakeholders who can delay the delivery of the project; also, there is the possibility of budget cuts or the misspending of funds by corrupt government employees; these approaches do not always respond to the actual needs, possibly because of an incorrect perception of needs. • Some projects might be successful in some ways but may have negative knock-on/side-effects elsewhere; for example, a scheme to address housing shortages by building new housing blocks could mean that people live in cleaner, better equipped accommodation – but living spaces might be much smaller and the sense of community (that existed in the previous squatter settlement) may be lost. • In some cities, there are barriers preventing approaches being successful, such as a lack of funding, rapidly growing populations, and the legacy of deindustrialisation. • An evaluation could consider the advantages of alternative, smaller-scale, 'bottom-up' projects because they involve local people in the planning and delivery of the project – which helps to sustain the project over time; these types of projects also have the advantage of getting off the ground quickly as they don't require a great amount of funding or manpower to make it happen.	
Level	**Mark**	**Descriptor**
	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)

Question 2 – Global Development

Question number	Answer	Mark
2(a)	**B** Fishing <u>Incorrect responses:</u> Options A and C are incorrect as they are activities in the tertiary sector; Option D is incorrect as this activity is in the secondary sector.	**(1)**

Question number	Answer	Mark
2(b)(i)	One mark for correctly plotting the data (1).  	**(1)**

Question number	Answer	Mark
2(b)(ii)	30,000 (1)	**(1)**

Question number	Answer	Mark
2(b)(iii)	Award 1 mark for a comparative statement, and a further 1 mark for the use of data to support the statement. The UK has a higher GNI per capita than Brazil (1) it is 35,000 US$ higher (1). The UK's has a GNI per capita of 43,000 (1) which is higher than Brazil's GNI per capita (1). The UK GNI per capita is higher (1) by approximately 5-6 times (1). The UK's GNI per capita is 43,000. Brazil's GNI per capita is 8,000. (1 mark for a 'side by side' implied comparison if both pieces of data are correct, but no comparative language). **Do not accept 'they are different'.** **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
2(b) (iv)	Working to show: Addition of the birth rates: 12+10+8 = 30 and division by 3 (1) Correct answer, written to the nearest whole number = 10 (1) Maximum of 1 mark if the correct answer is given without any working shown.	**(2)**

Question number	Answer	Mark
2(c)	Award 1 mark for identifying one impact of a lack of food security (1) and a further 1 mark for further explanation about why this can affect a country's level of development (1). A lack of food insecurity can lead to many people being undernourished (1) which means they find it hard to work / make a living (1). Could lead to starvation / death (1) which will reduce the labour force (1) Fewer children are well enough to go to school (1) which means that they are unable to obtain qualification / skills (1). People are less healthy / do not (mentally / physically) grow as quickly (1) which means that they are disadvantaged with regards to obtaining employment / which could reduce life expectancy (1). Food insecurity can weaken the immune system (1) which makes people them more vulnerable to diseases and infections, so they are unable to work (1). Food insecurity can lead to social unrest (1) which can limit develop as the government has to allocate resources to address this, rather than furthering economic development (1). Food insecurity can accelerate soil erosion (1) because farmers could be breeding and rearing too many cattle / trying to grow too many crops (1). More money must be spent importing food (1) which means that there is less money available to develop healthcare / education (1). Food prices might increase (1) which means that poorest people are unable to feed themselves, so they are unable to work (1). **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
2(d)	Award 1 mark for identifying a historical factor (1), and a further one mark for development through explanation of why this factor has led to global variations in the level of development, up to a maximum of 2 marks each. The Industrial Revolution / industrialisation (1) led to some parts of the world developing more quickly as trade / population increased in these cities (1). Uneven government investment (1) accelerated the development of some parts of countries / the world due to better infrastructure (1). Growth of international trade / importing and exporting (1) led to the development of ports in coastal areas / limited the development of land-locked countries (1). Colonialism (1) which meant that the country that was colonised experienced slower development because resources were taken by the country colonising it – *or reverse* (1). Wars (1) led to some (parts of) countries being badly damaged, and in need of repair / investment (1). Deindustrialisation (1) reduced the level of development in some areas as businesses closed down / the local economy declined (1). **Accept any other appropriate response**	**(4)**

Question number	Answer	Mark
2(e) (i)	3614 (1)	**(1)**

Question number	Answer	Mark
2(e) (ii)	**D** 361135 <u>Incorrect responses:</u> Options A, B and C are incorrect as the civic centre in Totton is not located at these grid references.	**(1)**

Question number	Answer	Mark
2(e) (iii)	**B** 3km <u>Incorrect responses:</u> Options A, C and D are incorrect as the straight-line distance between these two points is 6cm = 3km.	**(1)**

Question number	Answer	Mark
2(e) (iv)	Award 1 mark for a limitation shown on Figure 2c (1), and a further 1 mark for explanation about why this is a disadvantage (1). It costs £13.4 million, (1) which could have been spent on other projects (1). Building the A35 road could lead to areas of countryside being destroyed (1) which would reduce biodiversity (1). There could be more cyclists / motorists on the road (1) which could lead to greater levels of pollution / accidents / traffic jams (1). The road could lead to increased tourism in the New Forest (1) which could lead to overcrowding / increased footpath erosion and littering / conflict with local homeowners (1). **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
2(e) (v)	Award 1 mark for an advantage of the A35 Redbridge Causeway project shown on Figure 2c (1), and 1 mark for further explanation about why this might benefit the area (1), up to maximum of 2 marks each. Economic investment will be attracted to the area (1) which means that there could be more job opportunities made available (1). Increase in job opportunities (1) which could mean that people in the local area will have higher incomes / more disposable income (1). New housing development will be attracted will stimulate jobs for local builders / trades people (1) which could lead to the multiplier effect (1). Less congestion on roads / traffic will be more free-flowing (1) which means that they will be safer for people travelling on them / shorter commuter times (1). Increased number of tourists accessing the New Forest (1) which means that the local economy will benefit / further jobs in the tourism industry might be created (1). Residents in the new housing development might have a shorter journey time (1) due to the closer proximity to the centre of Southampton (1). Few lane closures / weight restrictions on the A35 (1) which will decrease delays / journey times / increase connectivity across the region (1). **Accept any other appropriate response.**	**(4)**

Question number	Indicative content
2(f)	**AO2 (4 marks)/AO3 (4 marks)** **AO2** • Rapid development has led to positive and negative social, economic, and environmental impacts. • Variations in rapid development exist within countries (regions and urban areas) – and has resulted into the growth of more developed 'core', and 'peripheral' areas, which lag behind in terms of progress and development. • Positive social impacts include decreased death rates/higher life expectancy due to better medical care; another positive social impact has been the improved level of education that children receive/increasing numeracy and literacy rates. • There are also positive economic impacts of rapid development such as increased wealth/wages/GDP per capita for many people in the country. • As rural areas in developing and emerging countries become more developed, infrastructure improves; this could mean that electricity lines are built, lessening the need for deforestation for fuel wood. • Availability of new technology in rural areas can lead to more efficient use of farmland and the reduction of over-grazing. • Negative environmental impacts are often associated with the overextraction of natural resources which can pollute/damage the land and restrict future developments. **AO3** Evaluation will depend on the specific case study, but may include: • The impacts of rapid development can be considered from an holistic 'country as a whole' perspective' and/or from the perspective of its impact on different regions within the named country. • The positive impact of improving the accessibility of clean drinking water supplies and sanitation can also lead to a healthier/larger working population, which means that industrial/economic growth is more attainable. • Positive social impacts on healthcare and education may not be felt equally across the country. In particular, peripheral rural areas may not enjoy any positive social impacts of the country's rapid development. • As country becomes more developed, it may become more attractive to FDI; this can trigger further economic growth and raise the quality of life for many people. However, these improvements are not balanced and often the gap between rich and poor is actually growing in many countries. • Governments often sacrifice environmental sustainability for economic growth; for example, the increased use of non-renewable energy resources in some areas have helped boost productivity and GDP, but have also led to environmental degradation (e.g., air and water pollution and increased deforestation). • Decreasing death rates have led to rapid population growth in some areas; this has added increasing strain to housing provision, healthcare, and unemployment rates – particularly in urban areas. • Often, the development is urban based, which leads to increased rural to urban migration and negative consequences for rural settlements and societies – and the widening gap between 'core' and 'peripheral' areas.

Question number	Indicative content	
Level	**Mark**	**Descriptor**
	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)

Marks for SPGST		
Performance	**Marks**	**Descriptor**
SPGST 0	0	*No marks awarded* • Learners write nothing. • Learners response does not relate to the question. • Learners achievement in SPaG does not reach the threshold performance level, for example errors in spelling, punctuation and grammar severely hinder meaning.
SPGST 1	1	*Threshold performance* • Learners spell and punctuate with reasonable accuracy. • Learners use rules of grammar with some control of meaning and any errors do not significantly hinder meaning overall. • Learners use a limited range of specialist terms as appropriate.
SPGST 2	2–3	*Intermediate performance* • Learners spell and punctuate with considerable accuracy. • Learners use rules of grammar with general control of meaning overall. • Learners use a good range of specialist terms as appropriate.
SPGST 3	4	*High performance* • Learners spell and punctuate with consistent accuracy. • Learners use rules of grammar with effective control of meaning overall. • Learners use a wide range of specialist terms as appropriate.

Question 3 – Resource Management

Question number	Answer	Mark
3(a)	**A** bacteria <u>Incorrect responses:</u> Options B, C and D are incorrect as these are abiotic resources	**(1)**

Question number	Answer	Mark
3(b)	Award 1 mark for any of the following: Calcium (1) Iron (1) Potassium (1) Magnesium (1) Phosphorus (1) Sodium (1) Chloride (1) Feldspar (1) Quartz (1) Mica (1) Halite (1) Calcite (1) Amphibole (1) Copper (1) Cobalt (1) Zinc (1) Gold (1) **Do not accept:** coal, water, rocks, granite, sandstone, oxygen	**(1)**

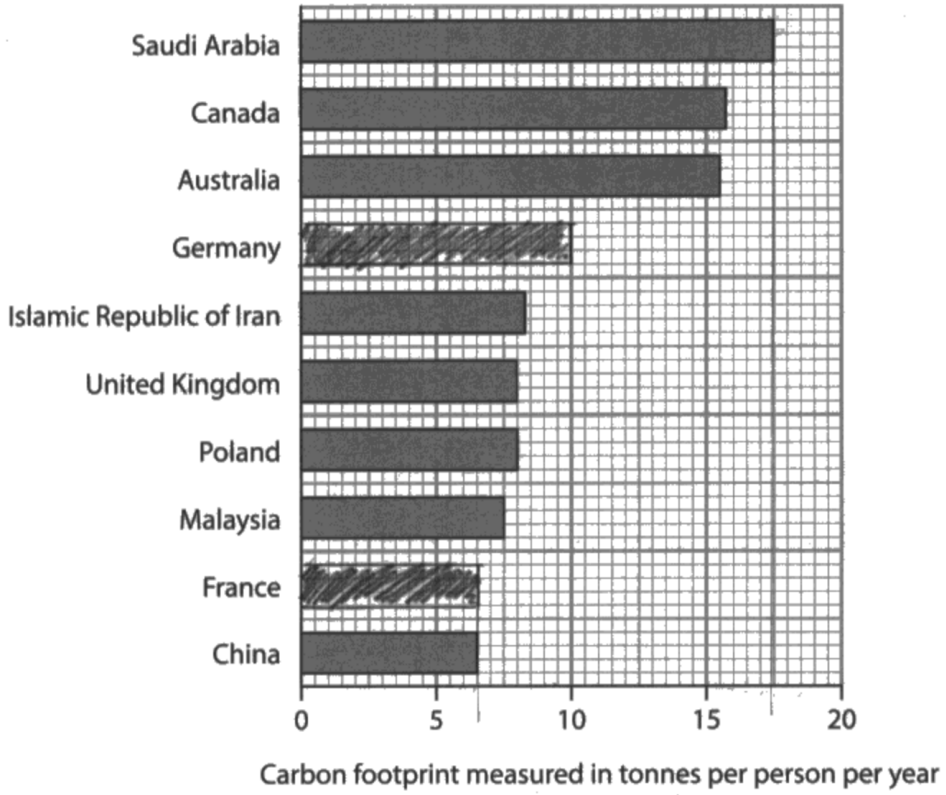
Question number	Answer	Mark
3(c) (i)	**D** wildfire and commercial forestry <u>Incorrect responses:</u> Options A, B and C are incorrect as these are not the main causes of tree loss in North America.	**(1)**

Question number	Answer	Mark
3(c) (ii)	Africa (1)	**(1)**

Question number	Answer	Mark
3(c) (iii)	Working to show: 103 / 100 x 56 (1) = 57.7 (1) ***OR*** 56 / 100 x 103 (1) = 57.7 (1) ***OR*** 0.56 x 103 (1) = 57.7 (1) Maximum of 1 mark if the correct answer given without any working shown. **Do not accept '56% x 103' for the working mark** (incomplete).	**(2)**

Question number	Answer	Mark
3(c) (iv)	Award 1 mark for the initial point (1), and 1 mark for further explanation (1), up to a maximum of 2 marks each. **Soil erosion** The removal of trees in the area which reduces interception (1) increases the amount of precipitation reaching the ground, washing the soil away (1). A change in land use can lead to overgrazing (1) which then leaves the soil exposed to the wind / rain (1). There could be an increase in soil compaction (1) which will reduce infiltration / increase surface run-off (1). Root systems that bind the soil together are removed (1) so when roots are removed, the soil structure is weakened / more easily blown away / washed away (1). **Reduced biodiversity** Deforestation leads to the loss of habitats (1) which means that the biodiversity will decline as species move away / are killed (1). Deforestation involves the use of heavy machinery to cut down the trees (1) which can frighten animals / lead to animals migrating (1). Food chains are disrupted when trees are cut down (1) which means species further up the food chain might not have enough food supplies to survive (1). Lots of species live in trees / trees are important habitat (1) so when trees are cut down, species migrate / are killed (1). **Accept any other appropriate response.**	**(4)**

Question 4 – Energy Resource Management

Question number	Answer	Mark
4(a) (i)	One mark for each correct plot:  **Figure 4**	**(2)**

Question number	Answer	Mark
4(a) (ii)	**A** Canada <u>Incorrect responses:</u> Options B, C and D are incorrect as these do not have a carbon footprint of 15.7 tonnes per person per year.	**(1)**

Question number	Answer	Mark
4(a) (iii)	11	**(1)**

Question number	Answer	Mark
4(a) (iv)	Award 1 mark for an initial reason for the difference, and 1 mark for further development, up to a maximum of 2 marks. Expect reference to human intervention: increased wealth and technological advances. Some countries use more non-renewables than others / have a different energy mix (1) which means that more greenhouse gas emissions are created when these resources are burnt (1). Some countries are more developed (1) which means they have more factories / cars etc. (1). Some countries have continued to develop fossil fuels (1) which means that the majority power stations in these countries will use this type of resource in the production of electricity (1). Some countries may now experience greater water supply issues (1) which means that energy-intensive practices such as desalination are used more frequently (1). Changing diets / demand for food produced has increased (1) which means that the amount of fuel used for transporting food ('food miles') has gone increased (1). China might have a very large population in relation to the greenhouse gases generated by human activities (1) which means the overall carbon footprint is quite small per person (1). **Accept any other appropriate response**	**(2)**

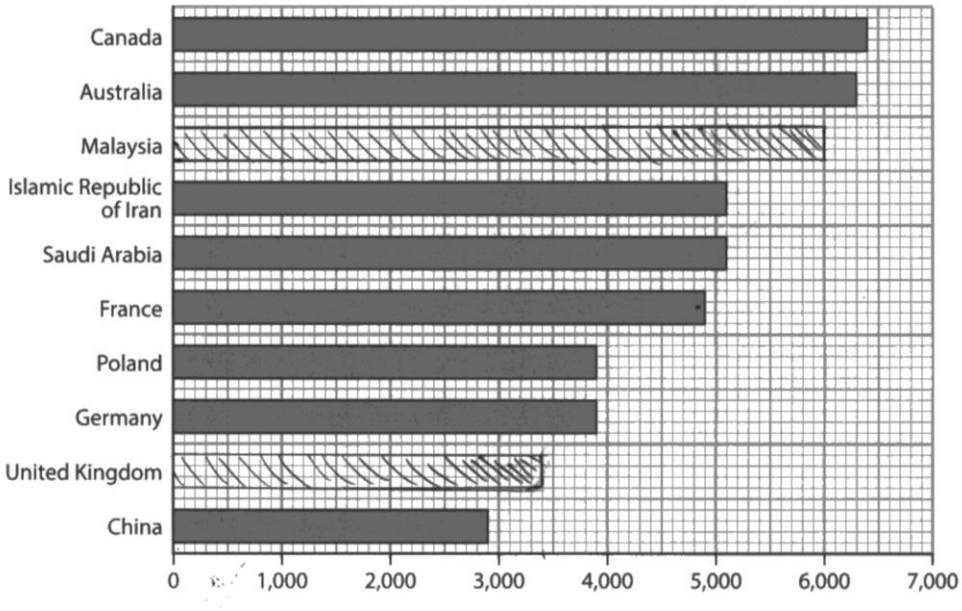
Question number	Answer	Mark
4(b)	Award 1 mark for each of the following negative impacts of developing fracking: It is a non-renewable resource / will eventually run out (1) Greenhouse gases are released (1) It contributes to acid rain / global warming (1) Deforestation often is required (1) It can lead to water pollution / contamination of the soil/groundwater (1) The fracking process can lead to earthquakes (1) Visual pollution (1) Noise pollution (1) Expensive (upfront and maintenance) (1) Subsidence (1) Damages / reduces biodiversity / habitats (1) Uses a lot of energy in the fracking process (1) Uses a lot of water / could lead to water shortages (1) **Do not accept, 'bad for the environment / damages the environment' (too vague)** **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
4(c)	Award 1 mark for the identification of a strategy, and 1 mark for further explanation about why this benefits people and/or the environment, up to a maximum of 2 marks each. **NB: Either the identification of the strategy or the explanation must contain place-specific detail about the named developed country or area within a named developed country.** **Max 1 mark for each generic response**. Feed-in tariffs in Germany are paid to producers of renewable energy (1) which encourages people to install solar panels / makes the cost of electricity cheaper (1). A new solar power park has been built in Germany (1) which will provides 215 million kWh of electricity to people living in Bavaria over the next 20 years (1). In the UK, there are plans to build 40 wind turbines just off the coast from Morecambe (1) which will provide renewable power for 500,000 homes (1). In the Blanda Area of Iceland, there are three HEP stations (1) which generate electricity that produce fewer greenhouse gas emissions compared to thermal power stations (1). There are six geothermal power stations in Iceland (1) which means that the country does not have to pay to import coal or gas (1). **Accept any other appropriate response**	**(4)**

Question number	Indicative content
4 (d)	• **AO2 (4 marks) /AO3 (4 marks)** **AO2** • The world's population is growing, which is going to increase the demand for energy; for energy security / sustainability to be achieved, individuals and organisations need to look to renewables / more sustainable practices. • Sustainable management is where energy resources are used in a way that ensures that they do not damage the environment and meet the needs of future generations. • Broader global implications linked to global warming and waste management need to be considered. • Countries are also looking to secure energy supplies for geopolitical reasons as well as meeting the needs of their population. • At current rates, non-renewable energy resources will run out within the next 50- 450 years. • Renewable energy supplies are slowly being developed as a more sustainable option compared to non-renewables. • Individuals and organisations have different views on the management and sustainable use of energy resources; these views are often complex and contradictory. For example, environmental organisations (e.g. Friends of the Earth and Greenpeace) are going to be in favour of developing non-renewable energy resources, whereas oil / motor vehicle organisations will often be more in favour of developing existing fossil fuels. **AO3** • Some individuals/consumers and organisations choose to support or develop renewable options to generate electricity, heat and hot water for their home or business; this includes the installation of biofuel boilers and/or solar panels on the roof. However, these options are expensive – and government-led incentives and grants have diminished in recent years. • Some individuals/organisations may be against the development of certain types of energy resource for personal reasons; for example, they might be in favour of the development of renewable, but do not want to see a wind farm built next to their house because they might think they are unsightly or have the perception that they are noisy. • Energy companies are often driven by profit, government policy/incentives, but also have to meet shifts in demand which may lead them to using a combination of different energy resources. • Individuals will have a number of considerations (especially financial ones) when developing their viewpoint: often there will be a stand-off between 'idealistic' and 'realistic'. • Organisations might be driven by national and international agendas, which could include the meeting of targets for non-renewables set by the government. • Conservation groups will be very much in favour of sustainable, more renewable forms of energy resources such as wind, solar and HEP; this will be advantageous for the environment as less carbon emissions are created but might conflict with the views and opinions of different stakeholders as the development of these resources may often be costly or inefficient.

		• The viewpoints of different stakeholders may vary depending on a country's level of development; for example, individuals and organisations in developed countries may have the capacity to pursue the installation of renewables, whereas stakeholders in emerging/developing may not have the luxury to do so. • Viewpoints can change over time, as people become more aware (e.g. via education in schools and social media) about the importance of reducing their carbon footprint.
Level	**Mark**	**Descriptor**
	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3)

Question 5 – Water Resource Management

Question number	Answer	Mark
5(a) (i)	One mark for each correct plot:  	**(2)**

Question number	Answer	Mark
5(a) (ii)	**B** France <u>Incorrect responses:</u> Options A, C and D are incorrect as these do not have a water footprint of 4,900 litres per person per year.	**(1)**

Question number	Answer	Mark
5(a) (iii)	3,500	**(1)**

Question number	Answer	Mark
5(a) (iv)	Award 1 mark for an initial reason for the difference, and 1 mark for further development, up to a maximum of 2 marks. Expect reference to human intervention. People in some countries are now wealthier than they were in 1990 (1) which enables people to afford technology / more products and appliances that require water (1). Some countries have experienced an increase in tourism (1) which means that new facilities (e.g., swimming pools) / hotels are constructed (1). Some countries are more developed (1) which means they have more golf courses / swimming pools etc. (1). Some countries might have a low population and high rainfall (1) which means that they have a good water security (1). The growth in commercial / intensive agriculture (1) which means human intervention / technology that uses water (e.g., irrigation systems) is being developed to increase crop yield (1). Industrial growth (which uses water in its method of production) takes place (1) as a country becomes more economically developed (1). Some countries might have a warmer climate (1) which might increase the demand for water for drinking / swimming pools / irrigation (1). China might have a very large population in relation to the water used (1) which means the overall water footprint is quite small per person (1). **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
5(b)	Award 1 mark for any of the following disadvantages of desalination, up to a maximum of 2 marks: Expensive (upfront and maintenance) (1) Uses a lot of energy (1) Creates waste material / brine (1) Can disturb ecosystems (1) Concerns about quality of drinking water (1) Uses chemicals (1) Not an option for landlocked countries (1) Inefficient method (1) **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
5(c)	Award 1 mark for the identification of a strategy, and 1 mark for further explanation about why this benefits people and/or the environment, up to a maximum of 2 marks each. **NB: Either the identification of the strategy or the explanation must contain place-specific detail about the named developing/emerging country or area within the named developing/emerging country.** **Max 1 mark for each generic response**. £2.1billion has been spent on desalination plants in China (1) which provides water for people in areas where rainfall is insufficient (1). Desalination plants have been built (1) which provide water for cities on the north/east coast of China (1). The South-North Water Diversion Project was opened in China (1) which provides water to areas that have low rainfall (1). The Kainji dam has been built in Nigeria (1) which provides HEP / water for irrigation (1). In India, the government is developing a scheme to transfer water from major rivers like the Ganges to other areas (1) which will tackle the drought that often occurs (1). **Accept any other appropriate response**	**(4)**

Question number	Indicative content
5 (d)	• **AO2 (4 marks) /AO3 (4 marks)** **AO2** • The world's population is growing, which is going to increase the demand for water resources; if global water security is going to be achieved in the future, water resources are going to require sustainable management. • Sustainable management is where water resources are used in a way that ensures that environmental degradation does not occur, and the needs of future generations are met. There are ways individuals (e.g., in the home) and organisations (e.g., in factories) can take action to use water resources more sustainably. • Broader implications linked to water quality, including pollution and waste management, need to be considered. • Countries are also looking to secure water supplies for geopolitical reasons as well as meeting the needs of their population. • Future issues linked to climate change need to be considered as this could place further pressure on water supplies. • More sustainable uses of water resources are slowly being developed, but these are often costly, and people are often reluctant to change their habits. • Different groups of people have different views on the management and sustainable use of water resources; these views are often complex, contradictory and vary according to a country's level of development. **AO3** • Some individuals and organisations will have the view that they need to water their crops regardless issues to sustainability; this is because reduced water usage might lead to a reduction in crop yield, which will have a negative financial impact on the farmer. • Individuals and organisations may have contrasting priorities; they will want to ensure that there is enough water to supply themselves and the business, but they will also need to ensure that supplies are used in a way that there will be enough in the future. • Conservation groups will want to ensure that levels of water quality are high and wildlife habitats are not damaged by new developments; this may conflict with water companies wanting to develop water supplies to meet growing demand. • Some individuals and organisations in developed countries may be reluctant to conserve water as they cannot or can afford to pay for it; they may have other views e.g., developments for leisure / water sports are equally as important as developments for drinking water. • Water companies are trying to balance supply and demand, but this is difficult given the ageing infrastructure (including leaking pipes) in some areas which could lead to inefficient distribution of water around the country. They might have the view that the government should be spending more money on upgrading old pipes, but the government's priorities may lie elsewhere. • Some individuals and organisations may recognise the importance of conserving their domestic and industrial/agricultural water supplies, and to develop safe water supplies for a healthier working population which could lead to economic development; however, they might not have the capacity to implement any new developments or have to rely on aid and international support from NGOs such as Water Aid. • The viewpoints of different stakeholders may vary depending on a country's level of development; for example, individuals and organisations in developed

		countries may have the capacity to pursue the installation of water transfer or water-saving technology, whereas stakeholders in emerging/developing may not have the luxury to do this. • Viewpoints can change over time, as people become more aware (e.g. via education in schools and social media) about the importance of reducing their water footprint.
Level	**Mark**	**Descriptor**
	0	No acceptable response.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2) • Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3)

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