GCSE

WJEC GCSE Geography

Approved by Qualifications Wales

Sample Assessment Materials

Unit 3: Our Dynamic and Diverse World

Teaching from 2025
For award from 2027

This Qualifications Wales regulated qualification is not available to centres in England.

Made for Wales.
Ready for the world.

WJEC would like to thank the students and teachers of Fitzalan High School, Cardiff and Llanwern High School, Newport for their participation in the creation of these covers.

Contents

Surname	Centre number	Candidate number
First name(s)		0

GCSE

3140U30-1

Geography – Unit 3
Our Dynamic and Diverse World

1 hour 30 minutes
SAMPLE ASSESSMENT MATERIALS

Additional materials
A ruler and a calculator.

Instructions to candidates

Use black ink or black ball-point pen. Do **not** use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces provided at the top of this page.

Answer **all** questions.

For examiner's use only		
Question	**Maximum mark**	**Mark awarded**
1.	**29**	
2.	**18**	
3.	**28**	
4.	**15**	
Total	**90**	

Write your answers in the spaces in this booklet. If you need more space, use the additional page(s) at the back of this booklet. Number the question(s) correctly.

Information for candidates

The number of marks is given in brackets at the end of each question or part-question.

The total number of marks available is **90.**

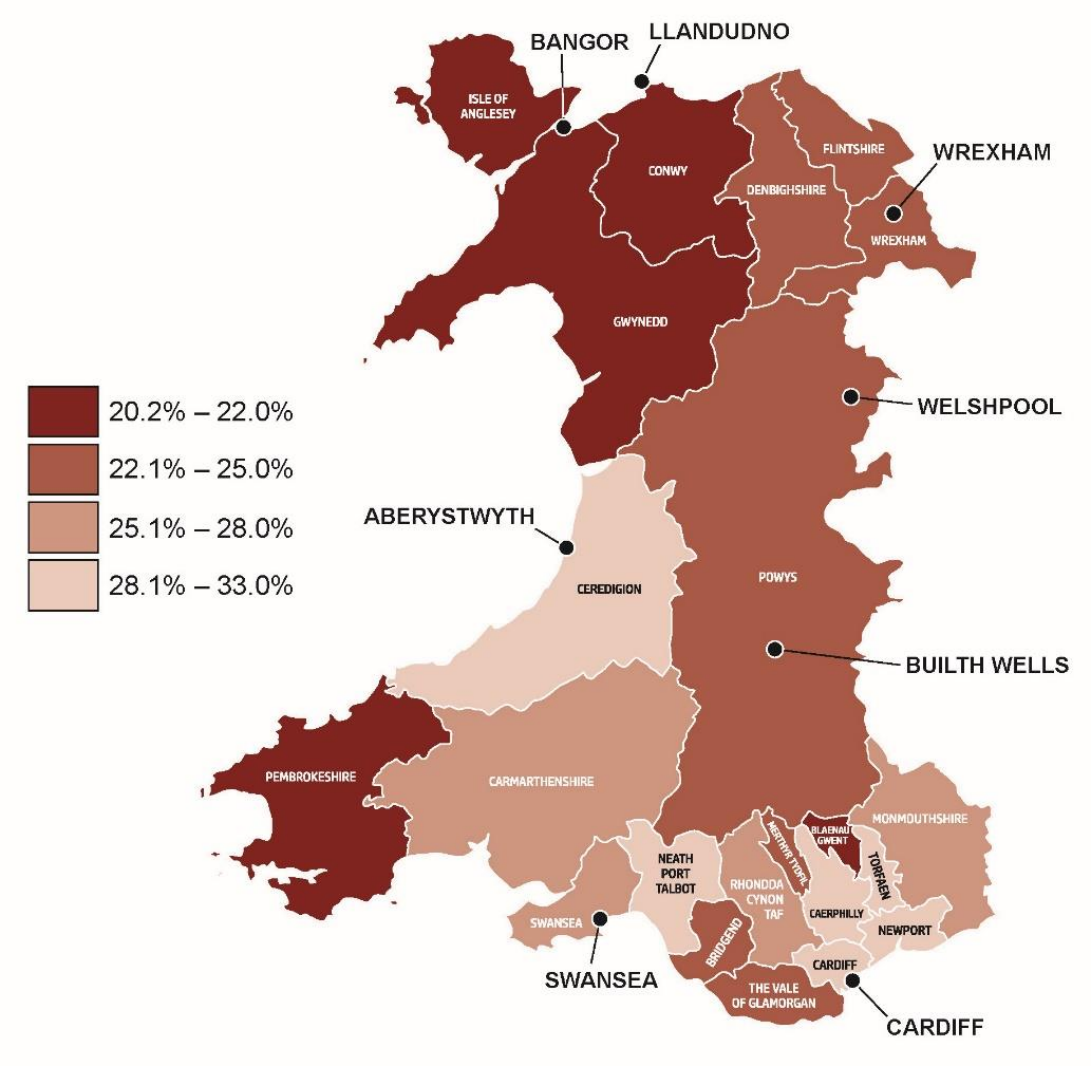
You should think carefully about how you use your time.

Your responses must be clear, accurate and well presented.

Answer **all** questions.

Examiner only

1. Map 1: Percentage of jobs in Welsh Unitary Authorities that are paid less than the living wage, 2018



(a) Name the mapping technique used in Map 1. [1]

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(b) Discuss the location of the Unitary Authorities with the highest and lowest percentages of jobs paid less than the living wage in Wales in 2018.
Use evidence from Map 1 in your answer. [3]

Examiner only

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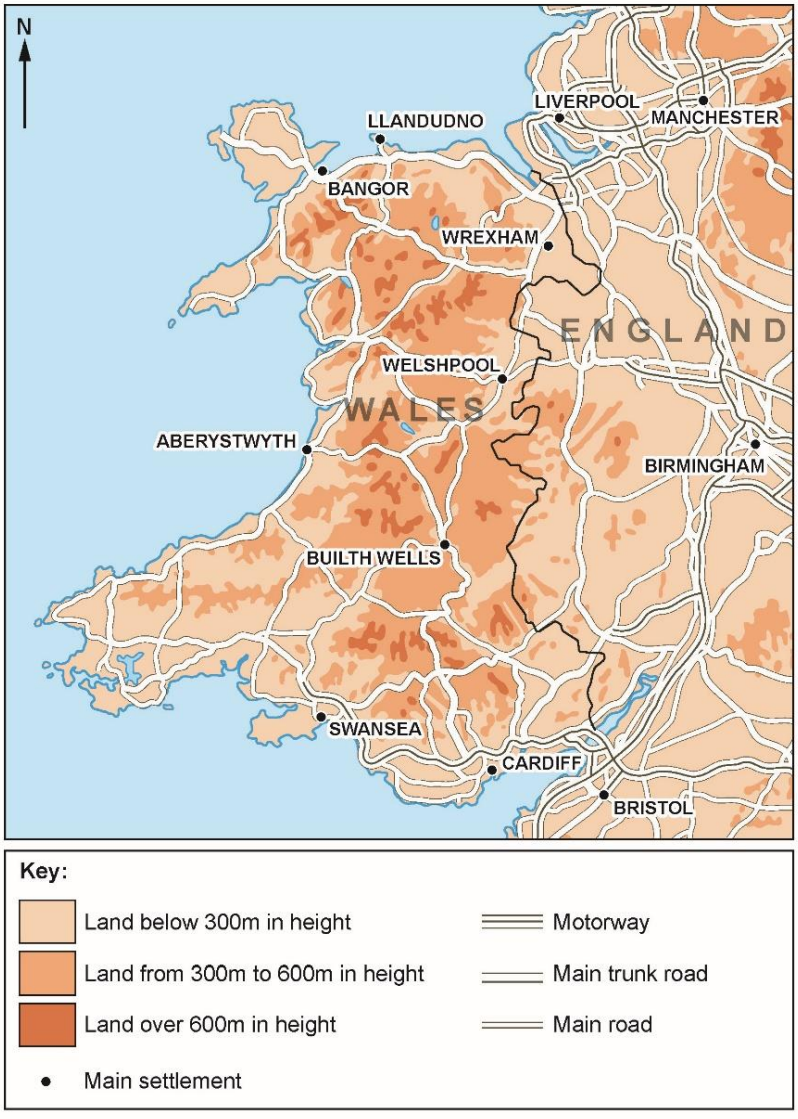
Map 2: Wales: Settlements, Major Roads and Relief



(c) Explain **two** ways in which the physical and human geography of Wales and England help account for the inequalities in living wage described in Question 1 (b). [4]

You should use evidence from Map 2 and your own knowledge in your answer.

Examiner only

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(d) Define the term 'development gap'. [2]

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(e) Outline **one** human and **one** physical cause of the development gap. [4]

Examiner only

Human:

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Physical:

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Table 1: Selected sub-Saharan African countries development statistics.

	Life Expectancy at birth (years)		Literacy rate %	
	2010	2020	2010	2020
Ghana	62	66	86	93
Kenya	61	66	84	88
Malawi	57	66	72	76
Nigeria	59	63	70	75

(f) Justify why a multiple line graph would be the best method to use when presenting the data in Table 1. [3]

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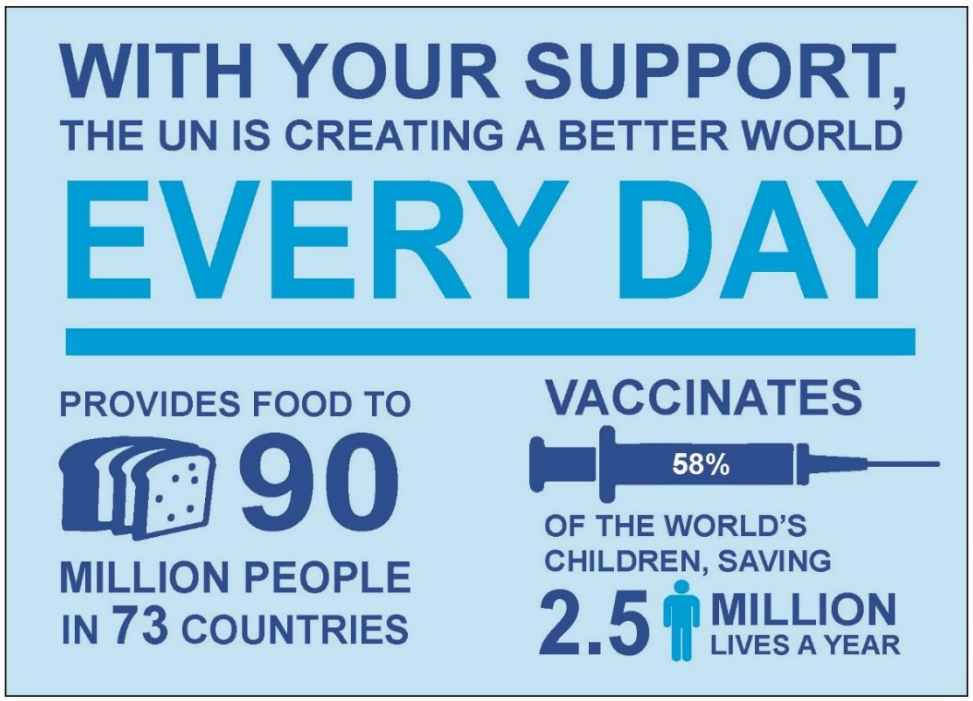
Study infographics 1-4

Infographic 1: Benefits of Development Aid



Infographic 2: Benefits of Fair Trade

Examiner only

Infographic 3: Major MNC Companies in India, 2024

Infographic 4: Why Tourism Matters

(g) Suggest **one** benefit and **one** limitation that infographics 1-4 may have when assessing whether countries are successfully closing the development gap. [2]

Examiner only

Benefit:

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Limitation:

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(h) Evaluate the statement that "development aid is the most effective strategy in attempting to close the development gap".
You can use infographics 1 to 4 and your own knowledge in your answer. [10]

Examiner only

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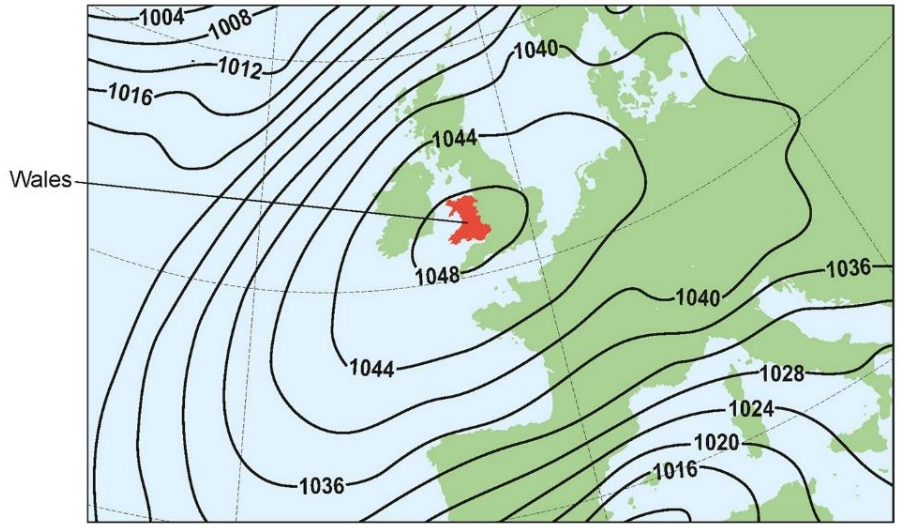
2. Map 3: A weather map for the 17th January 2020



(a) Study Map 3 carefully. [1]
Name the type of weather system you can see centred over Wales on the 17th January 2020.

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(b) Tick (✓) the correct answer in the table below for each of the following weather conditions that would have been expected in Wales on 17th January 2020. [4]

Weather Condition		**Tick ✓**		**Tick ✓**		**Tick ✓**
Cloud Cover	50%		0%		100%	
Temperature	Very cold		Mild		Very warm	
Precipitation	None		Light rain		Heavy rain	
Wind Speed	Very high		Medium		Very low/none	

Examiner only

(c) High pressure systems often lead to extreme weather events that can cause major impacts in places around the world.

(i) Give the name and location of an extreme high pressure weather event. [1]

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(ii) Outline the environmental **and** economic impacts of the extreme weather event linked to a high pressure weather system you have named in (c) (i). [6]

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(d) Evaluate the effectiveness of short and long-term responses to a low pressure extreme global weather event you have studied. [6]

Examiner only

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Examiner only

3. Photograph 1: A Coal Fired Power Station in the UK

Photograph 2: Deforestation in Amazonia, Brazil

(a) Describe how the burning of fossil fuels and removal of forest cover enhances the global greenhouse effect and contributes to climate change. [4]

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(b) Describe how **one** natural process has contributed to past global climate change. [4]

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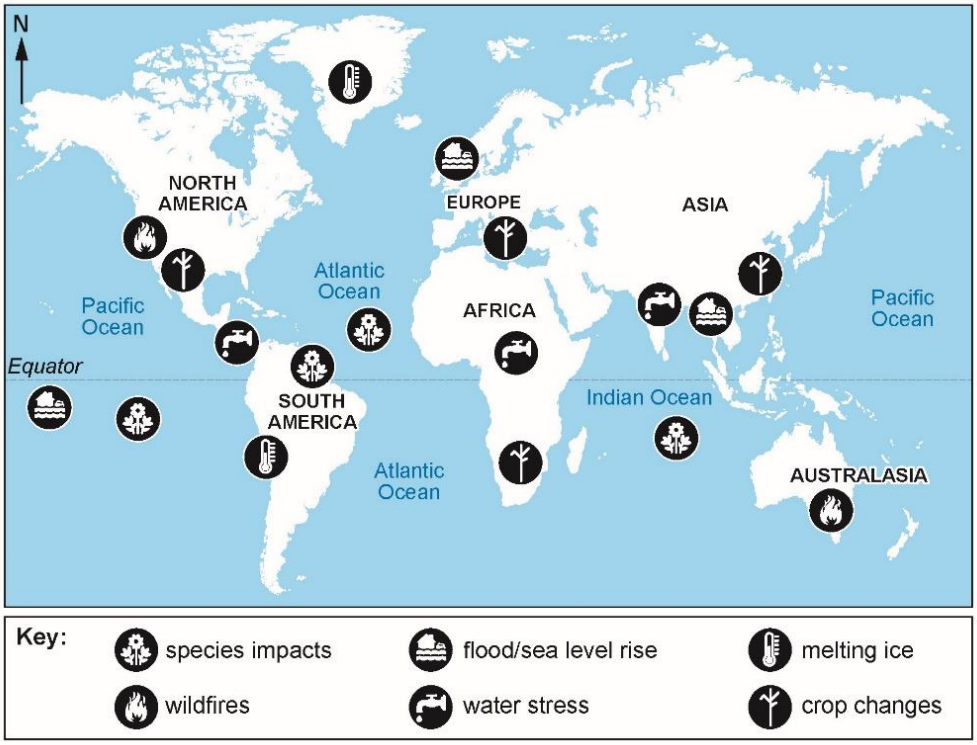
Examiner only

Map 4: Potential Global Impacts of Climate Change



(c) Study Map 4 carefully. [5]
Discuss the location of potential global impacts of climate change. Use map evidence in your answer.

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(d) Suggest **one** reason why this map may not be reliable in showing potential global impacts of climate change. [2]

Examiner only

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(e) Explain the environmental and social impacts of climate change on **one** location you have studied. [6]

Location studied:……

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(f) ‘The best way of managing climate change is through global co-operation and action.’
Evaluate how far you agree with this statement. [7]

Examiner only

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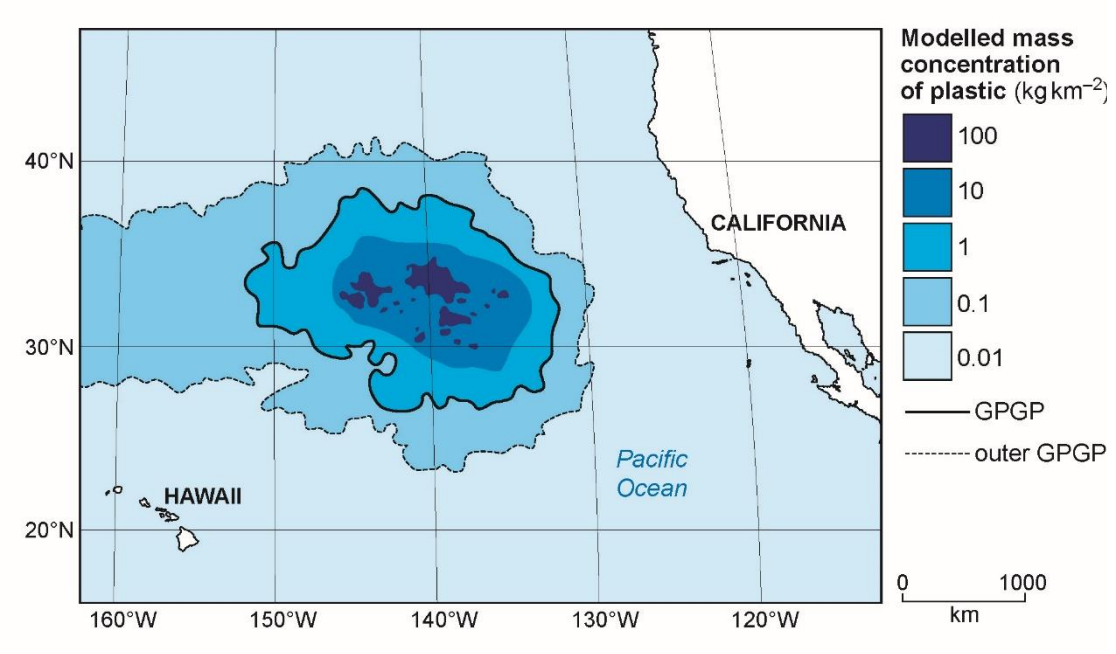
Examiner only

4. Map 5: The Great Pacific Garbage Patch (GPGP)



(a) Describe the location of the Great Pacific Garbage Patch (GPGP) in the Pacific Ocean, using Map 5. [4]

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(b) Describe how waste, like plastic, ends up in the oceans. [3]

Examiner only

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(c) Explain why plastic and other pollution becomes concentrated into large patches in the oceans, as seen with the Great Pacific Garbage Patch on Map 5. [2]

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(d) Explain actions individuals can take to help reduce the amount of plastic waste, like the waste found in the Great Pacific Garbage Patch, reaching the oceans. [6]

Examiner only

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END OF QUESTIONS

Examiner only

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.
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MARK SCHEME

Guidance for examiners

Generic marking principles

- Marks awarded are always whole marks (not half marks, or other fractions).
- Answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.
- Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
- Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Positive marking

It should be remembered that candidates are writing under examination conditions and credit should be given for what the candidate writes, rather than adopting the approach of penalising candidates for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

For questions that are objective or points-based, the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision made.

Mark schemes often list points which may be included in candidates' answers. The list is not exhaustive. The inclusion of *'Credit any other valid response.*' (or similar instruction) within mark schemes allows for the possible variation in candidates' responses. Credit should be given according to the accuracy and relevance of candidates' answers.

Appropriate terminology is reflected in exemplar responses in mark schemes. However, unless there is a specific requirement within a question, candidates may be awarded marks where the answer is accurate but expressed in their own words.

Banded mark schemes

For band marked questions mark schemes are in two parts; the indicative content and the assessment grid.

The indicative content suggests the range of points and issues which may be included in candidates' answers. It can be used to assess the quality of the candidate's response. As noted above, indicative content is not intended to be exhaustive and candidates do not have to include all the indicative content to reach the highest level of the mark scheme.

However, to reach the highest level of the mark scheme a candidate must meet the requirements of the highest mark band. Where a response is not creditworthy, that is, it contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The marking of banded mark questions should always be positive. This means that, for each candidate's response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

Examiners should first read and annotate the candidate's answer to pick out the evidence that is being assessed in that question. The mark scheme can then be applied. This is done as a two-stage process.

Stage 1 – Deciding on the band

Beginning at the lowest band, examiners should look at the candidate's answer and check whether it matches the descriptors for that band. If the descriptors at the lowest band are satisfied, examiners should move up to the next band and repeat this process for each band until the descriptors most closely matches the work.

Stage 2 – Deciding on the mark

Having determined the appropriate band, deciding on the mark within a band will be made on the basis of a 'best fit' procedure, weaknesses in some areas being compensated for by strengths in others.

Examiners should use the full range of marks available to them. Marking should be positive, rewarding achievement rather that penalising failure or omissions. The awarding of marks must be directly related to the marking criteria, and all responses must be marked according to the banded levels provided for each question.

Standardising material that has already been awarded a mark will be provided during standardising and this should be used as a reference material when assessing work. Examiners are reminded of the need to revisit the standardising material as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the work submitted.

This mark scheme instructs examiners to look for and reward valid alternatives where indicative content is suggested for an answer. This is not a checklist for expected content in an answer, or set out as a 'model answer', as responses must be marked in the banded levels of response provided for each question. Where a candidate provides a response that contains aspects or approaches not included in the indicative content, examiners should use their professional judgement to determine the validity of the response in light of the task and reward as directed by the bands. Candidates are free to choose any approach that is relevant to the set task. Candidates can (and will most likely) incorporate ideas other than those mentioned in the mark scheme.

Question		Answer	AO1	AO2	AO3	Total Mark
1.	(a)	Name the mapping technique used in Map 1.				
		Award **one** mark for: • Choropleth Map.	1			1
	(b)	Discuss the location of the Unitary Authorities with the highest and lowest percentages of jobs paid less than the living wage in Wales in 2018. Use evidence from Map 1 in your answer.				
		Award **one** mark for a basic discussion, for example: • Most jobs are paid below the living wage in the North West and West/fewest jobs paid below the living wage in the South East and South Central counties. Award **two** marks for a more developed discussion, for example: • The unitary authorities with the most jobs paid below the living wage are Gwynedd, Conwy and Ynys Mon, in the North West, Pembrokeshire in the West and Blaenau Gwent in the South. Ceredigion, Cardiff and Newport (and others nearby named) have fewest jobs paid below the living wage. (**NB** - Answers may make reference to second highest e.g. Powys, Wrexham, East Wales or second lowest e.g. Carmarthenshire, Monmouthshire, Swansea and others.) Award **three** marks for a detailed discussion, for example: • The unitary authorities with the most jobs paid below the living wage are Gwynedd, Conwy and Ynys Mon, in the Northwest, Pembrokeshire in the West and Blaenau Gwent in the South. Ceredigion, Cardiff and Newport (and others nearby named) have fewest jobs paid below the living wage. Areas with the second highest percentages include Powys, Wrexham and Northeastern counties of Wales and areas with the second lowest percentage include Carmarthenshire, Monmouthshire and Swansea in the Southeast and Southwest of Wales. Ceredigion and Blaenau Gwent are clear anomalies in the overall pattern of locations seen. Accept reference to regions e.g. North West, South East without all unitary authorities being named. Credit any other valid response.		3		3

	(c)	Explain **two** ways in which the physical and human geography of Wales and England help account for the inequalities in living wage described in Question 1 (b). You should use evidence from Map 2 and your own knowledge in your answer.				
		Award **one** mark for a basic explanation, for example: • Proximity to infrastructure/ease of commuting as northwestern counties and Pembrokeshire are further from motorways and fast rail links whereas counties near Cardiff benefit from better accessibility into the capital, neighbouring English counties and London. • Quality and quantity of roads and communications is better in South Wales/fewer, slower and less direct roads in Mid and West/Northwest Wales. • Broadband speeds and Wi-Fi are slower/less reliable in more remote Western areas/faster in eastern areas and near the southern and northern settlements. Award **two** marks for a more developed explanation, for example: • Proximity to infrastructure/ease of commuting as northwestern counties and Pembrokeshire are further from motorways and fast rail links whereas counties near Cardiff benefit from better accessibility. This makes it more likely for businesses offering highly paid work to locate there and easier for residents to commute either to the capital or to bordering English towns and cities, as well as London. • Quality and quantity of roads and communications is better in South Wales/fewer, slower and less direct roads in Mid and West/Northwest Wales. Therefore, companies offering higher wages are more likely to locate in the south and nearer to the English border. • Broadband speeds and Wi-Fi are slower/less reliable in more remote Western areas/faster in eastern areas and near the southern and northern settlements. This means that people experience differing access to more highly paid IT based jobs that may pay at or over the living wage. Credit any other valid response.		4		4

	(d)	Define the term ‘development gap’.				
		Award **one** mark for a basic definition, for example: • The difference in levels of development between different countries. Award **two** marks for a more developed definition, for example: • The difference in levels of development between different countries. Examples of this can be in terms of wealth/services/resources etc. Credit any other valid response.	2			2
	(e)	Outline **one** human and **one** physical cause of the development gap.				
		Award **one** mark for a basic outline, for example: Human: • **Colonialism** often means that LICs are still reliant on exporting primary goods. • **Demographic characteristics** rapidly growing population. • **Globalisation** has led to MNCs from HICs exploiting LICs for their cheap labour. • **Industrialisation** has led to a technological divide. • **Urbanisation** rapid urbanisation can lead to unplanned informal settlements. Award **one** mark for a basic outline, for example: Physical: • **Geographical location** landlocked countries. • **Natural resources** such as fossil fuels. **N.B.** do not award one mark for merely naming a cause without providing a basic outline. Award **two** marks for a more developed outline for example: Human: • **Colonialism** often means that LICs are still reliant on exporting primary goods while they import manufactured goods. • **Demographic characteristics** rapidly growing population means that governments can struggle to provide enough services e.g. healthcare. • **Globalisation** has led to MNCs from HICs exploiting LICs for their cheap labour and the profits go back to the HIC. • **Industrialisation** has led to a technological divide with LICs often lacking reliable electricity for example.	4			4

		• **Urbanisation** rapid urbanisation can lead to unplanned informal settlements widening the inequality within a country. Award **two** marks for a more developed outline for example: Physical: • **Geographical location** landlocked countries find importing and exporting goods more expensive. • **Natural resources** such as fossil fuels are not evenly distributed and are expensive to import. Credit any other valid response.				
	(f)	Justify why a multiple line graph would be the best method to use when presenting the data in Table 1.				
		Award **one** mark for each justification up to a maximum of **three** marks, for example: Multiple line graph: • All the data can be plotted on one graph. • The data shows change over time. • The lines can be in different colours for each country with a key. • Easy to extend/extrapolate the lines to make future predictions. Credit any other valid response.			3	3
	(g)	Suggest **one** benefit and **one** limitation that infographics 1-4 may have when assessing whether countries are successfully closing the development gap.				
		Award **one** mark for a benefit, for example: • Clear, colourful and easy to understand the information presented. • Contain more information than a photograph might show. • Easy to compare the four infographics about four different things. Award **one** mark for a limitation, for example: • We don't know anything about the sources so could be presenting biased information. • May be incomplete or abridged. • Often need photos, maps or graphs to go with them in order to present the information more clearly. Credit any other valid response.			2	2

	(h)	Evaluate the statement that “development aid is the most effective strategy in attempting to close the development gap”. You can use infographics 1 to 4 and your own knowledge in your answer.

Indicative Content

Development aid can provide a crucial role in addressing immediate and longer term needs in LICs e.g. food/water/education/healthcare. Reference to resource to support argument. This aid can alleviate poverty, malnutrition and increase life expectancy. However, it does not necessarily address the root cause of the development gap such as unequal trade relationships, access to resources etc.

Fair trade initiatives aim to empower small scale producers in LIC/NICs by developing and promoting equitable and sustainable trading relationships so that the producer gets a fair and consistent price for their goods and providing a premium for communities to develop their education/healthcare etc – refer to resource. Fair trade projects can help lift communities out of poverty and reduce inequalities BUT are usually only small scale and therefore have little impact on a larger scale.

MNC’s, such as those shown in the resource, can bring a range of jobs, investment, infrastructure improvements and prestige to a NIC/LIC and bring a positive multiplier effect when other MNC’s then locate in the same areas. If they leave the country however, they can cause long term economic problems, as well as being responsible for pollution into the environment. Much of the profits often go back to their country of origin and highly skilled employment is limited in the country of location with many jobs being in areas like construction, maintenance and cleaning.

Tourism brings many benefits to countries, as seen in the resource. Many countries rely on it for crucial foreign investment and capital and for employment and infrastructure improvements. The chance of environmental damage from tourist developments is very high however, profits often ‘leak’ out of the country back to holiday companies and many tourists stay in purpose-built resorts or go on organised tours, both of which have little to do with the culture, environment and traditions of the host country.

Candidates may well use other valid information here and refer to examples they have studied from all the different strategies e.g. Water Aid in Mali, Fair Trade chocolate in Ghana, Telecommunications MNC investment in India and Tourism in The Gambia or Nepal.

Credit any other valid response.

Band	AO3
4	**9-10 marks** An excellent evaluation which demonstrates: • very detailed knowledge and understanding of how development aid and other strategies are used to close the development gap • a balanced and coherent argument considering the pros and cons of each strategy • the use of detailed examples which draw on information from different strategies to back up the argument • a clear response that has purpose, is organised and well structured.
3	**6-8 marks** A good evaluation which demonstrates: • detailed knowledge and understanding of how development aid and other strategies are used to close the development gap • a balanced argument considering the pros and cons of each strategy • the use of examples which draw on information from different strategies to back up the argument • a clear response that is organised and structured.
2	**3-5 marks** A basic evaluation which demonstrates: • some knowledge and understanding of how development aid and/or other strategies are used to close the development gap. • an imbalanced argument • partial use of examples and/or draws on information from one strategy • a generally clear and structured response.
1	**1-2 marks** A limited evaluation which demonstrates: • minimal knowledge and understanding of how development aid is used to close the development gap • a one-sided argument • no use of examples resources or simply uses a direct lift of statistics from infographics • a lack of clarity in parts, and statements that are linked by a basic structure.
0	No response attempted or nothing worthy of credit.

Question		Answer	AO1	AO2	AO3	Total Mark
2.	(a)	Name the type of weather system you can see centred over Wales on the 17th January 2020.				
		Award **one** mark for: • Anticyclone/High Pressure system (allow winter anticyclone).	1			1
	(b)	Tick (✓) the correct answer in the table below for each of the following weather conditions that would have been expected in Wales on 17th January 2020.				
		Award **one** mark each for these answers only: **Cloud Cover**: 0% **Temperature**: Very cold **Precipitation**: None **Wind Speed**: Very low/none	4			4
	(c)	High pressure systems often lead to extreme weather events that can cause major impacts in places around the world.				
		(i) Give the name and location of an extreme high pressure weather event.				
		Award one mark for an appropriate named and located weather event linked to high pressure e.g. California Drought of 2015, UK summer of 2022. **N.B.** Do not credit wildfires as a specific weather event here.	1			1
		(ii) Outline the environmental **and** economic impacts of the extreme weather event linked to a high pressure weather system you have named in (c) (i).				
		Award **one** mark for a limited outline of environmental impacts, that does not link specifically to the named event, for example: • burning of land and vegetation in wildfires • drying out and erosion of soil linked to drought • rivers, reservoirs and lakes drying out due to high temperatures • high evaporation rates also leading to a reduction in river aquatic life. Award **two** marks for a basic outline of environmental impacts that has some links to the named event, for example: • A 36% increase in wildfires in 2015 leading to burning of land and vegetation and windy and dry conditions spreading the flames further. • Drying out and erosion of soil linked to drought that lasted from 2012 to 2015. • Rivers, reservoirs and lakes drying out and having much lower discharge than usual due to high temperatures and increased evaporation.	6			6

			• High evaporation rates also leading to a reduction in fish and aquatic life stocks in the San Joaquin River Delta. Award **three** marks for a more developed outline of environmental impacts that has specific links to the named event, for example: • Burning of land and vegetation in wildfires e.g. 3000 acres of land lost near Clear Lake, 31 000 acres of Oak tree habitats were lost in the State. • Drying out and erosion of soil linked to drought meaning key fruit and vegetable crops were irreparably damaged. • Rivers and lakes drying out due to high temperatures, so in August 2015 44% of rivers had only 10% of their normal flow • Evaporation also leading to reduction in salmon and trout stocks in the San Joaquin River Delta, as higher temperatures in the water reduces oxygen available for fish to survive. Award **one** mark for a limited outline of economic impacts, that does not link specifically to the named event, for example: • farmers losing out on money from failed/burnt crops • job losses in agriculture • reduced revenue from food sales • insurance claims needed to compensate farmers and/or homeowners. Award **two** marks for a basic outline of economic impacts, for example: • farmers losing out on $810 million from failed/burnt crops in 2015 • 17 000 job losses in agriculture in 2015 • greatly reduced revenue from food sales and costs of importing more food to compensate • insurance claims needed to compensate farmers and/or homeowners, money spent on repairing damage to roads, houses and key public buildings. Award **three** marks for a more developed outline of economic impacts, for example: • farmers losing out on $810 million from failed/burnt crops in 2015 and similar figures in future years as the land failed to recover from devastating burning • 17 000 job losses in agriculture in 2015, plus the knock-on effects on jobs in transport, storage, sales and trade				

			• greatly reduced revenue from food sales and costs of importing more food to compensate. Food prices rose by 6% in the shops as a result • California Government paid out $687 million of its savings to compensate farmers and/or homeowners, in addition to the high cost of insurance claims after the drought. **N.B.** Most candidates will focus on warm weather high pressure events but credit also cold weather high pressure events e.g. the Big Freezes of 2009-10 & 2010-11 in UK and associated environmental and economic impacts.				
	(d)	Evaluate the effectiveness of short and long-term responses to a low-pressure extreme global weather event you have studied.					

Indicative Content

The response will vary depending on the chosen low pressure weather event studied and may make reference to the level of development of the country/location chosen.

Examples used are likely to be tropical cyclones, although named storms in the UK may be used, along with possibly extreme rain and snowfall.

Short term responses could include evacuation of areas based on forecasting and prediction, provision of sandbags to protect houses from floods and coastal surges, boarding up windows, securing houses and household items to protect against strong winds, residents having emergency kits if unable to leave homes, action by emergency services trained to deal with weather hazard situations.

Long term responses could include building strategies to make houses and industry more resistant to strong winds and rain, land use zoning to ensure building is prevented or heavily controlled in vulnerable areas, investing in improving emergency services and ensuring overseas aid and help is available when needed, education of the population in terms of emergency drills and where and how to evacuate, improving communication of forecasts, building of flood defences and coastal defences in vulnerable areas.

Credit any other valid response.

Band	AO3
3	**5-6 marks** A very good evaluation which demonstrates: • clear understanding of long and short-term responses used to manage a low pressure weather event • a balanced approach that clearly comes to a conclusion on the advantages and disadvantages of both, and their overall effectiveness • a clear response that has purpose, is organised and well structured.

2	**3-4 marks** A good evaluation which demonstrates: • some understanding of long and/or short-term responses used to manage a low pressure weather event • some imbalance in its approach which comes to a limited conclusion • clear meaning and structure.
1	**1-2 marks** A basic evaluation which demonstrates: • simple statements showing limited understanding of responses used to manage a low pressure weather event • an unbalanced response that does not come to a conclusion • meaning that may lack clarity in parts and a simple structure.
0	No response attempted or nothing worthy of credit.

Question		Answer	AO1	AO2	AO3	Total Mark
3.	(a)	Describe how the burning of fossil fuels and removal of forest cover enhances the global greenhouse effect and contributes to climate change.				
		Award **one** mark for a limited description, for example: • Burning fossil fuels releases greenhouse gases. • Deforestation stops trees taking in carbon. Award **two** marks for a basic description, for example: • Burning fossil fuels releases CO_2 into the atmosphere. • Deforestation stops trees taking in carbon and acting as a carbon store. Award **three** marks for a more developed description, for example: • The burning of fossil fuels such as coal, oil, and natural gas releases large amounts into the atmosphere. These gases absorb and reradiate infrared energy. • Deforestation reduces a natural carbon store as carbon is returned to the atmosphere when trees are burnt or decompose. Award **four** marks for a fully developed description, for example: • The burning of fossil fuels such as coal, oil, and natural gas releases large amounts of CO_2 into the atmosphere. These gases absorb and reradiate infrared energy within the atmosphere heating the Earth's surface. • Deforestation removes a natural carbon store as carbon is returned to the atmosphere when trees are burnt or decompose. This further contributes to the greenhouse effect. Credit any other valid response.	4			4

	(b)	Describe how **one** natural process has contributed to past global climate change.				
		Award **one** mark for naming the process: • Milankovitch Cycles • sunspots • volcanic eruptions. Award **one** mark for each point up to a maximum of **three** marks: **Milankovitch Cycles** • Long term changes to the Earth's orbit/tilt. • Affect the distribution of solar radiation that reaches the Earth's surface throughout the year. • These cycles have caused glacial and interglacial periods in the past. • The Earth's orbit changes from elliptical to circular every 100 000 years. • A more elliptical orbit increases the annual variation in the amount of solar radiation reaching the surface. • The Earth's tilt changes from 22.5° to 24.5° every 40 000 years. • This effects how extreme the seasons are in each hemisphere. • A reduced angle of obliquity would cool the planet • The Earth's precession (wobble) changes every 23 000 years. • This affects which hemisphere is tilted towards the sun at perihelion (when the Earth is closest to the sun in orbit). • This also affects how extreme the seasons are in each hemisphere. • Currently perihelion is during the northern hemisphere winter and so ice and snow generally only occur at high altitudes and latitudes. **Sunspots** • Occur in an 11-year cycle. • During periods of increased sunspot activity, more solar radiation is released. • This can lead to a 0.1°C in the Earth's temperature. • The Little Ice Age in the 17th century is believed to have been partly caused by a decrease in sunspot activity. • This period was known as the Maunder Minimum. **Volcanic eruptions** • Can both increase and decrease global temperatures. • Long lasting effusive eruptions can produce a lot of CO_2. • They lead to a longer term warming of the planet. • Explosive eruptions release a lot of sulphur dioxide/ash.	4			4

		• This goes into the atmosphere which blocks the sun's radiation. • This can cause a temporary cooling effect. • Mt Pinatubo's 1991 eruption is believed to have reduced the Earths global temperature by 0.5°C in the following year. Credit any other valid response.				
	(c)	Study Map 4 carefully. Discuss the location of potential global impacts of climate change. Use map evidence in your answer.				
		Award **one** mark for each valid point that uses map evidence up to a maximum of **five** marks: • There are global impacts of climate change • there is roughly an equal split of impacts between north and south hemispheres • melting ice in Greenland/Arctic • wildfires in Australia • crop changes in Africa, North America, Asia & Europe • rising sea levels in Pacific, Indian and Atlantic Oceans • no impacts in Canada/North America or Russia/Northern Asia. Credit any other valid response.		5		5
	(d)	Suggest **one** reason why this map may not be reliable in showing potential global impacts of climate change.				
		Award **one** mark for a basic suggestion, for example: • The map doesn't show specific countries or areas of high and low population density • The impacts will vary on a much finer scale the can be shown in a global map with a handful of symbols • Some impact symbols cover more than one country. • The type of impacts are not clear. • No year is given on the map. • Impacts are not ranked in order of importance/severity • Doesn't show vulnerability of the human populations and natural systems to those impacts. . Award **two** marks for a more developed suggestion, for example: • The map doesn't show specific areas of high and low population density so you don't know if the impact is widespread or local. • The impacts will vary on a much finer scale than can be shown in a global map with a handful of symbolsso it is not clear exactly where the impacts are felt. • The type of impacts are not clear as some impacts can be positive e.g. crop changes and species impacts.			2	2

		• No year is given on the map so it is unclear how up to date/valid/reliable the map is. • Impacts are not ranked in order of importance/severity so it is unclear if some areas of the world are affected more than others. • Map doesn't show how vulnerable human populations and natural systems are to these impacts e.g. through levels of development of countries, locations of areas of settlement and frequency of natural disasters linked to climate change. Credit any other valid response.				

	(e)	Explain the environmental and social impacts of climate change on **one** location you have studied.

Indicative Content

Answer must name and locate one area/country/region studied.

Environmental Impacts could include:
- Rising sea levels flooding low lying coastal land and beaches.
- Contamination of fresh water supply from rising saltwater levels.
- Warmer temperatures leading to increased evaporation into the atmosphere, increasing the likelihood of more powerful storms and severe weather.
- Change in vegetation due to increasing temperatures and unreliable/extreme precipitation.
- Melting of snow and ice leading to flooding.
- Loss of ice cover and reduction in seasonal meltwater in glacial areas
- Increased possibility of wildfires and extreme heat events.
- Changing phenology and species displacement.

Social Impacts could include:
- Pressure on water supplies from increased contamination, evaporation and competition and changing seasonal meltwater.
- Migration away from affected area/country as environmental refugees, leaving home area for good.
- Construction of new homes & infrastructure to replace areas at risk.
- Impacts of disease e.g. malaria as warmer conditions allow mosquitos and other insects to survive further north and south.
- Loss of culture and traditions as people leave affected areas.

Examples may include The Maldives, Tuvalu, Bangladesh, UK but credit any valid example with specific information about the impacts of climate change.

Credit any other valid response.

Band	AO2
3	**5-6 marks** A very good explanation which demonstrates: • clear understanding of environmental and social impacts of climate change • a balanced approach that clearly explains both types of impact on one named country • a clear response that has purpose, is organised and well structured.
2	**3-4 marks** A good explanation which demonstrates: • some understanding of environmental and social impacts of climate change • a partially balanced response that explains both types of impact on one named country • clear meaning and structure.

1		**1-2 marks** A basic explanation which demonstrates: • simple statements showing limited understanding of environmental and social impacts of climate change • an unbalanced response that may not contain reference to one named country • meaning that may lack clarity in parts and a simple structure.
0		No response attempted or nothing worthy of credit.
	(f)	'The best way of managing climate change is through global co-operation and action.' Evaluate how far you agree with this statement.

Indicative Content

Examples of global co-operation and action will be given, and could include Kyoto Protocol 1997, Paris Agreement 2015 and COP26 Glasgow 2021. Detail on these summits/agreements will be given, for example:

- Kyoto: Legally binding targets for reducing emissions by an average of 5% below 1990 levels by 2008-2012, introduction of carbon trading and offsetting, Clean Development Mechanism (CDM), and Joint Implementation (JI) to help countries meet their climate targets.
- Paris: Nationally Determined Contributions (NDCs) where each country sets its own targets for reducing emissions, Global Stocktake of regular assessments to evaluate progress and increase ambition and Support for Developing Countries giving financial and technological support to help vulnerable nations adapt to climate impacts.
- Glasgow: Glasgow Climate Pact with strengthened climate action commitments and updated NDCs, Coal Phase-Out agreement on phasing down unabated coal power and phasing out inefficient fossil fuel subsidies and Climate Finance with increased pledges to support climate adaptation and mitigation in developing countries.

Comparison may be made with local and national scale initiatives, including recycling, renewable energy, improving public transport, electric cars, sustainable buildings, green taxes and many others. It is important to note that the smaller scale initiatives discussed here help people adapt to climate change, but that global/international management and mitigation is needed to see widespread changes and actions. Local actions do not lead to local impacts only.

Simon Stiell, Executive Secretary of the UN Framework Convention on Climate Change, said at COP29 in November 2024 "global cooperation is the only way humanity survives global warming.

Credit any other valid response.

N.B. Balance between international and national/local management of climate change must be seen and a clear reference to the opening statement and an evaluation of 'how far do you agree?' must be present for maximum marks.

Band	AO3
4	**7 marks** An excellent evaluation which demonstrates: • very detailed knowledge and understanding of global, national and local management of climate change • a balanced and coherent approach that clearly addresses the statement and the level of agreement with it • the use of detailed examples which draw on information from different approaches to the management of climate change to back up the argument • a clear response that has purpose, is organised and well structured.
3	**5-6 marks** A good evaluation which demonstrates: • detailed knowledge and understanding of global, national and local management of climate change • a balanced approach that addresses the statement and the level of agreement with it • the use of examples which draw on information from different approaches to the management of climate change to back up the argument • a clear response that is organised and structured.
2	**3-4 marks** A basic evaluation which demonstrates: • some knowledge and understanding of global, national and local management of climate change • an imbalanced approach • partial use of examples and/or draws on information from one approach to the management of climate change • a generally clear and structured response.
1	**1-2 marks** A limited evaluation which demonstrates: • minimal knowledge and understanding of global, national and local management of climate change • a one sided approach • no use of examples • a lack of clarity in parts, and statements that are linked by a basic structure.
0	No response attempted or nothing worthy of credit.

Question		Answer	AO1	AO2	AO3	Total Mark
4.	(a)	Describe the location of the Great Pacific Garbage Patch (GPGP) in the Pacific Ocean, using Map 5.				
		Award **one** mark for each description up to a maximum of **four** marks: • 300km (1) W/WSW of California (1) • 350km (1) NE of Hawaii (1) • Between 153°W - 133°W (1) and 26°N - 38°N (1).		4		4
	(b)	Describe how waste, like plastic, ends up in the oceans.				
		Award **one** mark for a basic description, for example: • People drop litter on the ground which can wash into the oceans. • Plastic does not decompose. • There is no recycling facility. • Plastic comes from boats/ships. • Too much single use plastic. Award **two** marks for a developed description, for example: • Littering leads to plastic entering rivers. • Plastic do not decompose they break up into smaller pieces of plastic. • Lack of proper recycling facilities can lead to plastic pollution in the environment. • Shipping/fishing activities can result in plastic pollution through accidental spills. • Single use plastic is often not disposed of properly. Award **three** marks for a fully developed description, for example: • Littering leads to plastic entering rivers which flow into the ocean. • Plastic do not decompose they break up into smaller pieces of plastic which can be blown or washed into the sea. • Lack of proper recycling facilities can lead to plastic pollution in the environment which can end up in rivers/seas. • Shipping/fishing activities can result in plastic pollution through accidental spills lost fishing gear going directly into the ocean. • Single use plastic is often not disposed of properly and ends up in the rivers/sea. Credit any other valid response.	3			3

	(c)	Explain why plastic and other pollution becomes concentrated into large patches in the oceans, as seen with the Great Pacific Garbage Patch in Map 5.				
		Award **one** mark for a basic explanation, for example: • Ocean currents and/or surface winds cause rubbish to be concentrated in one place. Award **two** marks for a developed explanation, for example: • Ocean circulation/currents and surface winds create gyres that rotate in a circular pattern leading to the accumulation of rubbish in one place. Credit any other valid response.		2		2
	(d)	Explain actions individuals can take to help reduce the amount of plastic waste, like the waste found in the Great Pacific Garbage Patch, reaching the oceans.				

Indicative Content

Reduce use of single use plastics e.g. carrier bags, plastic bottles etc.
Reuse where possible e.g.using reusable bottles reduces an individual's plastic footprint.
Recycle properly – separate waste so that it can be effectively recycled. This keeps plastic out of landfill and the ocean.
Avoid microbeads – don't buy products e.g. toothpaste, cosmetics etc. containing microbeads as they can easily get into rivers and be ingested by marine wildlife, entering the food chain.
Participate in beach cleanups – Removing plastic and other waste from beaches and enables it to be recycled properly.
Safe plastic disposal e.g. making sure all plastic is disposed of carefully so that it does go to be incinerated/ landfill and not end up in the ocean, or is transported to other countries where it is not processed appropriately.
Support sustainable and ethical businesses – buy recycled produce and from companies that have little packaging wate that can't be properly recycled/composted.
Educate themselves and others – stay informed and teach others about the issues of plastic waste to encourage waste reduction in their community.
Advocate for change – support policies and initiatives to reduce waste. Be an active voice in the community and lobby the government for further legislation.

Credit any other valid response.

Band	AO2
3	**5-6 marks** A very good explanation which demonstrates: • a clear understanding of actions individuals can take to reduce the amount of plastic entering oceans • developed reasoning that explains how individual actions can reduce plastic pollution • a clear response that has purpose, is organised and well structured.
2	**3-4 marks** A good explanation which demonstrates: • an understanding of actions individuals can take to reduce the amount of plastic entering oceans • some reasoning that explains how individual actions can reduce plastic pollution • a clear response that is organised and structured • if only one action is explained in detail, then maximum mark is 3 marks.
1	**1-2 marks** A basic explanation which demonstrates: • simple statements that show limited understanding of actions individuals can take to reduce the amount of plastic entering oceans • little attempt to explain or develop reasoning • meaning that may lack clarity in parts, and statements that are linked by a basic structure.
0	No response attempted or nothing worthy of credit.

Mapping of questions to specification content and assessment objectives: Unit 3

Question			Topic and Section																		Total Marks	AO1 Marks	AO2 Marks	AO3 Marks
			3.1				3.2						3.3		3.4				3.5					
			3.1.1	3.1.2	3.1.3	3.1.4	3.2.1	3.2.2	3.2.3	3.2.4	3.2.5	3.2.6	3.3.1	3.3.2	3.4.1	3.4.2	3.4.3	3.4.4	3.5.1	3.5.2				
1	a		1																		1	1		
	b		3																		3		3	
	c		4																		4		4	
	d				2																2	2		
	e				4																4	4		
	f				3																3			3
	g					2															2			2
	h					10															10			10
2	a											1									1	1		
	b											4									4	4		
	c	(i)											1								1	1		
		(ii)											6								6	6		
	d													6							6			6
3	a															4					4	4		
	b														4						4	4		
	c																	5			5		5	
	d																	2			2			2
	e																	6			6		6	

	f																		7		7			7
4	a																			4	4		4	
	b																			3	3	3		
	c																			2	2		2	
	d																			6	6		6	
																			Total marks		90	30	30	30