Mark Scheme (Results)

November 2020

Pearson Edexcel GCSE
In Geography A (1GA0)
Paper 02: 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) (i)	**C** 2001 A, B and D are all incorrect because they have a lower percentage growth due to natural increase than 2001, which has a growth of 43%.	**(1)**

Question number	Answer	Mark
1(a) (ii)	Award 1 mark for identification of overall pattern, and a further 1 mark for extension through the use of supporting data, up to a maximum of 2 marks. Overall pattern – population has increased (1) with use of supporting data e.g. by 11.7 million / by approximately five-fold (1) Population increased (1) from 3.4 million in 1981 to 15.1 million in 2011 (1). **Accept any other appropriate response**	**(2)**

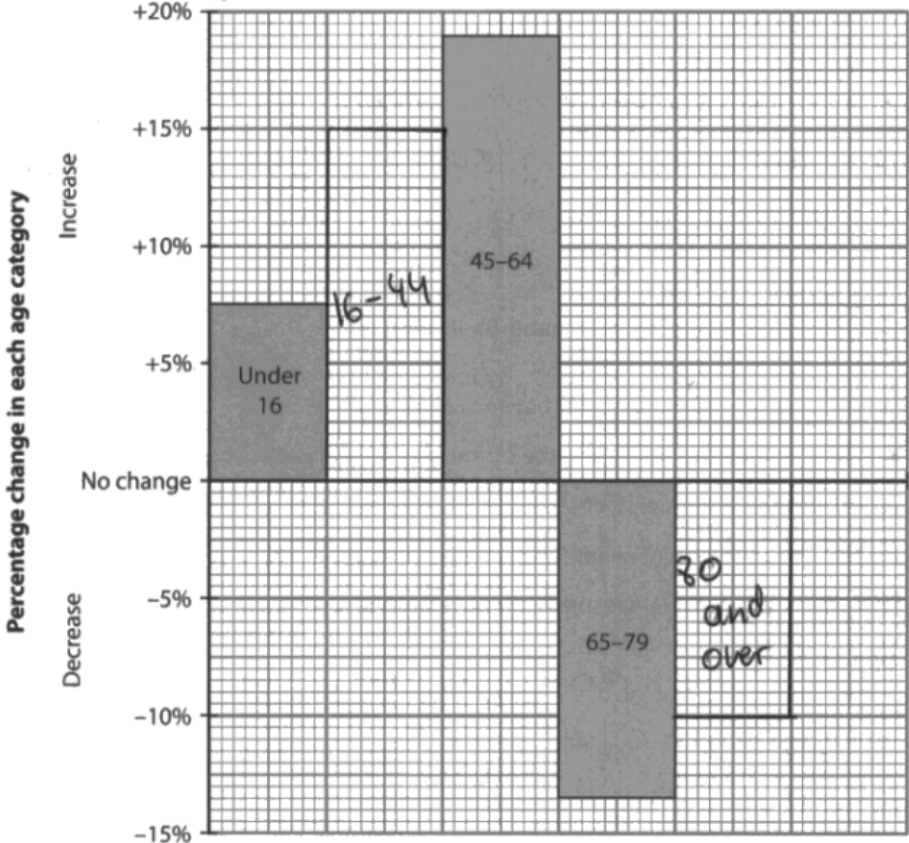| Question number	Answer	Mark
1(a)(iii)	Working to show: The correct addition: 7.62 + 5.54 + 2.13 + 2.49 = 17.78 (1) The division of this number by 4, with the answer written to two decimal places: 17.78 / 4 = 4.45 Maximum of one mark if no working out is shown or answer not written to two decimal places.	**(2)**

Question number	Answer	Mark
1(b)	Award 1 mark for a factor influencing site (1) and a further 1 mark for explanation of this factor (1), up to 2 marks. Maximum of one mark if no place-specific information has been included.	
	Mumbai was built on the western coast of India / next to the Arabian Sea (1) which meant that it could develop its port to trade with other countries (1).	
	The original site of Libreville was on the banks of the Komo River (1) which meant that the city could grow as an important port (1).	
	The city of Sao Paulo is built near to the Anhangabau River (1) which provided a good supply of drinking water for the inhabitants (1).	
	Mexico City was originally built on an island in Lake Texcoco (1) which meant that it could easily be defended from invaders (1).	
	Accept any other appropriate response	**(2)**

Question number	Answer	Mark
1(c)	**B** The growth of a city into the surrounding countryside	
	A, C and D are all incorrect because they do not provide a definition for the term 'suburbanisation' – they refer to other urban processes.	**(1)**

Question number	Answer	Mark
1(d)	Award 1 mark for any of the following:	
	Cheaper labour / production / land costs abroad (1)	

Government incentives in the UK city have ended (1)

Growth in the internet / transport / communications / globalisation (1)

Fall in demand for the manufactured goods produced in the UK (1)

De-centralisation – movement to out of city locations instead (1)

Raw materials for UK factories are becoming more expensive / harder to access (1)

Historical lack of investment – idea that UK factories have fallen behind overseas counterparts (1)

Accept any other appropriate response **(1)**

Question number	Answer	Mark
1(e)	Award 1 mark for a reason why urbanisation occurs at different rates around the world, and 1 mark for further explanation, up to a maximum of 2 marks each. Responses are likely to include ideas about industrialisation, natural increase, and migration: Industrialisation takes place at different times for different countries (1) which means the need for additional labour takes place at different times (1). Some places have more rural to urban migration than others (1) example of push / pull factor (1). Developing countries are experiencing high rates of urbanisation due to falling death rates (1) because of improvements in health care / education / sanitation (1). **Accept any other appropriate response**	
		(4)

Question number	Answer	Mark
1(f) (i)	One mark for each correctly drawn bar, up to a maximum of 2 marks. 	
		(2)

Question number	Answer	Mark
1(f)(ii)	Award 1 mark for any of the following, up to maximum of 2 marks: Overcrowding (1) Pressure on housing / rising house prices (1) Pressure on schools / health care services (1) Job losses in the welfare sector e.g. nursing homes (1) Greater competition for jobs (1) Increased air pollution (1)	

	Increased traffic congestion (1)	
	Increased trade / business for shops (1)	
	Accept any other appropriate response	**(2)**

Question number	Answer	Mark
1(g) (i)	Award 1 mark for any of the following:	
	Many shops / businesses / large chain stores (1)	
	Lots of shoppers (1)	
	Pedestrianised (1)	
	Cafes / restaurants (1)	
	Street furniture (1)	
	Accept any other appropriate response	**(1)**

Question number	Answer	Mark
1(g) (ii)	Award 1 mark for a recent change in retailing, and 1 mark for further explanation about why this change has led to a decline of the CBD or	

| | | about why this change has happened, up to a maximum of 2 marks each.

Responses are likely to focus on the growth of out-of-town shopping and shift towards online shopping:

Many high street shops decentralised / moved to out of town locations (1) which means that they no longer have a store in the CBD (1).

Larger stores are now opening in out of town locations (1) which means that shoppers are going there instead of the CBD (1).

More people are shopping online compared to visiting shops in the CBD (1) which means that shops in the CBD are losing trade and closing down (1).

There has been a growth in online shopping (1) due to the Lockdown / pandemic / government guidelines (1)

Accept any other appropriate response | **(4)** |

Question number	Indicative content
1(h)	**AO2 (4 marks)/AO3 (4 marks)** **AO2** - The term 'quality of life' includes a range of factors, such as health, education, employment, housing, and entertainment. - There are also issues linked to the environment and sustainability that also can have an impact on quality of life. - Strategies to improve quality of life should also look at tackling negative factors such as crime, unemployment, and social tension. - Strategies that have been used in the UK often have a focus on waste management (e.g. recycling programmes and the use of HWRCs), developing employment opportunities (e.g. local government plans to attract new businesses to the area) and improving services (such as school, libraries, medical centres and hospitals). - Cities in the UK are attempting to improve transport links in and around cities, for example through Park and Ride or car-sharing schemes. - As urban populations grow, strategies to improve the quality and quantity of housing are being used. New housing has to follow stricter guidelines in the past in terms of energy-efficiency. **AO3** Evaluation will depend on specific case studies, but may include: - Appreciation that quality of life actually varies across a city, and some strategies might be more suitable than other, depending on the area of the city. - Understanding that the concepts of 'quality of life' and 'sustainability' involve a range of factors – and therefore strategies need to be carefully planned to tackle all of these. - Evaluation of the extent to which strategies are successful will be influenced by factors such as the funding available, local government priorities and the influence of different stakeholders. - The effectiveness of a strategy should be evaluated in terms of the amount of people and the size of the area that is affected, along with considerations about sustainability.

	- Some strategies that aim to tackle one aspect of quality of life, may indirectly improve another aspect e.g. improving the quality of housing may attract wealthier residents who spend more money on local services, which ultimately boost the local economy. - Some strategies, whilst having a positive impact on the quality of life for a population of the city, may also have negative knock-on effects for others. - There are sometimes barriers that restrict the options available – or the success if implemented strategies, such as a lack of funding, rapid in-migration, or a legacy of deindustrialisation / economic decline.

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)(i)	**B** Singapore A, C and D are all incorrect because they do not have a HDI score in 2015 that is equal to – or above the HDI score for Singapore.	**(1)**

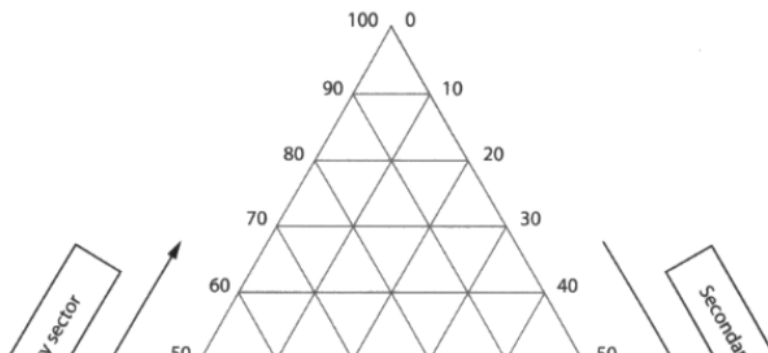| Question number	Answer	Mark
2(a) (ii)	Award 1 mark for each descriptive point, up to a maximum of 2 marks. Overall, the HDI score has increased slightly (1) The HDI score for Zimbabwe went down between 1990 and 2000 (1) The HDI score increased steadily between 2000 and 2015 (1). The HDI score has fluctuated during this 25-year period (1). The HDI score for Zimbabwe changed from 0.5 to about 0.52 (1) **Accept any other appropriate response**	 **(2)**

Question number	Answer	Mark
2(a)(iii)	Award 1 mark for identification of a change, and a further 1 mark for extension through further explanation about why this would increase the HDI score, up to a maximum of 2 marks. There have been improvements in healthcare (1) which means that life expectancy has increased (1). The mean years of schooling has gone up (1) as the government has increased investment in schools (1). The expected years of schooling has gone up (1) as more primary schools have been built / there are more qualified primary school teachers (1). New trade agreements might have been made with other countries (1) which means that Gross national income per capita has gone up (1).	

Question number	Answer	Mark
	Accept any other appropriate response	**(4)**

Question number	Answer	Mark
2(a)(iv)	Award 1 mark for any of the following: Only a limited / relatively time period is covered by the graph (1). Only a small number of countries are included on the graph (1) The graph does not provide any indication to the causes of change in HDI score over time (1). Unclear as to which component of the HDI score is influencing change (1). The graph is bias in terms of the number of developed/emerging countries that are represented vs developing countries (1). **Accept any other appropriate response**	**(2)**

Question number	Answer	Mark
2(b)(i)	**A** retailing **C** banking B is incorrect as this is an economic activity in the secondary sector; D and E are incorrect as they are both activities in the primary sector.	**(2)**

Question number	Answer	Mark
2(b)(ii)	One mark for a correctly plotted point.	

		(1)
Question number	**Answer**	**Mark**
2(b) (iii)	Award 1 mark for each possible reason why the contribution of the primary sector might be very high in Kenya, up to a maximum of 2 marks. Kenya has very good soil for farming (1). The climate in Kenya is suitable for farming (1). Kenya has lots of natural resources / raw materials to be mined (1). There has been less investment in factories / industrialisation is happening later in Kenya (1). There are large amounts of forests / woodland in Kenya (1). Kenya might have a long coastline and therefore many people work in the fishing industry (1).	
	Accept any other appropriate response	**(2)**

Question number	**Answer**	**Mark**

2(b) (iv)	Award 1 mark for identifying a positive impact of an increase in the tertiary sector (social, economic, or environmental), and a further one mark for explanation of the impact, up to a maximum of 3 marks.	
	Average wages might increase (1) which means that people would be paying more tax (1) which would provide the government with greater funding for services / infrastructure (1).	
	Workers will receive higher salaries / have more disposable income (1) which means that they can afford to pay people for 'new' services (such as entertainment / leisure) (1) which stimulates growth in new / niche / developing areas of employment – idea of the multiplier effect (1)	
	The government might encourage even more foreign investment (1) which could lead to a grow in job opportunities (1) which would improve the standard of living for many people in the country (1).	
	Money generated from the growth in the tertiary sector (1) could be reinvested in the country, developing industry / education / healthcare (1) which would improve the overall level of development of the country / help close the 'development gap' (1).	
	Accept any other appropriate response.	**(3)**

Question number	Answer	Mark
2(c)	0.65	**(1)**

Question number	Answer	Mark
2(d)	Award 1 mark for identifying a negative **social** impact of rapid development, and a further one mark for development through explanation of a consequence of this impact, up to a maximum of 2 marks. Award 1 mark for identifying a negative **economic** impact of rapid development, and a further one mark for development through explanation of a consequence of this impact, up to a maximum of 2 marks. **Social**:	

There is a lack of teachers / health care professionals in the country (1) which means that many jobs in health care / education are not filled OR standards of health care / education remain low (1).

Many rural areas have not benefitted from improvements in health and sanitation (1) which means that the gap between the core and periphery widens OR which means that many people in rural areas still live below the poverty line (1).

More developed regions might experience a rapid growth in population / in-migration (1) which might lead to overcrowding / crime / congestion (1).

Economic:

Investment from overseas companies (FDI) / the Government often targets the 'core' areas (1) which means that the GDP per capita / average salaries in 'periphery' regions remain relatively low (1).

The gap between rich and poor widens (1) which means that resentment / social unrest may build in a country (1).

Less developed regions might experience a decline in public and/or private investment (1) as investors are attracted to the more 'developed 'core' areas where similar companies are based (1).

Accept any other appropriate response.

(4)

Question number	Indicative content
2(e)	**AO2 (4 marks)/AO3 (4 marks)**
	AO2

Question number	Indicative content
	- There are different international strategies that can be used to address uneven global development, including international aid, inter-governmental agreements, encouragement of foreign direct investment (FDI), promotion of Fair-Trade agreements (as opposed to Free Trade), debt relief and remittances. - International aid can be provided in different ways: bilateral aid (from one government to another), multilateral aid (e.g. from an international organisation such as the World Bank to a developing country) and/or voluntary aid (such as money raised from a NGO to support a project or relief fund). - Inter-governmental agreements may include agreements such as EU membership – and commitments to fund improvements in specific parts of the world. - Fair trade producers in developing/emerging countries work together to deal directly with larger organisations / retailers in developed countries. **AO3** - The aims of difference strategies differ, but generally the main purpose is to raise the gross national income of a country; some strategies have been more effective than others at achieving this goal. - The different types of international aid mentioned above have advantages and disadvanatages, with varying degrees of success depending on location. - Inter-governmental agreements may be quite complex, depending on the geopolitical relationship between the countries involved; for example, some agreements may come with 'strings attached' which restrict the overall effectiveness of a particular strategy. - Inter-governmental agreements will often include trade agreements such as removing trade barriers; these might be helpful in increasing the flow of trade around the world (e.g. between China and the EU) – but the impact of this on reducing the development gap is open to discussion. - Fair Trade can be a useful strategy in reducing uneven development as it provides farmers with fairer conditions and a better price for their produce – however the overall importance of this is quite low as it only makes up less than 1% of total world trade.

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 3 – Resource management

Question number	Answer	Mark
3(a)	**C** coal A, B and D are all incorrect as these are examples of renewable natural resources.	**(1)**

Question number	Answer	Mark
3(b)	The living parts/organisms of an ecosystem/area **Accept any other appropriate response.**	**(1)**

Question number	Answer	Mark
3(c) (i)	**C** Central Africa A, B and D are all incorrect as these regions had a decrease in the percentage of the population who are undernourished.	**(1)**

Question number	Answer	Mark
3(c) (ii)	36	**(1)**

Question number	Answer	Mark
3(c)(iii)	Working to show: Division of 64 (million) divided by 100 = 0.64 (1) Multiplication of 0.64 x 5 (% undernourished) = 3.2 (1) **OR** Division of 5 by 100 = 0.05 (1) Multiplication of 0.05 by 64 = 3.2 (1) Maximum of 1 mark if the correct answer is given without any working show.	

	Maximum of 1 mark if the working is shown, but the answer is not written to one decimal place.	**(2)**

Question number	Answer	Mark
3(c)(iv)	Award 1 mark for identifying one way the environment is exploited, and a further 1 mark for an explanation about why this changes the environment, up to a maximum of 4 marks each. Overgrazing might be taking place in some areas (1) which means that all of the vegetation protecting the soil being eaten by cattle (1) which means that bare soil is left exposed (1) which means that it is more susceptible to soil erosion (1). Trees might be cut down to make room for crops/livestock/mining/development of energy resources (1) which will lead to more soil being washed/blown away (1) which means that local rivers could fill up with the eroded sediment (1) which means that the likelihood of these rivers flooding will increase (1). Deforestation for more space to farm (1) could lead to a loss of habitats (1) which means that the biodiversity of the area will fall (1) as species will also be killed / have to migrate to other areas in search of food/shelter (1). Over fishing might be taking place (1) which will reduce species numbers as more fish are being caught than replaced (1) which means that the food chain / ecosystem will be disrupted (1) as consumers of the fish that are being targeted by the fisherman will have a smaller food supply in the future (1). **Accept any other appropriate response.**	**(4)**

Question 4 – Energy resource management

Question number	Answer	Mark
4(a)	**A** Resources that will never run out B, C and D are all incorrect as these are not definitions of 'renewable energy resources'.	**(1)**

Question number	Answer	Mark
4(b) (i)	**C** 25% A, B and D are all incorrect as these values do not represent the proportion of energy generates using renewables in 2016.	**(1)**

Question number	Answer	Mark
4(b) (ii)	Award 1 mark for each of the following, up to a maximum of 3 marks. The usage of coal has fallen (1) whereas the usage of natural gas has increased (1) plus use of data to support either point (1) **Accept any other appropriate response**	**(3)**

Question number	Answer	Mark
4(b) (iii)	Award 1 mark for a reason why the proportion of natural gas might increase, and a further 1 mark for extension of this point, up to a maximum of 2 marks each. Changes in Government policy (1) which means that some energy resources (e.g. natural gas) might be favoured more than others (e.g. coal) (1). Cost of natural gas becomes cheaper (1) due to improved trade deals with countries / new pipelines developed (1). New supplies of natural gas have been found (1) which means that the cost of this energy resource might fall (1). Improved technology / infrastructure to extract natural gas (1) which increases the supply of this resource / lowers the cost (1).	

	Supplies of natural gas might be running out slower than other energy resources (1) which means that more natural gas might be used to prolong the lifespan of other energy resources (1)	
	Accept any other appropriate response	**(2)**

Question number	Answer	Mark
4(c)	Award 1 mark for any of the following:	
	The construction of the blades and pillars generates CO_2 emissions (1)	
	It has been reported that turbine blades can kill birds (1)	
	Some turbines can create noise pollution (1)	
	Wind farms can look intrusive / unnatural and spoil the appearance of the environment / visual pollution (1)	
	Accept any other appropriate response	**(1)**

Question number	Answer	Mark
4(d)	Award 1 mark for a disadvantage, and a further 1 mark for extension through further explanation, up to a maximum of 2 marks each.	
	Working with uranium is extremely dangerous (1) because a leak / explosion could expose people to radiation (1).	
	Nuclear power plants are vulnerable to the impacts of natural disasters / terrorist attacks (1) which means that many people do not want a nuclear power station anywhere near their home as they fear for their own safety (1).	
	Nuclear power stations are very expensive to build (1) which means that the energy provider might have to raise tariffs for the consumer to ensure profits are made (1).	
	Nuclear waste is very radioactive / has a large potential for it to pollute the environment with radiation (1) which means that it costs a lot of money to ensure that it is disposed of safely (1).	

	Accept any other appropriate response	(4)

Question number	Indicative content
4 (e)	**AO2 (4 marks)/AO3 (4 marks)** **AO2** • It is estimated that the global demand for energy resources is going to keep increasing; the main reasons for this are linked to rapid population growth and rising affluence / economic development. • This increasing demand is putting a greater strain on existing energy resources, in particular non-renewable resources such as coal, oil and gas; these resources are eventually going to run-out and are therefore not a long-term solution. • Many developing/emerging countries are becoming increasingly industrialised, which means that there has been is a shift in the types of energy resources that are being used; in some of these countries, the goal of economic development has taken priority over sustainable development / environmental considerations. • In many developed countries, government policies and concerns about the negative environmental impact of non-renewable energy resources has led to a movement towards the increasing use of renewable energy resources. More environmentally-friendly / sustainable options such as wind, solar and HEP are being developed; these renewables do not emit CO_2 as no fossil is burnt – therefore not adding to the greenhouse effect / global warming. • Developed countries and more recently, developing and merging countries are now developing renewable energy resources as part of their energy mix – and the type and extent of usage is influenced by wealth/funding, government policy, availability of resources, the population size of the country (and gap between supply and demand), technology/infrasture limitations and the existing energy mix. • With regards to ways energy resources are being managed, it is important to be aware that whilst renewables have many advantages, they are do have disadvantages, such as the expense of set-up costs and reliability of supply in areas with inconsistent sun/wind/water supply. • Different groups of people have different views on the management and sustainable use of energy resources; these views are often complex and contradictory.

AO3

Evaluation will depend on the specific case studies used, but may include:

- Whilst it is clear that renewable energy resources have advantages, they also have disadvantages; for AO3, evaluation will take into both sides of the argument for/against different types of energy resource (bearing in mind the concept of 'sustainability') and come to a final conclusion.
- Within the evaluation, expect some awareness of the different stakeholder involved which influence the ways a country might manage its energy resources; for example, government-led incentives to increase the use of renewable in homes and industry may only be effective where the funding exists.
- Some stakeholders 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 wind energy or fracking, but do not want to see a wind farm / fracking drill site built next to their house because they might think they are unsightly, will lower land values or have the perception that they are noisy.
- Energy companies, often based in developed countries, are driven by profit, and therefore may not develop a particular energy resource, even if it is the most sustainable option, if they do not think it is economically viable.
- Whilst conservationists will be very much in favour of sustainable, renewable forms of energy resources, developing/emerging may not have the luxury of selecting their 'ideal' energy resource, but have to use the natural resources they have as they are cheaper and the demand is rapidly outstripping supply.

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)

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 5 – Water resource management

Question number	Answer	Mark
5(a)	**A** The removal of salt from sea water to make it drinkable B, C and D are all incorrect as these are not definitions of the term 'desalination'.	**(1)**

Question number	Answer	Mark
5(b) (i)	**C** Estonia A, B and D are all incorrect as these countries did not have the largest predicted change in water stress between 2020 and 2040.	**(1)**

Question number	Answer	Mark
5(b) (ii)	Award 1 mark for each of the following, up to a maximum of 3 marks. Both countries are predicted to experience an increase in water stress between 2030 and 2040 (1) but Botswana is predicted have a greater change / has a higher degree of water stress (1) plus use of data to support either point e.g. Botswana is predicted to have an increase of 0.6 / Chile is predicted to have an increase of 0.36 (1) **Accept any other appropriate response**	**(3)**

Question number	Answer	Mark
5(b) (iii)	Award 1 mark for a reason for an increase in water stress, and a further 1 mark for extension of this point, up to a maximum of 2 marks each. Low annual rainfall (1) which means that water stores (such as reservoirs) are going to run low (1). Climate change (1) might lead to an increasing length of dry seasons (1) Increased industrialisation / intensive farming (1) might lead to more of the existing water courses being used up / polluted (1) Growing population (1) might lead to the demand for water resources exceeding supply (1)	

	Accept any other appropriate response	(2)

Question number	Answer	Mark
5(c)	Award 1 mark for any of the following: Type of farming varies – with some types needing more water than others (1) Some countries can afford irrigation systems which use a lot of water (1) Some countries have a larger number of farms / farmers / people working in the farming industry (1) Some areas of the country are arid / low rainfall / seasonal imbalance (1) Maximise crop yield (1) **Accept any other appropriate response**	**(1)**

Question number	Answer	Mark
5(d)	Award 1 mark for a disadvantage, and a further 1 mark for extension through further explanation, up to a maximum of 2 marks each. Rainfall is imbalanced across the UK (1) which means that in some areas, there is not enough rainfall to meet demand (1). Rainfall varies seasonally in the UK (1) which means that irrigation is needed to overcome shortages in summer (1). The UK has a growing population (1) which means that the demand for water supply is also increasing – but the amount of water in the UK is not increasing (1). The UK has an ageing infrastructure / leaking water/sewage pipes (1) which means that water transfer is inefficient (1). **Accept any other appropriate response**	**(4)**

Question number	Indicative content
5 (e)	**AO2 (4 marks)/AO3 (4 marks)**
	AO2
	• It is estimated that the demand for water resources in developing/emerging countries is going to keep increasing; the main reasons for these are linked to rapid population growth and rising affluence, lead to water shortages and a deterioration in water quality as a result of pollution – which poses a threat to health.
	• More environmentally-friendly / sustainable options such desalination, installing water meters, monitoring of water usage, use of technology (e.g. irrigation systems in China) and fines for those who pollute water courses are being used with varying degrees of success.
	• The type and extent of water resource management is influenced by the level of development of a country; e.g. one would expect more developed countries to have greater wealth/funding available to manage their water resources in a way that provides a sustainable water supply for domestic, agricultural and industrial use.
	• On the other hand, developing / emerging countries may have less flexibility in terms of the options available for managing water resources due to financial limitations.
	• Other factors also influence the way a country manges its water resources, such as government policy, availability of technology/resources, the population size of the country (and gap between supply and demand), technology/infrasture limitations and the existing infrastructure.
	• Different groups of people have different views on the management and sustainable use of water resources; these views are often complex and contradictory.
	AO3
	Evaluation will depend on the specific case studies used, but may include:
	• Hard engineering solutions have been used in some areas (e.g. dams and reservoirs) – which have improved water supply and reduced flooding; however, these startegies also have negative impacts on people and the environment.
	• Different strategies have their own advantages, but they also do have disadvantages, such as the expense of set-up costs (particularliy for developing/emerging countries) and capacity to maintain a strategy once in place. For AO3, evaluation will take into both sides of the argument for/against different types of management (bearing in mind the concept of 'sustainability') and come to a final conclusion.
	• Within the evaluation, expect some awareness of the different stakeholder involved which influence the ways a country might manage its water resources; for example, government-led incentives to monitor water use in industry may only be effective where the funding and cooperation exists.
	• When making a judgement about how successful water resources have been managed, expect some reflection in terms of sustainability and in terms of how well these management startegies ensure an adequate water supply for domestic, agricultural and industrial purposes.
	• Some stakeholders may be against the development of certain strategies – for example farmers might be against that use of drought resistant crop types as they are more expensive to cultivate or do not generate as much profit.

- Organisations that manage water quality and supply are driven by profit, and therefore may not opt for a particular strategy, even if it is the most sustainable option, if they do not think it is economically viable.
- Approaches to the management of water resources might reflect the socio-political makeup of the governing classes – some see as a basic right and make water available at low cost, others depend on market economy to determine whether profit can be made from making water available and at what price to the customer
- Some groups, such as conservationists, will be very much in favour of sustainable methods of management, developing/emerging may not have the luxury of implementing these strategies, but have to use their existing infrastructure / methods as they are cheaper and the demand for water resources is rapidly outstripping supply.

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)

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.