Oxford Cambridge and RSA

GCE

Geography

H081/02: Geographical debates

AS Level

Mark Scheme for June 2023

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

MARKING INSTRUCTIONS

PREPARATION FOR MARKING
RM ASSESSOR

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Assessor Online Training*; *OCR Essential Guide to Marking*.

2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are posted on the RM Cambridge Assessment Support Portal http://www.rm.com/support/ca

3. Log-in to RM Assessor and mark the **required number** of practice responses ("scripts") and the **number of required** standardisation responses.

   YOU MUST MARK 10 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

MARKING

1. Mark strictly to the mark scheme.

2. Marks awarded must relate directly to the marking criteria.

3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.

4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone or the RM Assessor messaging system, or by email.

5. **Crossed Out Responses**
   Where a candidate has crossed out a response and provided a clear alternative then the crossed out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed out response where legible.

   Rubric Error Responses – Optional Questions
   Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM assessor, which will select the

highest mark from those awarded. *(The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)*

Multiple Choice Question Responses
When a multiple choice question has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).
When a question requires candidates to select more than one option/multiple options, then local marking arrangements need to ensure consistency of approach.

Contradictory Responses
When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only **one mark per response**)
Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. *(The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)*

Short Answer Questions (requiring a more developed response, worth **two or more marks**)
If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space.)

Longer Answer Questions (requiring a developed response)
Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there, then add a tick to confirm that the work has been seen.

7. Award No Response (NR) if:

- there is nothing written in the answer space

Award Zero '0' if:

- anything is written in the answer space and is not worthy of credit (this includes text and symbols).

Team Leaders must confirm the correct use of the NR button with their markers before live marking commences and should check this when reviewing scripts.

8. The RM Assessor **comments box** is used by your team leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**
   If you have any questions or comments for your team leader, use the phone, the RM Assessor messaging system, or e-mail.

9. *Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.*

10. For answers marked by levels of response: Not applicable in F501
    a. **To determine the level** – start at the highest level and work down until you reach the level that matches the answer
    b. **To determine the mark within the level**, consider the following

Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

11. **Annotations**

Annotation	Meaning
	Highlight
	Off page comment
	Omission
	Indicates questionable points / comments
	Rubric error (place at start of Question not being counted)
	Level 1
	Level 2
	Level 3
	Level 4
	Development of point
	Irrelevant; a significant amount of material that does not answer the question
	Point has been seen and noted
	No Examples
	Must be used on all blank pages where there is no candidate response
	Evaluation
	Highlighting an issue e.g. irrelevant paragraph. Use in conjunction with another stamp e.g IRRL

Question			Answer	Mark	Guidance
1	(a)		Explain how **two** mitigation strategies can cut global emissions of greenhouse gases. • Energy efficiency and conservation (✓) means that less carbon dioxide is produced by the burning of fossil fuels for energy (DEV) • Fuel shifts and low-carbon energy stores (✓) means that less carbon dioxide is produced by the burning of fossil fuels for energy (DEV) • Carbon capture and storage (CCS) (✓) the carbon dioxide that is released is sequestered and therefore removed from the atmosphere (DEV) • Forestry strategies (✓) atmospheric carbon dioxide is sequestered via photosynthesis (DEV) • Banning of CFCs (✓) has led to a sudden reduction in the amount of CFCs in the atmosphere which are a particularly potent greenhouse gas (DEV) • Biogas (✓) involves the use of methane as a waste product to produce energy which reduces its prevalence in the atmosphere (DEV)	**4** **AO1x4**	**AO1 – 4 marks** 2 x 1 mark (✓) for each correct mitigation strategy. 2 x 1 mark (DEV) for each explanatory point. Focus should be on the knowledge and understanding of how the mitigation strategies can cut global emissions of greenhouse gases.
1	(b)		**Examine how the public image of climate change can be shaped by different interest groups.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of the public image of climate change (AO1). Where appropriate, **place specific details** should be **accurate**. Demonstrates **thorough** application of knowledge and understanding to provide an **accurate, clear** and **developed** analysis as to how the public image of climate change can be shaped by different interest	**6** **AO1x3** **AO2x3**	**Indicative content** **AO1 - 3 marks** Knowledge and understanding of the public image of climate change could potentially include: • Climate change being of increasing concern as demonstrated by the rise of veganism and environmental activism • Climate change being too far gone to act upon, leading to a sense of powerlessness and apathy • Climate change being debatable leading to scepticism and denial

			groups (AO2). **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the public image of climate change (AO1). Where appropriate, **place specific** material is present which is **partially accurate.** Demonstrates **reasonable** application of knowledge and understanding to provide a **sound** analysis showing some accuracy and development as to how the public image of climate change can be shaped by different interest groups (AO2). **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the public image of climate change (AO1). If appropriate, little or no **place specific** material is present and / or is **inaccurate**. Demonstrates **basic** application of knowledge and understanding to provide a **simple analysis** showing limited accuracy and little development as to how the public image of climate change can be shaped by different interest groups (AO2). **0 marks** No response or no material worthy of credit.		**AO2 - 3 marks** Application of knowledge and understanding to analyse how the public image of climate change can be shaped by different interest groups could potentially include: • the public image of climate change being of increasing concern has been shaped by documentaries such as those by David Attenborough • the public image of climate change as being controversial and up-for-debate is in part shaped by the media; newspapers often hold political bias and the public will adopt attitudes about climate change which reflect the media that they consume • the controversy surrounding climate change has also been shaped by influential political figures such as Donald Trump who claim that climate change is not occurring/ climate change is not human-induced/ economic progress is a greater priority • the public image of climate change as topical and polarising attitudes towards it has been shaped by environmental activists such as Greta Thunberg and Extinction Rebellion Reference to specific countries, newspapers, NGOs, politicians might help to support a response.
1	**(c)**	**(i)**	**Study <u>Fig.1</u> which shows the global distribution of carbon dioxide emissions per capita in 2018.** **With reference to Fig.1 describe the global distribution of carbon dioxide emissions per capita.**	**4** **AO3x4**	**AO3 – 4 marks** 4 x 1 mark (✓) for each piece of evidence from Fig.1 that describes a feature of the global distribution of carbon dioxide per capita.

			• highest in the Persian Gulf (UAE, Kuwait and Qatar) with >20t per capita (✓) • high in the USA, Canada, Australia, Saudi Arabia and Kazakhstan with between 15 and 20t per capita (✓) • lowest in central Africa with <1t per capita (✓) • South America has relatively low levels as a continent with between 1 and 5t per capita (✓) • higher per capita emissions generally in ACs and lower levels in LIDCs (✓) • Anomalies include Kazakhstan and Canada which has unexpectedly high per capita emissions (✓)		
1	**(c)**	**(ii)**	**Using evidence from Fig.1, analyse possible reasons for the variation in carbon dioxide emissions per capita shown.** **Level 3 (5-6 marks)** Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 (AO2). Demonstrates **thorough** investigation and interpretation of the resource to fully evidence the variation in carbon dioxide emissions per capita. There must be strong ideas linking resource evidence to the possible reasons for variation in carbon dioxide emissions per capita in Fig.1 (AO3). **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 (AO2).	**6** **AO2x3** **AO3x3**	**Indicative content** **AO2 - 3 marks** Application of knowledge and understanding to analyse reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 could potentially include: • use of energy-dependent technologies requiring the burning of fossil fuels for energy and therefore carbon dioxide emissions • countries with a high number of cars, particularly older vehicles and a lack of efficient and affordable public transport, will have higher carbon dioxide levels • oil extraction/ production countries releasing high amounts of carbon dioxide • island nations are likely to have higher carbon dioxide per capita levels due to more transport and freight • environmental regulation (energy efficiency, conservation and sequestration schemes) can lower average amounts, often in ACs • Land clearance and deforestation may increase levels in some LIDCs and EDCs

			Demonstrates **reasonable** investigation and interpretation of the resource to fully evidence the variation in carbon dioxide emissions per capita. There must be good ideas linking resource evidence to the possible reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 (AO3). **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 (AO2). Demonstrates **basic** investigation and interpretation of the resource to fully evidence the variation in carbon dioxide emissions per capita shown in Fig.1 There must be some ideas linking resource evidence to possible reasons for the variation in carbon dioxide emissions per capita shown in Fig.1 (AO3). **0 marks** No response or no material worthy of credit.		• EDCs industrialising and producing carbon dioxide through secondary industries – demand often coming from ACs • LIDCs which are pre-industrial will have very low carbon dioxide per capita levels due to a lack of energy demand **AO3 - 3 marks** Evidence from investigation and interpretation of the data in Fig.1 could potentially include: • AC countries such as the USA and Australia having high energy demand e.g. lights, heating, modern technologies etc • recognition of the Persian Gulf and Canada being involved in oil extraction and production • Australia is likely to have higher carbon dioxide per capita levels linked to transport and freight, and mining operations • Some AC countries (Portugal, Sweden) have lower carbon dioxide per capita levels than others perhaps due to environmental laws • Land clearance and deforestation may increase levels in some EDCs due to less sequestration • EDCs (South Africa, China) industrialising and producing carbon dioxide through secondary industries – demand often coming from ACs – and cement production DRC/ CAR having an average of 1t or less per capita due to little energy demand as pre-industrial countries/ LIDCs
1	**(d)**		**'The environmental impacts of climate change present greater threats than the socio-economic impacts.' Discuss in the context of <u>one</u> EDC or LIDC.** **Level 4 (10–12 marks)**	**12** **AO1x6** **AO2x6**	**Indicative content** **AO1 - 6 marks** Knowledge and understanding of environmental and socio-economic impacts of climate change in an LIDC or

			Demonstrates **comprehensive** and accurate knowledge and understanding of environmental and socio-economic impacts of climate change in an LIDC or EDC (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and convincing evaluation offering secure judgements leading to rational conclusions that are evidence based as to whether environmental or socio-economic impacts of climate change present greater threats in an LIDC or EDC (AO2). **Level 3 (7-9 marks)** Demonstrates **thorough** and mainly accurate knowledge and understanding of environmental and socio-economic impacts of climate change in an LIDC or EDC (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation offering generally secure judgements with some link between rational conclusions and evidence as to whether environmental or socio-economic impacts of climate change present greater threats in an LIDC or EDC (AO2). **Level 2 (4-6 marks)** Demonstrates **reasonable** and some accurate knowledge and understanding of environmental and socio-economic impacts of climate change in an LIDC or EDC (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation offering generalised judgements and conclusions with limited links to evidence as to as to whether environmental or socio-economic impacts of climate change present greater threats in an LIDC or EDC (AO2). **Level 1 (1-3 marks)** Demonstrates **basic** and/or inaccurate knowledge and		EDC could potentially include: Environmental impacts: • regional climate – factors such as temperature, rainfall, relative humidity • diseases – changes in regional climates could see the introduction of diseases e.g. malaria into particular areas • sea level rise – warming oceans are likely to cause rising sea levels; average sea levels have already risen by 0.2m since 1880 – this can have wider impacts such as coastal erosion and flooding • habitat loss – heat stress on vegetation can affect entire ecosystems • glacier melt – increased ablation due to higher temperatures will see glaciers shrink • positive feedback – changes in the environment can lead to worsening climate change e.g. heat stress of vegetation causing increased rates of decomposition and carbon dioxide emissions Socio-economic impacts: • primary industries, particularly agriculture, will see a decline due to more failed harvests and disease spread • urbanisation as primary industries become less secure • migration – abandoned villages due to failed agriculture or a lack of water • more sea defences needed to address sea level rise which is costly • healthcare costs as diseases spread

			understanding of environmental and socio-economic impacts of climate change in an LIDC or EDC (AO1). Demonstrates **basic** application of knowledge and understanding offering either unsupported or minimal if any evaluation. Judgements and conclusions, if any, are simplistic as to whether environmental or socio-economic impacts of climate change present greater threats in an LIDC or EDC (AO2). **0 marks** No response or no material worthy of credit.		**AO2 - 6 marks** Application of knowledge and understanding to analyse and evaluate whether environmental or socio-economic impacts of climate change present greater threats in an LIDC or EDC could potentially include: • evaluation of importance of environmental impacts • evaluation of importance of socio-economic impacts • idea that environmental and socio-economic impacts affect one another • consideration that impacts can change over time • consideration that impacts can vary in importance at different scales within the country • significance of the various impacts depends on the case study in question; the relative significance of the factors might be viewed in terms of size / extent of area affected, demographic characteristics such as population density and age structure, income levels and employment structure, housing, access to medical care, landscape features which may experience changes due to climate change e.g. coastal, river flood plain, drought frequency. An example of case material could be Bangladesh.

Question			Answer	Mark	Guidance
2	(a)		**Explain how <u>two</u> socio-economic barriers can limit the spread of disease.** • medical health checks (✓) conducted at political borders to check international movement of carriers of infectious disease (DEV) • quarantine / curfews / track and trace (✓) limit contact between people which can control spread of disease (DEV) • social distancing / wearing face masks in public / cancelling public events (✓) spread of viruses can be checked by these precautions to minimise social contact (DEV) • mass vaccination programmes (✓) protect populations against diseases such as flu (DEV) • health education (✓) to increase public awareness of social precautions or need for cleanliness such as hand washing (DEV) • Cost of access to medical facilities for testing of non-symptomatic illnesses to stop the spread of the disease.	**4** **AO1x4**	**AO1 – 4 marks** 2 x 1 mark (✓) for each correct socioeconomic barrier 2 x 1 mark (DEV) for each explanatory point. Focus should be on the knowledge and understanding of how the socioeconomic barriers limit the spread of disease.
2	(b)		**Examine how zoonotic infectious diseases can be spread from animals to humans.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of zoonotic infectious diseases (AO1). Where appropriate, **place specific details** should be **accurate**.	**6** **AO1x3** **AO2x3**	**Indicative content** **AO1 - 3 marks** Knowledge and understanding of zoonotic infectious diseases could potentially include: • those caused by bacteria such as salmonella, anthrax, E. coli, leptospirosis • diseases caused by viruses such as rabies, avian flu, Ebola

			Demonstrates **thorough** application of knowledge and understanding to provide an **accurate, clear** and **developed** analysis as to how zoonotic infectious disease can be spread from animals to humans (AO2). **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of zoonotic infectious diseases (AO1). Where appropriate, **place specific** material is present which is **partially accurate.** Demonstrates **reasonable** application of knowledge and understanding to provide a **sound** analysis showing some accuracy and development as to how zoonotic infectious disease can be spread from animals to humans (AO2). **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of zoonotic infectious diseases (AO1). If appropriate, little or no **place specific** material is present and / or is **inaccurate**. Demonstrates **basic** application of knowledge and understanding to provide a **simple analysis** showing limited accuracy and little development as to how zoonotic infectious disease can be spread from animals to humans (AO2). **0 marks** No response or no material worthy of credit.		• those caused by parasites, or by fungi **AO2 - 3 marks** Application of knowledge and understanding to analyse how zoonotic infectious disease can be spread from animals to humans could potentially include: • direct contact of humans with animals such as dog or bat bite which could spread a virus such as rabies; this could occur where urbanisation creates suitable habitats for animals such as foxes, racoons and skunks; or where movement of infected wild animals is unrestricted by physical barriers or by political boundaries in the case of domestic animals • through insect vector bites such as mosquitos that transmit yellow fever; this could occur where hygiene and sanitation are poor such as contaminated drinking water or man-made habitats e.g. surface pools, ponds, that encourage insect vectors to breed • where there is prolonged contact between humans and animals such as poultry farms and avian flu or cattle farming and anthrax • spread of infections is more likely where controls on the movement of diseased domestic animals within a country are ineffective or where vaccination of pets and domestic livestock is sparse Reference to urban areas, and / or remote rural areas in some parts of Africa or Asia might help to support a response

2	(c)	(i)	**Study <u>Fig.2</u> which shows the global distribution of cardio-vascular disease (CVD) mortality, 2017.** **With reference to <u>Fig.2</u> describe the global distribution of CVD mortality.** • highest mortality rates in central Asia >600 (✓) • high rates in northeast Africa >500 (✓) • high rates in eastern Europe, sub-Saharan Africa and southeast Asia, between 400 + 600 (✓) • high rates in states of former USSR >400 (✓) • lowest mortality rates in east Asia, Andean states and southwest Europe <100 (✓) • low rates in northwest Europe, Australasia, north, central and south America, between 100 + 300 (✓) • higher rates in low- and middle-income countries / lower rates in high income countries (✓)	**4** **AO3x4**	**AO3 – 4 marks** 4 x 1 mark (✓) for each piece of evidence from Fig.2 that describes a feature of the global distribution of CVD mortality.
2	(c)	(ii)	**Using evidence from <u>Fig.2</u>, analyse possible reasons for the variation in CVD mortality rates.** **Level 3 (5-6 marks)** Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for variation in CVD mortality rates shown in Fig.2 (AO2). Demonstrates **thorough** investigation and interpretation of the resource to fully evidence variation in CVD mortality rates. There must be strong ideas linking resource evidence to the possible reasons for variation in CVD mortality rates shown in Fig.2 (AO3). **Level 2 (3-4 marks)**	**6** **AO2x3** **AO3x3**	**Indicative content** **AO2 - 3 marks** Application of knowledge and understanding to analyse possible reasons for variation in CVD mortality rates shown in Fig.2 could potentially include: • higher prevalence / greatest risk where premature death from CVD can be linked to lifestyle, particularly to tobacco consumption, harmful use of alcohol, unhealthy diet, obesity and physical inactivity • higher prevalence where governments have less capacity to control and prevent CVD, for example where lower levels of investment in public health • higher incidence where there is poor access to health care services including education • higher prevalence where other contributory factors including hereditary factors, stress and poverty

			Demonstrates **reasonable** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for variation in CVD mortality rates shown in Fig.2 (AO2). Demonstrates **reasonable** investigation and interpretation of the resource to fully evidence variation in CVD mortality rates. There must be good ideas linking resource evidence to the possible reasons for variation in CVD mortality rates shown in Fig.2 (AO3). **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for variation in CVD mortality rates shown in Fig.2 (AO2). Demonstrates **basic** investigation and interpretation of the resource to fully evidence variation in CVD mortality rates shown in Fig.2. There must be some ideas linking resource evidence to the possible reasons for variation in CVD mortality rates shown in Fig.2 (AO3).		**AO3 - 3 marks** Evidence from investigation and interpretation of the data in Fig.2 could potentially include: • Eastern European / other former USSR states - high proportion of population affected by contributory lifestyle factors especially high consumption of alcohol and tobacco • Sub-Saharan Africa and southeast Asia – where less access to effective and equitable health care, causing late detection, limited treatment and premature death relative to high-income countries • Eastern Asia, Southwest Europe and Andean states - dietary factors/lower alcohol use contribute to healthier lifestyle and lower CVD mortality rates • Northwest Europe, North America, Australasia – ACs, lower CVD mortality rates as levels of government investment in health enable more successful intervention including health policies that create conducive environments for making healthy choices affordable plus the motivation for people to sustain healthy behaviour.
2	**(d)**		**'Environmental factors are the main cause of communicable disease.' Discuss in the context of <u>one</u> communicable disease in either an LIDC or EDC.** **Level 4 (10–12 marks)** Demonstrates **comprehensive** and accurate knowledge and understanding of environmental and other causes of one communicable disease in an LIDC or EDC (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and convincing evaluation offering secure judgements leading to rational conclusions that are evidence based as to whether environmental factors are the main cause of one	**12** **AO1x6** **AO2x6**	**Indicative content** **AO1 - 6 marks** Knowledge and understanding of environmental and other causes of one communicable disease in an LIDC or EDC could potentially include: Environmental factors: • climate – factors such as temperature, rainfall, relative humidity that might influence habitats of disease vectors (e.g., airborne disease – spread of infectious micro-organisms/droplets through the air) • altitude and relief – factors that might influence temperature and rainfall regimes and seasonal

			communicable disease in an LIDC or EDC (AO2). **Level 3 (7-9 marks)** Demonstrates **thorough** and mainly accurate knowledge and understanding of environmental and other causes of one communicable disease in an LIDC or EDC (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation offering generally secure judgements with some link between rational conclusions and evidence as to whether environmental factors are the main cause of one communicable disease in an LIDC or EDC (AO2). **Level 2 (4-6 marks)** Demonstrates **reasonable** and some accurate knowledge and understanding of environmental and other causes of one communicable disease in an LIDC or EDC (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation offering generalised judgements and conclusions with limited links to evidence as to as to whether environmental factors are the main cause of one communicable disease in an LIDC or EDC (AO2). **Level 1 (1-3 marks)** Demonstrates **basic** and/or inaccurate knowledge and understanding of environmental and other causes of one communicable disease in an LIDC or EDC (AO1). Demonstrates **basic** application of knowledge and understanding offering either unsupported or minimal if any evaluation. Judgements and conclusions, if any, are simplistic as to whether environmental factors are the main cause of one communicable disease in an LIDC or EDC (AO2).		variation in disease incidence • climate change and its influence on the spread of emerging infectious diseases • natural hazards – such as flooding that can lead to spread of typhoid or the impact of earthquakes on incidence of cholera Human factors: • poverty – households and / or governments • urbanisation • housing quality – inadequate sanitation, limited access to clean drinking water • population – density, movement • irrigation schemes • misuse of medical drugs as parasites develop immunity • cultural practices **AO2 - 6 marks** Application of knowledge and understanding to analyse and evaluate whether environmental factors are the main cause of one communicable disease in an LIDC or EDC (AO2).could potentially include: • evaluation of importance of environmental factors • evaluation of importance of human factors • idea that disease may be caused by a combination of factors • consideration that factors can change over time • consideration that factors can vary in importance at different scales within the country • significance of the various factors depends on the specific type of communicable disease; the relative significance of the factors might be viewed in terms of size / extent of area affected, number of people affected, their wealth, housing, access to medical

			0 marks No response or no material worthy of credit.		care, extent of financial impacts on government response One example of case material could be causes of Malaria in Ethiopia.

Question			Answer	Mark	Guidance
3	(a)		**Explain <u>two</u> threats of rising ocean temperature to coral ecosystems.** • bleaching / coral mortality (✓) symbiotic relationship between coral polyps and algae is disturbed; algae are expelled depriving coral of its colour (DEV) • biodiversity reduced / food webs disrupted (✓) increasing depth of water through thermal expansion reduces light required by algae for photosynthesis (DEV) • physical damage to reef structure (✓) increased wave energy from greater number of more intense tropical storms / hurricanes (DEV) • rate of coral growth decreases / structural integrity weakened (✓) acidification causes calcification to decline, difficult for coral to build hard exoskeletons since warmer water becomes more acidic (DEV)	**4** **AO1x4**	**AO1 – 4 marks** 2 x 1 mark (✓) for each correct threat 2 x 1 mark (DEV) for each explanatory point. Focus should be on the knowledge and understanding of the threats of rising ocean temperature to coral ecosystems.
3	(b)		**Examine how the accumulation of plastic in oceans can have impacts on marine ecosystems.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of the accumulation of plastic in oceans (AO1). Where appropriate, **place specific details** should be **accurate**. Demonstrates **thorough** application of knowledge and understanding to provide an **accurate, clear** and **developed** analysis as to how the accumulation of plastic in oceans can have impacts on marine ecosystems (AO2).	**6** **AO1x3** **AO2x3**	**Indicative content** **AO1 - 3 marks** Knowledge and understanding of the accumulation of plastic in oceans could potentially include: • sources include rivers, beaches, vessels • a persistent, long-term problem (as well as short term impacts); plastic does not biodegrade but breaks down into microplastics • accumulation occurs in ocean gyres, such as North Pacific, at and below the surface • dispersal; microplastics found on shorelines of all continents and in increasing range of marine organisms

			Level 2 (3-4 marks) Demonstrates **reasonable** knowledge and understanding of the accumulation of plastic in oceans (AO1). Where appropriate, **place specific** material is present which is **partially accurate.** Demonstrates **reasonable** application of knowledge and understanding to provide a **sound** analysis showing some accuracy and development as to how the accumulation of plastic in oceans can have impacts on marine ecosystems (AO2). **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the accumulation of plastic in oceans (AO1). If appropriate, little or no **place specific** material is present and / or is **inaccurate**. Demonstrates **basic** application of knowledge and understanding to provide a **simple analysis** showing limited accuracy and little development as to how the accumulation of plastic in oceans can have impacts on marine ecosystems (AO2). **0 marks** No response or no material worthy of credit.		**AO2 - 3 marks** Application of knowledge and understanding to analyse how the accumulation of plastic in oceans can have impacts on marine ecosystems could potentially include: • physical impact on marine creatures causing death and injury, such as plastic fishing nets causing seals, turtles, sharks to drown; affects all trophic levels within marine ecosystems • spread of invasive marine organisms and bacteria; floating plastics can damage and lead to mortality of coral reef ecosystems by introducing harmful bacteria and by blocking light and oxygen • chemical impact on marine organisms that ingest pollutant chemicals which attach to floating plastics; can be very toxic when accumulation reaches high levels within the food chain • microplastics / plastic nurdles can be ingested by fish and sea birds, such as Shearwater; small pieces of plastic accumulate within the food chain and food webs causing high levels of mortality amongst all organisms in marine ecosystems • larger marine creatures such as seabirds, whales, turtles die of starvation as their stomachs are filled with plastic which they have mistaken for prey
3	**(c)**	**(i)**	**Study <u>Fig.3</u> which shows the global pattern of principal shipping routes across the oceans.** **With reference to <u>Fig.3</u> describe the global pattern of principal shipping routes across the oceans.** • overall circum-global route linking Pacific Asia, Europe and North America, (via Strait of Malacca, Suez Canal and Panama Canal) (✓) • northern transatlantic route linking North America and Europe (✓)	**4** **AO3x4**	**AO3 – 4 marks** 4 x 1 mark (✓) for each piece of evidence from Fig.3 that describes a feature of the global pattern of principal shipping routes across oceans.

			• northern transpacific route linking Pacific Asia and North America (✓) • trans Indian Ocean routes linking Pacific Asia and Europe, and Pacific Asia and the Middle East (✓) • a long coastal and transatlantic route between eastern South America and Europe (✓) • other coastal routes such as the west coast of North America, the east coasts of China and Japan, and the Scandinavia and the Baltic states (✓)		
3	**(c)**	**(ii)**	**Using evidence from Fig.3, analyse factors that influence the pattern of principal shipping routes across the oceans.** **Level 3 (5-6 marks)** Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to factors that influence the pattern of principal shipping routes (AO2). Demonstrates **thorough** investigation and interpretation of the resource to fully evidence factors that influence the pattern of principal shipping routes. There must be strong ideas linking resource evidence to factors that influence the pattern of principal shipping routes (AO3). **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to factors that influence the pattern of principal shipping routes (AO2). Demonstrates **reasonable** investigation and interpretation of the resource to fully evidence factors that influence the pattern of principal shipping routes. There must be good ideas linking resource evidence to factors that influence the pattern of principal shipping routes (AO3).	**6** **AO2x3** **AO3x3**	**Indicative content** **AO2 - 3 marks** Application of knowledge and understanding to analyse factors that influence the pattern of principal shipping routes could potentially include: • political factors such as: ○ political borders; including maritime borders and ocean management according to UNCLOS ○ construction of Suez and Panama canals; two significant maritime shortcuts ○ investment in port facilities; especially deep water ports to handle large container ships ○ geopolitical conflict; for example attacks / blocking of shipping in the Red Sea • socio-economic factors such as: ○ size of a market served by a port; such as high demand from areas of large / wealthy population ○ ports serving hinterlands that supply / produce manufactured goods / raw materials • physical factors such as: ○ shape of coastlines e.g. Cape Horn or Cape of good Hope ○ winds and ocean currents ○ water depth / presence of off-shore reefs

			Level 1 (1-2 marks) Demonstrates **basic** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to factors that influence the pattern of principal shipping routes (AO2). Demonstrates **basic** investigation and interpretation of the resource to fully evidence factors that influence the pattern of principal shipping routes. There must be some ideas linking resource evidence to factors that influence the pattern of principal shipping routes (AO3).		○ sea ice and icebergs, including impacts of climate change such as in the Arctic **AO3 - 3 marks** Evidence from investigation and interpretation of Fig.3 could potentially include: • routes between N. America and Europe linked to large wealthy population (demand) and major areas of production(supply) • Suez and Panama Canals linked to reduction in shipping distances and time for many major east-west routes • routes around Arabian peninsula, for example, shaped by coastline configuration • location of major deep water ports in Pacific Asia, Europe and N. America e.g. Singapore, Felixstowe, capable of handling large container ships • polar routes have been avoided in the past where sea ice and icebergs are constraints
3	**(d)**		**'Sea level change is the main threat to island communities.' Discuss in the context of <u>one</u> island community.** **Level 4 (10–12 marks)** Demonstrates **comprehensive** and accurate knowledge and understanding of threats to island communities caused by sea level change and other factors (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and convincing evaluation offering secure judgements leading to rational conclusions that are evidence based as to as to whether sea level change is the main threat to one island community (AO2). **Level 3 (7-9 marks)**	**12** **AO1x6** **AO2x6**	**Indicative content** **AO1 - 6 marks** Knowledge and understanding of threats to island communities caused by sea level change and other factors could potentially include: Threats from rising sea level: • fresh water for domestic use in reduced supply as aquifers contaminated by salt water • tourist areas such as beaches lost to the sea increases unemployment and increases out-migration • loss of agricultural land by marine incursion, reduction in agricultural productivity plus contaminated / toxic irrigation water • damage to coral reefs, reduces their effectiveness as natural coastal defences, and

			Demonstrates **thorough** and mainly accurate knowledge and understanding of threats to island communities caused by sea level change and other factors (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation offering generally secure judgements with some link between rational conclusions and evidence as to whether sea level change is the main threat to one island community (AO2). **Level 2 (4-6 marks)** Demonstrates **reasonable** and some accurate knowledge and understanding of threats to island communities caused by sea level change and other factors (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation offering generalised judgements and conclusions with limited links to evidence as to as to whether sea level change is the main threat to one island community (AO2). **Level 1 (1-3 marks)** Demonstrates **basic** and/or inaccurate knowledge and understanding of threats to island communities caused by sea level change and other factors (AO1). Demonstrates **basic** application of knowledge and understanding offering either unsupported or minimal if any evaluation. Judgements and conclusions, if any, are simplistic as to whether sea level change is the main threat to one island community (AO2). **0 marks** No response or no material worthy of credit.		loss of fish stocks which are important source of income and protein Threats from other factors: • overpopulation as a result of rate of high natural increase puts pressure on island resources • warming oceans can increase the risk of damage to life, livelihoods and property from more intensive tropical storms • age selective net migration loss, deprives islands of the most fit and active labour force and causes family / community upheaval • acidification of ocean water is threat to fish stock • unemployment, poverty, health • poverty of national government and inability to respond adequately to the problems without aid **AO2 - 6 marks** Application of knowledge and understanding to analyse and evaluate whether sea level change is the main threat to one island community could potentially include: • an evaluation of the threats arising from sea level change • an evaluation of the threats from other factors inherent in small low lying island communities • the threats to island communities can be economic, social, environmental and political; for example the relative significance of the threats might be viewed in terms of the size / extent of the area affected, the number of people affected and the wealth, employment opportunities and housing of the island population, and the extent of the financial impacts on government wealth and ability to support the population / respond to the problems • consideration that many of the threats from sea level rise and other factors are interlinked

					• threats can vary in significance over time; they might be a risk in the short-term or in the long-term or both One example of case material could be the variety of threats facing the Maldives in the Indian Ocean.

Question			Answer	Mark	Guidance
4	(a)		**Explain <u>two</u> health issues that are associated with food shortages.** • underweight / thin for height (✓) low daily calorific intake / limited access to protein - inadequate energy for normal activity such as subsistence agriculture / low productivity (DEV) • undernutrition / susceptible to disease (✓) lack of vitamin A in diet causes reduced resistance to infection or lack vitamin C, slow healing of wounds (DEV) • poor maternal and infant health (✓) limited access to balanced diet as a result of limited food supply and / or education and / or poverty (DEV) • low life expectancy (✓) result of famine / starvation linked to environmental change, or prevalence of any nutrient deficiency / malnutrition diseases (DEV)	**4** **AO1x4**	**AO1 – 4 marks** 2 x 1 mark (✓) for each appropriate health issue 2 x 1 mark (DEV) for each explanatory point. Focus should be on the knowledge and understanding of health issues associated with food shortages.
4	(b)		**Examine how geographical pinchpoints in supply chains can increase risks to food security.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of geographical pinchpoints in supply chains that can increase risks to food security (AO1). Where appropriate, **place specific details** should be **accurate**. Demonstrates **thorough** application of knowledge and understanding to provide an **accurate, clear** and **developed** analysis as to how geographical pinchpoints in supply chains can increase risks to food security	**6** **AO1x3** **AO2x3**	**Indicative content** **AO1 - 3 marks** Knowledge and understanding of geographical pinchpoints in supply chains that can increase risks to food security could potentially include: • locations where flow of goods in the food supply chain is disrupted placing food security at risk • at any stage in supply chain - production / supply, transport / import, export, consumption / demand • at a range of scales- local, national, regional, global **AO2 - 3 marks**

			(AO2) **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of geographical pinchpoints in supply chains that can increase risks to food security (AO1). Where appropriate, **place specific** material is present which is **partially accurate.** Demonstrates **reasonable** application of knowledge and understanding to provide a **sound** analysis showing some accuracy and development as to how geographical pinchpoints in supply chains can increase risks to food security (AO2). **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of geographical pinchpoints in supply chains that can increase risks to food security (AO1). If appropriate, little or no **place specific** material is present and / or is **inaccurate**. Demonstrates **basic** application of knowledge and understanding to provide a **simple analysis** showing limited accuracy and little development as to how geographical pinchpoints in supply chains can increase risks to food security (AO2). **0 marks** No response or no material worthy of credit.		Application of knowledge and understanding to analyse how geographical pinchpoints in supply chains can increase risks to food security could potentially include: • environmental risk: hazard event such as a hurricane could affect amount and / or quality of food production at local, regional or national scale in the case of island nations; a volcanic ash cloud, effects of earthquake, flooding could restrict transport / import of foods – significant for countries that depend on imports for staple food supply • environmental risk: increasing risk of extreme weather change can affect food production, limiting supply, income of producers • economic risk: volatility in world prices for a product could affect demand / consumption; or the impact of a crop disease that might cause local production shocks, affecting supply and food security at local or even national scale • socio-economic risks: impact of global pandemics such as Covid-19 in 2020, unemployment, lower income, limited access to food for poor; supply of foods in shops affected by limited production because restricted migration and shortage of farm labour, or less fruit and vegetables from abroad that previously relied on shipping or flights • socio-economic risks: ineffective crime prevention in the food supply chain at customs points of entry to a country such as fraud in mislabelling of products • political instability: impact of conflict where regional infrastructure is destroyed or a supply route such as the Suez Canal or Channel crossing is closed; or threats to shipping from piracy in the Gulf of Aden or Malacca Straits

					• political shocks such as imposition of a trade embargo / economic sanctions on a country
4	**(c)**	**(i)**	**Study Fig.4, which shows the global food security index, 2019.** **With reference to Fig.4 describe the global food security index.** • best performance in achieving food security is found in countries of North America, Northwest Europe, Australasia (✓) • good performance in countries of South and Central America, plus Russia, China, East Asia (✓) • only moderate performance in South Asia / India and countries of Southeast Asia and much of Africa (✓) • least good performance in achieving food security in sub-Saharan Africa plus Yemen and Syria in the Middle East (✓) • anomaly of poor performance of Venezuela in South America which is mostly good (✓)	**4** **AO3x4**	**AO3 – 4 marks** 4 x 1 mark (✓) for each piece of evidence from Fig.4 that describes a feature of the global food security index.
4	**(c)**	**(ii)**	**Using evidence from Fig.4, analyse economic factors that might account for the variation in the global food security index.** **Level 3 (5-6 marks)** Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to economic factors that account for variation in food security (AO2). Demonstrates **thorough** investigation and interpretation of the resource to fully evidence economic factors that account for variation in food security. There must be strong ideas linking resource evidence to possible economic factors that account for variation in food security (AO3).	**6** **AO2x3** **AO3x3**	**Indicative content** **AO2 - 3 marks** Application of knowledge and understanding to analyse economic factors that account for the variation in the global food security index shown in Fig.4 could potentially include: • relative poverty / wealth of households / communities • ability to take advantage of modern technology • effects of competition within supply chain • prices of imported foods • land grabbing • capability / wealth of government to meet shortages through subsidies

			Level 2 (3-4 marks) Demonstrates **reasonable** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to economic factors that account for variation in food security (AO2). Demonstrates **reasonable** investigation and interpretation of the resource to fully evidence economic factors that account for variation in food security. There must be good ideas linking resource evidence to the possible economic factors that account for variation in food security (AO3). **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to economic factors that account for variation in food security (AO2). Demonstrates **basic** investigation and interpretation of the resource to fully evidence economic factors that account for variation in food security. There must be some ideas linking resource evidence to economic factors that account for variation in food security (AO3).		• trade agreements **AO3 - 3 marks** Evidence from investigation and interpretation of Fig.4 could potentially include: • sub-Saharan Africa – countries unable to develop agricultural production to meet needs of fast growing populations, perhaps because of limited use of farm technology such as tractors, irrigation, pesticides, or farming practices that increase risk of desertification • North America / Europe benefit from trade agreements within trade blocs / free flow of farm products between neighbouring countries to satisfy shortages in particular goods • North America / Europe ACs with wealth to support farming through subsidies, use of technology, and obtain and distribute produce from abroad via effective transport systems • Syria / Yemen / South Sudan – countries severely affected by conflict / military action / out migration, may affect agricultural production and ability to import food • Low- and middle- income countries such as Southeast Asia, difficulty in recovering from shocks to the physical environment which significantly affect food supply
4	**(d)**		**'Food security risks and vulnerability are influenced mainly by physical factors.' Discuss in the context of <u>one</u> dryland area.** **Level 4 (10–12 marks)** Demonstrates **comprehensive** and accurate knowledge and understanding of physical and other factors that influence food security risks and vulnerability in a dryland	**12** **AO1x6** **AO2x6**	**Indicative content** **AO1 - 6 marks** Knowledge and understanding of physical and other factors that influence food security risks and vulnerability in a dryland area could potentially include: Physical factors: • increased frequency of periodic drought leading to low productivity in the ecosystem, with soils

			area (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and convincing evaluation offering secure judgements leading to rational conclusions that are evidence based as to whether physical factors are the main influence on food security risks and vulnerability in a dryland area (AO2). **Level 3 (7-9 marks)** Demonstrates **thorough** and mainly accurate knowledge and understanding of physical and other factors that influence food security risks and vulnerability in a dryland area (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation offering generally secure judgements with some link between rational conclusions and evidence as to whether physical factors are the main influence on food security risks and vulnerability in a dryland area (AO2). **Level 2 (4-6 marks)** Demonstrates **reasonable** and some accurate knowledge and understanding of physical and other factors that influence food security risks and vulnerability in a dryland area (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation offering generalised judgements and conclusions with limited links to evidence as to whether physical factors are the main influence on food security risks and vulnerability in a dryland area (AO2). **Level 1 (1-3 marks)**		unable to support agriculture • the variability in amount, type and seasonal timing of rainfall make crop production and livestock farming uncertain • exposure to high winds which can increase evapotranspiration and soil erosion • infertile soils as a result of lack of vegetation / organic matter Other factors: • population change; increasing population which may lead to deforestation / use of marginal land for agriculture/overgrazing / over-cultivation may lead to desertification and erosion with impacts on soil fertility / productivity. Also, increased demand for irrigation water and its impact on salinisation • climate change; reduced reliability of rainfall, greater incidence of droughts and extreme storm events affecting soil fertility/productivity • land grabbing; where agribusinesses have displace indigenous farmers with no legal land tenure or negotiating rights • all of the above then impact on poverty / wealth of households / communities / governments and their abilities to achieve food security **AO2 - 6 marks** Application of knowledge and understanding to analyse and evaluate whether physical factors are the main influence on food security risks and vulnerability in a dryland area could potentially include: • evaluation of the impacts of physical / environmental factors. The relative significance of the factors might be viewed in terms of the size / extent of the area affected, the number of people affected, their wealth, available technology / farming techniques, crop yields and the ability of

			Demonstrates **basic** and/or inaccurate knowledge and understanding of the impact of physical and other factors that influence food security risks and vulnerability in a dryland area (AO1). Demonstrates **basic** application of knowledge and understanding offering either unsupported or minimal if any evaluation. Judgements and conclusions, if any, are simplistic as to whether physical factors are the main influence on food security risks and vulnerability in a dryland area (AO2). **0 marks** No response or no material worthy of credit.		the government to provide support • evaluation of the impacts of other / human factors • food security risk/vulnerability can be influenced by economic, social, environmental, political factors • vulnerability depends on a combination of factors - resilience / fragility of the dryland environment, demographic factors, farming types, government strategies • physical and human factors rarely operate in isolation; often it is their interaction that places food security at risk • food security can vary spatially and at different scales even within one dryland area due to environmental differences or human activity • level of risk in a dryland area can vary from time to time, short- or long-term • risk and vulnerability might be increased by increasing dependency of communities on food aid + One example of case material could be the variety of threats facing The Sahel, a dryland area extending from West to East Africa.

Question			Answer	Mark	Guidance
5	(a)		**Explain the formation of <u>two</u> features found at convergent (destructive) plate boundaries.** • Fold mountains (✓) the movement of plates towards one another (irrespective of type) causes sedimentary rocks to buckle and rise up (DEV) • Ocean trench (✓) at oceanic-oceanic and oceanic-continental boundaries, the subducting oceanic plate causes a deepening of the ocean at the boundary (DEV) • Island arcs (✓) at oceanic-oceanic boundaries, the subducting plate melts and magma rises to the surface to form chains of volcanic islands (DEV) • Composite volcanoes (✓) the melting of oceanic plate as it is subducted creates viscous and acidic lava which creates steep gradient composite volcanoes (DEV) •	**4** **AO1x4**	**AO1 – 4 marks** 2 x 1 mark (✓) for each correct feature 2 x 1 mark (DEV) for each explanatory point Focus should be on the knowledge and understanding of how features are created by the convergence.
5	(b)		**Examine how earthquake activity shapes landforms and landscapes.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of how earthquake activity shapes landforms and landscapes (AO1). Where appropriate, **place specific details** should be **accurate**. Demonstrates **thorough** application of knowledge and understanding to provide an **accurate, clear** and **developed** analysis as to how earthquake activity shapes landforms and landscapes (AO2)	**6** **AO1x3** **AO2x3**	**Indicative content** **AO1 - 3 marks** Knowledge and understanding of earthquake activity, landforms and landscapes could potentially include: • Earthquake activity defined/ outlined • Rift valleys along mid-oceanic ridges • Fault scarps or escarpments in rift valleys • Fold mountains at collision boundaries • Landslides and avalanches in high relief areas **AO2 - 3 marks** Application of knowledge and understanding to analyse how earthquake activity shapes landforms and landscapes could potentially include: • Rifting where divergent plates create faults in the

			Level 2 (3-4 marks) Demonstrates **reasonable** knowledge and understanding of how earthquake activity shapes landforms and landscapes (AO1). Where appropriate, **place specific** material is present which is **partially accurate.** Demonstrates **reasonable** application of knowledge and understanding to provide a **sound** analysis showing some accuracy and development as to how earthquake activity shapes landforms and landscapes (AO2). **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of how earthquake activity shapes landforms and landscapes (AO1). If appropriate, little or no **place specific** material is present and / or is **inaccurate**. Demonstrates **basic** application of knowledge and understanding to provide a **simple analysis** showing limited accuracy and little development as to how earthquake activity shapes landforms and landscapes AO2). **0 marks** No response or no material worthy of credit.		lithosphere which both form and move as a result of earthquake activity. Accept different opinions about the origins of rifting, including: ○ the pulling apart of rocks due to tensional forces in the lithosphere. This produces faults along which rocks fracture and slip during earthquake activity. ○ As magma rises from the asthenosphere, the rocks above are pushed up in a dome. The rocks forming the dome are stretched and fracture. • Fault scarps or escarpments are inward facing in rift valleys and mark the location of faults caused by tension and compression in the crust. Multiple fracturing can exist in some high activity areas. • Landslides and avalanches in areas of high relief during earthquakes. During high magnitude events or in areas with high relief, significant mass movement can occur. These can cause flooding if debris blocks rivers.
5	**(c)**	**(i)**	**Study Fig.5 which shows the global distribution of earthquakes from 1960 to present.** **With reference to Fig.5 describe the global distribution of deep focus earthquakes (depth of 300km or more).**	**4** **AO3x4**	**AO3 – 4 marks** 4 x 1 mark (✓) for each piece of evidence from Fig.5 that describes a feature of the global distribution of deep focus earthquakes.

			• The majority of deep focus earthquakes occur on the boundaries of the Pacific Plate with the Indo-Australian and Eurasian Plates/ the Plate the Pacific Ring of Fire (✓) • Some deep focus earthquakes have also occurred along the west coast of South America and in central Europe, near Italy (✓) • The western side of the Pacific Plate has three main clusters of deep focus earthquakes (✓) • Indonesia and Fiji are particular hotspot areas for deep focus earthquakes (✓) with some exceeding 600km in depth (✓)		
5	**(c)**	**(ii)**	**Using evidence from <u>Fig.5</u>, analyse the reasons for the global distribution of deep focus earthquakes.** **Level 3 (5-6 marks)** Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO2). Demonstrates **thorough** investigation and interpretation of the resource to fully evidence the global distribution in deep focus earthquakes. There must be strong ideas linking resource evidence to the possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO3). **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO2). Demonstrates **reasonable** investigation and interpretation of the resource to fully the global distribution in deep focus	**6** **AO2x3** **AO3x3**	**Indicative content** **AO2 - 3 marks** Application of knowledge and understanding to analyse the reasons for the global distribution of deep focus earthquakes shown in Fig.5 could potentially include: • the existence of destructive plate boundaries (oceanic-oceanic or oceanic-continental) whereupon the denser of the two plates is subducting below the less dense plate • deep focus earthquakes originate in the Benioff Zone of subduction where pressure is high and faulting and fracturing occur • Minerals can change type and volume at these depths due to high pressure and temperature which may contribute to a release in energy **AO3 - 3 marks** Evidence from investigation and interpretation of Fig.5 could potentially include: • The deepest focus earthquakes occur in the south-west Pacific where the Pacific Plate subducts below the Indo-Australian Plate exceeding depths of 600km near Fiji.

			earthquakes. There must be good ideas linking resource evidence to the possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO3). **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide clear and developed analysis that shows accuracy as to possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO2). Demonstrates **basic** investigation and interpretation of the resource to fully evidence the global distribution in deep focus earthquakes. There must be some ideas linking resource evidence to possible reasons for the distribution in deep focus earthquakes shown in Fig.5 (AO3). **0 marks** No response or no material worthy of credit.		• Complex destructive boundaries around Indonesia and Japan also have some of the deepest focus earthquakes, often exceeding 300km in depth. • The subduction of the Nazca Plate beneath the South American plate has also produced deep focus earthquakes, but less numerous than in the west Pacific. • An anomalous area includes central Europe where the majority of earthquakes are very shallow in focus except for Italy where earthquakes with foci of 500km have taken place. This is likely due to the complex boundary activity in the region involving some subduction.
5	**(d)**		**'The benefits of living in tectonically active locations outweigh the costs.' Discuss in the context of <u>one</u> EDC or LIDC.** **Level 4 (10–12 marks)** Demonstrates **comprehensive** and accurate knowledge and understanding of the benefits and costs of living in tectonically active locations in an LIDC or EDC (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and convincing evaluation offering secure judgements leading to rational conclusions that are evidence based as to whether the benefits of living in tectonically active locations outweigh the costs in one LIDC or EDC (AO2). **Level 3 (7-9 marks)** Demonstrates **thorough** and mainly accurate knowledge and understanding of the benefits and costs of living in tectonically active locations in an LIDC or EDC (AO1).	**12** **AO1x6** **AO2x6**	**Indicative content** **AO1 - 6 marks** Knowledge and understanding of the benefits and costs of living in tectonically active locations in an LIDC or EDC potentially include: Benefits: • Ash from eruptions creates fertile land favourable to agriculture • Tourism opportunities in terms of visits to active volcanoes and rare ecosystems on volcano flanks • Geothermal for hot water or energy production • Minerals contained in lava fields can be collected and sold • Research opportunities • Picturesque settings with often low population densities

			Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation offering generally secure judgements with some link between rational conclusions and evidence as to whether the benefits of living in tectonically active locations outweigh the costs in one LIDC or EDC (AO2). **Level 2 (4-6 marks)** Demonstrates **reasonable** and some accurate knowledge and understanding of the benefits and costs of living in tectonically active locations in an LIDC or EDC (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation offering generalised judgements and conclusions with limited links to evidence as to whether the benefits of living in tectonically active locations outweigh the costs in one LIDC or EDC (AO2). **Level 1 (1-3 marks)** Demonstrates **basic** and/or inaccurate knowledge and understanding of the benefits and costs of living in tectonically active locations in an LIDC or EDC (AO1). Demonstrates **basic** application of knowledge and understanding offering either unsupported or minimal if any evaluation. Judgements and conclusions, if any, are simplistic regarding as to whether the benefits of living in tectonically active locations outweigh the costs in one LIDC or EDC (AO2). **0 marks** No response or no material worthy of credit.		Costs: • Potential death depending upon the eruption characteristics of the volcano including asphyxiation or burns • Unstable ground for building on – can give way particularly during periods of volcanic activity • Regular evacuations during periods of volcanic activity – particularly problematic if there are livestock to tend to • Ash from eruptions can devastate crops over large areas • Insurance costs are often high (if available and affordable) **AO2 - 6 marks** Application of knowledge and understanding to analyse and evaluate the benefits and costs of living in tectonically active locations in an LIDC or EDC could potentially include: • evaluation of importance of benefits • evaluation of importance of costs • idea that the benefits are often long term whilst the problems severe but shorter term • consideration impacts can change over time • consideration that impacts can vary in importance at different scales within the country • the relative significance of the factors depends upon the case study in question but might be viewed in terms of size / extent of area affected, demographic characteristics such as population density and age structure, income levels and employment structure, housing, access to medical care. An example of case material could be Merapi, Indonesia.

Question			Answer	Mark	Guidance
6	(a)		**With reference to Fig.6, suggest how future homes, offices and cities developed in response to risks from climate change might influence employment opportunities in places.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of future homes, offices and cities and employment opportunities in places (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed interpretation that shows accuracy of how future homes, offices and cities might influence employment opportunities in places (AO2). This will be shown by including **well-developed** ideas linking resource evidence of future homes, offices and cities and employment opportunities in places. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of future homes, offices and cities and employment opportunities in places (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound interpretation that shows some accuracy of how future homes, offices and cities might influence employment opportunities in places (AO2). This will be shown by including **developed** ideas linking resource evidence of future homes, offices and cities and	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of future homes, offices and cities and employment opportunities in places could potentially include: • Implications of climate change currently being experienced for people and the environment, such as from changes to ecosystems, health and extreme weather, and how these are projected to change in the future. • The vulnerability of people and the environment to the impacts of climate change • framework of adaptation (retreat, accommodate, protect) and its implementation in response to possible future implications of climate change in a range of communities across the development continuum what future homes, offices, cities, transport and economies will look like following adaptation throughout the twenty-first century. *Future homes, offices and cities ():* • Vertical planting up the sides of apartments and offices • Smaller footprints of land being used maximises efficiency in terms of high population densities in cities and access to parks and services • Planting trees along footpaths maximises green space in cities; protecting existing green spaces • Increasing the number of footpaths and cycle paths to encourage greener modes of transport • Mitigation strategies such as replacing impermeable surfaces with permeable paving • Heat adaptive strategies such as air conditioning, insulation, improved ventilation, high efficiency lighting

			employment opportunities in places. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of use of future homes, offices and cities and employment opportunities in places (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple interpretation that shows limited accuracy of how future homes, offices and cities might influence employment opportunities in places (AO2). There will be **simple** ideas linking resource evidence of future homes, offices and cities and employment opportunities in places. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		and air-tight buildings • Rainwater harvesting and use of grey-water systems • Rooftop gardens reduce albedo *Employment opportunities in places:* • planning / technology design • construction and architecture • operation / maintenance • environmental conservation • recreation and tourism **AO2 - 4 marks** Application of knowledge and understanding to interpret how future homes, offices and cities might influence employment opportunities in places could potentially include: • short-term employment in investigating identifying potential sites, town planning, developing appropriate technology, construction. Mitigation strategies such as replacing impermeable surfaces with permeable paving as would be needed for the site of Bosco Verticale in Milan, Fig 6 • long-term employment in operations e.g. producing electricity, maintenance of infrastructure such as roads, footpaths, street lights–clearly evident in Fig.6 Long term employment opportunities linked to Fig. 6 could include Vertical planting up the sides of apartments and offices which creates gardening and maintenance opportunities. • jobs in environmental management / conservation e.g. urban ecosystems and corridors Fig 6 shows the 'green' tree-lined pedestrian route leading to Bosco Verticale • Potential employment in recreation and tourism / visitor

					centre – which may be permanent and seasonal.Fig.6 shows paths to encourage residents to walk or cycle. • placemaking / rebranding would present a range of opportunities for 'players' with roles in government, corporate bodies and as members of local communities Fig 6 shows an area / Bosco Verticale that has been created in response to risks from climate change; this would have required the input of government, plus evidence of the work of planners, architects, construction firms and maintenance employees.
6	**(b)**		**Examine how the enhanced greenhouse effect might influence the flows of energy and material through ONE landscape system you have studied.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of the enhanced greenhouse effect and flows of energy and material through one landscape system (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system (AO2). There must be **well-developed** ideas of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of the enhanced greenhouse effect and flows of energy and material through one landscape system (AO1).	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of the enhanced greenhouse effect and flows of energy and material through one landscape system could potentially include: *The enhanced greenhouse effect:* • a greater abundance of greenhouse gases in the atmosphere (including carbon dioxide, methane, CFCs, nitrous oxides) cause more infra-red/ long wave radiation to be trapped/ re-radiated • This causes the global average temperature to increase *Flows of energy and material through one landscape system:* • *Glaciated landscapes* – thermal energy linked to temperature range, ablation and accumulation balance; rates of erosion leading to changed transportation by kinetic energy of derived sediment and its subsequent deposition as energy is lost • *Coastal landscapes* – kinetic energy of wind, waves, and sea-level influenced by thermal energy contributing to tidal range, global pattern of ocean currents; rates of erosion leading to changed

			Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system (AO2). There must be **developed** ideas of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the enhanced greenhouse effect and flows of energy and material through one landscape system (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system (AO2). This will be shown by including **simple** ideas of how the enhanced greenhouse effect might influence flows of energy and material through one landscape system. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		transportation and deposition of derived sediment related to kinetic energy • *Dryland landscapes* – kinetic energy of wind, water and thermal energy linked to temperature range; precipitation patterns, weathering, rates of aeolian erosion leading to changed transportation and deposition related to kinetic energy **AO2 - 4 marks** Application of knowledge and understanding to analyse how the enhanced greenhouse effect might influence the flows of energy and material through one landscape system could potentially include: • *Glaciated landscapes* – warmer temperatures increase ablation to cause glacial retreat; faster melt to cause increased flood risk in high relief areas; increased basal sliding increasing plucking and the transportation and deposition of sediment in the form of moraines • *Coastal landscapes* – temperature increase could cause stronger pressure gradients increasing wind in some locations and therefore wave height and speed and therefore abrasion, hydraulic action and attrition. Increased transportation and deposition. Change in ocean currents which transfer heat energy globally through the melting of ice sheets. • *Dryland landscapes* – temperature increase could cause stronger pressure gradients increasing wind in some locations and therefore aeolian erosion and transport and therefore deposition through ergs; ephemeral rivers dry out to reduce transportation in river systems; increased aridity reduces vegetation cover which increases deflation.

Question			Answer	Mark	Guidance
7	(a)		**With reference to Fig. 7, suggest how patterns of disease outbreaks at a global scale might be influenced by social inequality.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of patterns of disease outbreaks at a global scale and social inequality (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed interpretation that shows accuracy of how patterns of disease outbreaks at a global scale might be influenced by social inequality (AO2). This will be shown by including **well-developed** ideas linking resource evidence of social inequality and patterns of disease outbreaks at a global scale. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of patterns of disease outbreaks at a global scale and social inequality (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound interpretation that shows some accuracy of how patterns of disease outbreaks at a global scale might be influenced by social inequality (AO2). This will be shown by including **developed** ideas linking resource evidence of social inequality and patterns of disease outbreaks at a global scale	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of patterns of disease outbreaks at global scale and social inequality could potentially include: *Patterns of disease outbreaks at global scale* • LIDCs / EDCs tend to have higher prevalence / incidence of communicable disease such as malaria • viral respiratory disease, such as SARS, Covid-19 spread by close person-to-person contact • spreads through the air by respiratory droplets when an infected person coughs or sneezes • spreads from point of origin by infected people who travel within a country or globally *Social inequality* • measured through indices such as housing, healthcare, education, employment and access to services • spatial patterns of inequality vary both within and between places • evidence of social inequality can be found in housing, environmental quality, crime rates, digital divide • factors that influence people's social inequality include income, health, personal mobility and education *Social inequality factors affecting the pattern of disease* • low-income countries - high incidence in countries unable to prepare adequately for new global pandemic or limited ability to respond • high population densities – high incidence in slum / squatter settlements • poor quality housing areas with inadequate sanitation / limited access to clean drinking water

			There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of patterns of disease outbreaks at a global scale and social inequality (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple interpretation that shows limited accuracy of how patterns of disease outbreaks at a global scale might be influenced by social inequality (AO2). There will be **simple** ideas linking resource evidence of social inequality and patterns of disease outbreaks at a global scale. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		• limited access to health care services - high incidence in low-income countries • poor diet / inadequate nutrition lowers resistance to the disease • large migrant populations – refugees, IDPs - influence the spread of disease **AO2 - 4 marks** Application of knowledge and understanding to interpret how patterns of disease outbreaks at global scale might be influenced by social inequality could potentially include: • LIDC governments do not have the wealth to provide adequate health care services especially for large numbers of infected people – Fig 7 shows high density population in an urban slum • populations living in large numbers in close proximity in shanty towns in LIDCs and EDCs are more likely to be living in conditions where respiratory diseases spread easily – Fig 7 illustrates these conditions; poor quality housing probably with inadequate sanitation and limited access to clean drinking water • populations in shanty towns may be unable to maintain the cleanliness / sanitary conditions required to reduce the spread of disease – evident in Fig 7 • poverty restricts ability to secure adequate housing conditions, nutritious diet, education, access to health care – as in Fig 7, an area in which Mumbai authorities have been unable to improve these services • social practices / traditions in some areas may increase the spread of disease • introduction of infectious disease to new area by recent migrant population, e.g. large numbers of economic migrants or refugees from areas of conflict can cause the outbreak to spread rapidly

7	(b)		**Examine how the threats to medicinal plants can be linked to processes of globalisation.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of threats to medicinal plants and processes of globalisation (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how threats to medicinal plants can be linked to processes of globalisation (AO2). There must be **well-developed** ideas of how threats to medicinal plants can be linked to processes of globalisation. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of threats to medicinal plants and processes of globalisation (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how threats to medicinal plants can be linked to processes of globalisation (AO2). There must be **developed** ideas of how threats to medicinal plants can be linked to processes of globalisation. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)**	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of threats to medicinal plants and processes of globalisation could potentially include: *Threats to* medicinal plants*:* • high demand for medicinal drugs from plants such as rosy periwinkle (chemotherapy), various species of yew (anti-cancer drug, taxol), goldenseal (herbal medicine) • species survival endangered - wild plants overharvested • habitat loss - deforestation of tropical rain forest • diminishing biodiversity impact on natural ecosystems *Processes of globalisation:* • global market with increasingly high demand for natural medicines • large pharmaceutical TNCs, FDI with global operations and international supply chains • global interconnectedness between human activities including supply and demand for medicines from nature • global communications / transport create time-space compression in which space is no longer a barrier to movement of goods **AO2 - 4 marks** Application of knowledge and understanding to analyse how threats to medicinal plants can be linked to processes of globalisation could potentially include: • pharmaceutical companies, transnational companies conduct international research and international trade using medicinal plants some pharmaceutical companies in the past exploited the resources / plants of rainforest areas, transporting plants / raw materials across the globe - sometimes called biopiracy • huge investment by pharmaceuticals for R & D and production

			Demonstrates **basic** knowledge and understanding of threats to medicinal plants and processes of globalisation (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how threats to medicinal plants can be linked to processes of globalisation (AO2). This will be shown by including **simple** ideas of how threats to medicinal plants can be linked to processes of globalisation. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		of medicinal drugs requires a large supply of plants often from LIDCs / rainforest areas • natural habitats of medicinal plants and the survival of the plants themselves is threatened by the increasing demand from large and wealthy populations of the developed world • sought-after species can be collected and delivered to market by modern systems of international / intra-national trade • over-harvesting and global trade make sourcing of wild medicinal plants unsustainable, endangering the survival of some plants which are slow-growing or those occupying highly specialised niches • destruction of rainforest for other purposes such as supply of palm oil or timber causes some plant species to become extinct before scientists have had the chance to investigate or even discover them as potential medical drug producers • processes of globalisation can have an influence on the spatial and temporal scale of the threats to medicinal plants • the threats to medicinal plants might be influenced by the contrasting roles of governments and their ability to be involved in resource management, depending on differing levels of development x

Question			Answer	Mark	Guidance
8	(a)		**With reference to Fig.8, suggest how the use of ocean energy resources might influence employment opportunities in places.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of use of ocean energy resources and employment opportunities in places (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed interpretation that shows accuracy of how use of ocean energy resources might influence employment opportunities in places (AO2). This will be shown by including **well-developed** ideas linking resource evidence of use of ocean energy resources and employment opportunities in places. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of use of ocean energy resources and employment opportunities in places (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound interpretation that shows some accuracy of how use of ocean energy resources might influence employment opportunities in places (AO2). This will be shown by including **developed** ideas linking resource evidence of use of ocean energy resources and employment opportunities in places.	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of use of ocean energy resources and employment opportunities in places could potentially include: *Use of ocean energy resources:* • *wave and tidal energy (flow resources-renewable resources)* • *use of energy resources is a contested issue that creates both opportunities and threats* *Use of ocean energy resources:* • tidal energy makes use of the flow of water with the rise and fall of tides • barrage constructed across narrow estuary • large tidal range • as tide rises and fall electricity is generated as water passes through the barrage's generators *Employment opportunities in places:* • planning / technology design • construction • operation / maintenance • environmental conservation • recreation and tourism **AO2 - 4 marks** Application of knowledge and understanding to interpret how use of ocean energy resources might influence employment opportunities in places could potentially include: • short-term employment in investigating potential sites,

			There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of use of ocean energy resources and employment opportunities in places (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple interpretation that shows limited accuracy of how use of ocean energy resources might influence employment opportunities in places (AO2). There will be **simple** ideas linking resource evidence of use of ocean energy resources and employment opportunities in places. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		planning the barrage, developing appropriate technology, construction – as would be the case in developing the barrage site shown in Fig.8, in order to exploit the tidal flows across the Rance Estuary • long-term employment in operating / producing electricity, maintenance of equipment, pylons / cables – as required in operating the barrage shown in Fig 8 • jobs in environmental management / conservation of marine and estuarine / land ecosystems – all arising from the 'threats' to the environment created by the barrage in Fig 8 • employment in recreation and tourism / visitor centre – which may be permanent and seasonal – 'opportunities' have been created by this method of tidal energy production for example marinas shown in Fig 8 • employment in other services attracted to the site such as food and drink / retail • employment at or near the site, and employment in industrial manufacturing sites elsewhere such as production of turbines
8	**(b)**		**Examine how the use of oceans as escape routes for migrants can shape place profiles over time.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of use of oceans as escape routes for migrants and place profiles over time (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how use of oceans as escape routes for migrants can shape place profiles over time (AO2).	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of use of oceans as escape routes for migrants and place profiles over time could potentially include: *Use of oceans as escape routes for migrants:* • economic migrants, escaping economic hardship • refugees, escaping political or religious persecution • refugees escaping political instability / war / conflict • environmental refugees fleeing an environmental disaster *Place profiles over time*

			There must be **well-developed** ideas of how use of oceans as escape routes for migrants can shape place profiles over time. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of use of oceans as escape routes for migrants and place profiles over time (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how use of oceans as escape routes for migrants can shape place profiles over time (AO2). There must be **developed** ideas of how use of oceans as escape routes for migrants can shape place profiles over time. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of use of oceans as escape routes for migrants and place profiles over time (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how use of oceans as escape routes for migrants can shape place profiles over time (AO2). This will be shown by including **simple** ideas of how use of oceans as escape routes for migrants can shape place profiles over time. There are limited attempts to make synoptic links between		• demographic • socio-economic • cultural **AO2 - 4 marks** Application of knowledge and understanding to analyse how use of oceans as escape routes for migrants can shape place profiles over time could potentially include: • refugee camps with large and high density populations, • few services / temporary built environment • age-sex structure likely to dominated by young predominantly male populations where economic migrants; wider ranges for the refugee camps • ethnic structure influenced by sources of origin of the migrants • populations of aid workers such as coastguards, UN agency workers, NGO staff • Mediterranean crossings from African countries to Italy / Spain And from Middle Eastern countries to Greek islands • South China Sea crossings for Vietnamese to Australia • Indian Ocean crossings for Sri Lankan Tamils, and people from Bangladesh and Myanmar to Thailand, Indonesia and Malaysia • low economic status of migrants (many having used all their savings at the hands of traffickers) / poverty in camps and other destinations • traditions / language / religion are examples of cultural characteristics which are inevitably maintained in destinations / host countries • impact on place profiles might depend on level of development of the country of destination • impact on place profiles might depend on the scale of the migrant populations entering a country both in terms of numbers and duration of stay. x

			content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		

Question			Answer	Mark	Guidance
9	(a)		**With reference to Fig.9, suggest how attempts to increase food production can affect place identity.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of attempts to increase food production and place identity (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed interpretation that shows accuracy of how attempts to increase food production can affect place identity (AO2). This will be shown by including **well-developed** ideas linking resource evidence on attempts to increase food production and place identity. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of attempts to increase food production and place identity (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound interpretation that shows some accuracy of how attempts to increase food production can affect place identity (AO2). This will be shown by including **developed** ideas linking resource evidence on attempts to increase food production and place identity. There are some attempts to make synoptic links between content from different parts of the course	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of attempts to increase food production and place identity could potentially include: *Attempts to increase food production:* • irrigation • deforestation • changing landscapes, such as formation of terraces, larger fields • government policies such as agricultural trading policies • agribusiness • fair trade organisations • approaches to increasing food security varying from short term relief to long term system redesign • use of large scale technological techniques to small scale bottom up approaches *Attempts to increase food production:* • deforestation of tropical rainforest • clearance of large areas • monoculture • large scale agribusiness • possibly land grabbing • intensive cultivation *Place identity:* • natural / physical characteristics • demographic • socio-economic • cultural

			of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of attempts to increase food production and place identity (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple interpretation that shows limited accuracy of how attempts to increase food production can affect place identity (AO2). There will be **simple** ideas linking resource evidence on attempts to increase food production and place identity. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		• political • built environment **AO2 - 4 marks** Application of knowledge and understanding to interpret how attempts to increase food production can affect place identity could potentially include: • impact on natural characteristics of the area / physical environment might include soil erosion (suspended load in river – evident in the colour of the river in Fig 9), water pollution via throughflow of chemicals used, impacts on ecosystems further downstream • loss of biodiversity and loss of natural habitats for wide range of flora and fauna – caused by deforestation of tropical rainforest as shown in Fig 9 • visual impact on the landscape, loss of rainforest, less varied landscape of monoculture – evident where the forest has been cleared and replanted with one crop in Fig 9 • impact on indigenous populations and settlements, out-migration, ageing populations, cultural loss, conflict • introduction of roads – just visible in Fig 9 / vehicles / atmospheric pollution
9	**(b)**		**Examine how fair trade organisations can influence the global food system by driving economic change in places.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of the influence of fair trade organisations on the global food system and economic change in places (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how fair trade organisations can	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of the influence of fair trade organisations on the global food system and economic change in places could potentially include: *Influence of fair trade organisations on the global food system:* • the work of the World Fair Trade Organisation promoting fair trade practices • ethical policies of TNCs such as Nestle and Tate and Lyle • support of major food retailers such as Sainsbury's for fair trade

			influence the global food system by driving economic change in places (AO2). There must be **well-developed** ideas of how fair trade organisations can influence the global food system by driving economic change in places. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of the influence of fair trade organisations on the global food system and economic change in places (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how fair trade organisations can influence the global food system by driving economic change in places (AO2). There must be **developed** ideas of how fair trade organisations can influence the global food system by driving economic change in places. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the influence of fair trade organisations on the global food system and economic change in places (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how fair trade organisations can influence the global food system by driving economic change in places (AO2).		products *Economic change in places:* • payments of fair prices for produce • gender equality in pay and working conditions • opportunities for economically disadvantaged producers • fair trading practices • capacity building • sustainable development based on fair trade **AO2 - 4 marks** Application of knowledge and understanding to analyse how fair trade organisations can influence the global food system by driving economic change in places could potentially include: • WFTO aims to develop partnerships between producers and traders at fair prices and with complete transparency and accountability in the transactions • WTFO aims to secure the rights of marginalised producers and farm labourers especially in LIDCs to fair prices for the goods produced • the fair trade network of producer organisations and traders is an increasingly global network; fair trade products produced in LIDCs are recognised and supported by large international corporations such as Nestle and by sales on the shelves in major food retailers such as Waitrose in ACs • fair trade organisations drive economic change by creating opportunities for economically disadvantaged producers to secure fair prices and to ensure the products have access to global supply chains • these organisations also contribute to sustainable development in LIDCs / local areas, that are often dependent on production and sale of primary agricultural products, by enabling production capacity to be enhanced through access to markets for fair prices

			This will be shown by including **simple** ideas of how fair trade organisations can influence the global food system by driving economic change in places. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		• WFTO has a commitment to gender equality with fair pay for the input of women in local farming practices, and ensuring there is no forced labour • fair trade organisations might influence the scale of economic change in terms of food production at local, regional and national scales and over differing periods of time • whilst many benefits, the influence of fair trade organisations is not always positive; the initial process of fair trade certification is expensive for individual producers, small businesses and co-operatives with rules / regulations to be followed - products can be more expensive. The model of 'direct trade', cutting out the middle man in the food supply chain, is gaining ground as more beneficial for some producers. x

Question			Answer	Mark	Guidance
10	(a)		**With reference to Fig. 10, suggest how strategies to manage volcanic hazards can shape place profiles over time.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding strategies to manage volcanic hazards and place profiles over time (AO1). Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed interpretation that shows accuracy of how strategies to manage volcanic hazards can shape place profiles over time (AO2). This will be shown by including **well-developed** ideas linking resource evidence on strategies to manage volcanic hazards and place profiles over time. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding strategies to manage volcanic hazards and place profiles over time (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound interpretation that shows some accuracy of how strategies to manage volcanic hazards can shape place profiles over time (AO2). This will be shown by including **developed** ideas linking	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of use of strategies to manage volcanic hazards and place profiles over time could potentially include: *Strategies to manage volcanic hazards* • attempts to mitigate against the event such as lava and lahar diversion channels • Volcano research centres, including the use of tiltmeters and seismometers on volcanos to monitor activity • attempts to mitigate against vulnerability such as community preparedness e.g. evacuation procedures • Zoning e.g. permanent settlement forbidden in high risk areas • Well-trained and well-equipped emergency services • Building design to cope with ash fall *Place profiles over time* • Natural/ physical characteristics • Demographic • Socio-economic • Political • Historical • Cultural • Built environment **AO2 - 4 marks** Application of knowledge and understanding to analyse how strategies to manage volcanic hazards can shape place profiles over time could potentially include: • Increase in vegetation cover and therefore change in the

			resource evidence on strategies to manage volcanic hazards and place profiles over time. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding strategies to manage volcanic hazards and place profiles over time (AO1). Demonstrates **basic** application of knowledge and understanding to provide a simple interpretation that shows limited accuracy of how strategies to manage volcanic hazards can shape place profiles over time (AO2). There will be **simple** ideas linking resource evidence on strategies to manage volcanic hazards and place profiles over time. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		physical environment in zoned areas which forbid permanent settlement – Fig 10 shows zoned area / routeway for visitors plus safety information • Increase in tourism leading to changes in socio-economic characteristics of the area e.g. the volcanic area shown has been designated as a National Park as identified in the title of Fig 10 • Evacuation potentially leading to refugee camps with large and high density populations affecting demographic characteristics, • Populations of scientists and during volcanic activity, aid workers such as UN agency workers and NGO staff – possible scientists / agency / NGO staff shown in Fig 10 • Hard engineering such as lava diversion channels alter the physical environment including residential areas, road networks and vegetation coverage • Cultural changes including a reduction of sedentary lifestyle and increased awareness of being at risk – the notice board in Fig 10 increases the awareness of the potential hazards i.e. steam events, earth cracks and cliffs • Emigration from the area altering the demographic characteristics, potentially leaving a more elderly population
10	**(b)**		**Examine how earthquake activity might influence the flows of energy and material through ONE landscape system you have studied.** **Level 3 (6-8 marks)** Demonstrates **thorough** knowledge and understanding of earthquake activity and the flows of energy and material through ONE landscape system (AO1).	**8** **AO1 x4** **AO2 x4**	**Indicative content** **AO1 - 4 marks** Knowledge and understanding of the influence of earthquake activity on the flows of energy and material through ONE landscape system could potentially include: *Influence of earthquake activity:* • Primary (P), secondary (S) and surface (L) waves travel

			Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how earthquake activity can influence the flows of energy and material through ONE landscape system (AO2). There must be **well-developed** ideas of how earthquake activity might influence the flows of energy and material through ONE landscape system. There are clear attempts to make synoptic links between content from different parts of the course of study. **Level 2 (3-5 marks)** Demonstrates **reasonable** knowledge and understanding of earthquake activity and the flows of energy and material through ONE landscape system (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how earthquake activity can influence the flows of energy and material through ONE landscape system (AO2). There must be **developed** ideas of how earthquake activity might influence the flows of energy and material through ONE landscape system. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of earthquake activity and the flows of energy and material through ONE landscape system (AO1). Demonstrates **basic** application of knowledge and		through different layers of the earth in different ways • Ground shaking and displacement • Liquefaction • Flooding • Landslides and avalanches • Tsunamis *Flows of energy and material through one landscape system:* • *Glaciated landscapes* – potential energy relating to the positioning of material on slopes, kinetic energy relating to glacier movement, rivers, high relief, unconsolidated sediment, production of sediment • *Coastal landscapes* – kinetic energy relating to wave movement, tsunami risk, change in tidal range and erosion, availability of material for transportation and deposition • *Dryland landscapes* – wind and heat energy, kinetic energy relating to material movement, unconsolidated sediment, rivers, collapse of landforms, deflation. **AO2 - 4 marks** Application of knowledge and understanding to analyse how earthquake activity might influence the flows of energy and material through ONE landscape system could potentially include: • *Glaciated landscapes* – potential energy converted to kinetic energy with sudden glacier movement; rivers diverted affecting the transportation and deposition of load; shaking and displacement in high relief areas leading to flooding, landslides and avalanches; saturated unconsolidated sediment causing liquefaction; increased basal sliding; greater movement of scree onto glaciers • *Coastal landscapes* – ground shaking transferring energy to waves and possibility of tsunami; change in local sea-level affecting coastal erosion (increased abrasion and hydraulic action); increase in material for transportation and deposition

			understanding to provide a simple analysis that shows limited accuracy of how earthquake activity can influence the flows of energy and material through ONE landscape system (AO2). This will be shown by including **simple** ideas of how earthquake activity might influence the flows of energy and material through ONE landscape system. There are limited attempts to make synoptic links between content from different parts of the course of study. **0 marks** No response or no response worthy of credit.		• *Dryland landscapes* – rivers diverted affecting the transportation and deposition of load; unconsolidated sediment further loosened enabling more deflation; cracking of desert pavements and collapse of landforms such as pedestal rocks. Landform collapse also links to flows of energy from potential to kinetic. Movement of material can alter flows of energy e.g. wind. • Further discussion may centre around the scale of influence (dependent upon the magnitude of the event, stores of potential energy, local geological characteristics, the amount of loose material); whether energy or material is more significant for the landscape system in question with reasons, how energy and material influence one another within the landscape system.

Question			Answer	Mark	Guidance
11*			**'The success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale'. To what extent do you agree?** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of the success of international directives and other factors on reducing current rates of warming on a global scale. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of the success of international directives and other factors upon reducing current rates of warming on a global scale. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the success of international directives and other factors on reducing current rates of warming on a global scale. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the success of international directives and other factors on reducing current rates of warming on a global scale. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear,	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of the success of international directives and other factors on reducing current rates of warming on a global scale could potentially include: *The success of international directives:* • Involve the setting of targets which signatories work towards • Global scale in approach so unites signatories around an agreement • Clear to the public that action is being taken by governments which increases individual scale buy-in • Despite targets historically having not been met, arguably they create movement in the right direction *Other factors:* • Carbon trading and credits • National and sub-national directives • Collective efforts by individuals and TNCs • IPCC in monitoring current rates of warming **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate the extent to which the success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale could potentially include: • an evaluation of the success of international directives (linked to evidence, in relation to the original aims, relating to effectiveness in terms of change to warming rates) • an evaluation of the success of other factors • understanding that factors operate on different scales but can transcend scale (e.g. afforestation techniques are

			developed and convincing analysis that is fully accurate of the success of international directives and other factors on reducing current rates of warming on a global scale. Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based on the extent to which the success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the success of international directives and other factors on reducing current rates of warming on a global scale. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on the extent to which the success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the success of international directives and other factors on reducing current rates of warming on a global scale.		regional but combined have a global effect; TNCs operate locally with most carbon emissions being released in EDCs but most mitigation in ACs, carbon trading occurs between regions but has a global impact) • understanding that international directives have changed over time and have gained traction but this is also due to other factors such as the media • factors are not mutually exclusive and are interdependent to reduce current rates of warming – such interdependence is increasingly recognised as the climate system (including feedback mechanisms, modelling, scale) is more understood

			Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence on the extent to which the success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the success of international directives and other factors on reducing current rates of warming on a global scale. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions on the extent to which the success of international directives, such as the Kyoto Protocol, has the greatest influence on reducing current rates of warming on a global scale. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2**		

			The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
12*			**Evaluate the evidence for a warming world since the late-nineteenth century.** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of the evidence for a warming world since the late-nineteenth century. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of the evidence for a warming world since the late-nineteenth century. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the evidence for a warming world since the late-nineteenth century. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the evidence for a warming world since the late-nineteenth century. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the evidence for a warming world since the late-nineteenth century. Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of the evidence for a warming world since the late-nineteenth century could potentially include: • Temperature recorded data globally since 1880 and the hockey stick curve; the current global average temperature is approx. 1°C higher than 150 years ago • Retreating glaciers and shrinking ice sheets • Rising sea levels of approx. 3mmyr^{-1} since 1993 • Decreasing snow and ice cover • Decline in terrestrial and marine ecosystem health including coral bleaching • Regional climate changes including increasing prevalence of drought **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate the evidence for a warming world since the late-nineteenth century could potentially include: • an evaluation of the individual sources of evidence for a warming world including: ○ evidence needs to be global in scale to eliminate regional or local scale factors being the cause ○ comparisons to past climates often rely on less sophisticated technology before the twentieth century and less abundant data – e.g. new technologies include buoys (for SSTs and sea level) and remote sensing from satellites for temperature, carbon dioxide distribution, vegetation growth etc ○ large fluctuations in temperature makes confident trend lines difficult to construct

			substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the evidence for a warming world since the late-nineteenth century. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the evidence for a warming world since the late-nineteenth century. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence as to the evidence for a warming world since the late-nineteenth century. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the evidence for a warming world since the late-nineteenth century. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the evidence for a warming world since the late-nineteenth century. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the evidence for a warming world since the late-nineteenth century.		○ some evidence can be attributed to numerous causal factors e.g. ecosystem health could be linked to changes in land use • an evaluation of other possible causes including cyclical climatic phenomena on a regional scale • convergence of evidence makes the case for a warming world compelling • the warming experienced is explainable with reference to human activity and the release of GHGs, these also show agreement with the carbon cycle when modelled (e.g. feedback mechanisms)

			Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the evidence for a warming world since the late-nineteenth century. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
13*			**'Standards of living have the greatest impact upon susceptibility to disease.' To what extent do you agree?** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of the impact of standards of living and other factors upon susceptibility to disease. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of the impact of standards of living and other factors upon susceptibility to disease. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the impact of standards of living and other factors upon susceptibility to disease. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the impact of standards of living and other factors upon susceptibility to disease. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the impact of standards of living and other factors upon susceptibility to disease. Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of the impact of standards of living and other factors upon susceptibility to disease could potentially include: *Standards of living:* • access to food – inadequate nutrition, undernutrition and malnutrition, widespread in the poorest countries of the world, weaken the immune system and increase the risks of bacterial and viral infections • access to clean water – caused by lack of proper sanitation and hygiene, polluted water from wells and surface streams provides a disease reservoir for cholera, typhoid and diarrhoea • access to sanitation – millions of people in LIDCs live in appalling conditions of slum housing and overcrowding without latrines which increases the threat of infectious disease • in ACs where standards of living are better today there has been a decline in communicable diseases during the period of epidemiological transition; in LIDCs the problems remain where diet, clean drinking water and sanitation are a problem *Other factors:* • in ACs today there is higher prevalence of non-communicable diseases which are related to lifestyle rather than standard of living • air pollution, which causes cancers for example, is a significant factor in susceptibility to disease rather than standard of living • environmental factors can be more significant than

			conclusions that are evidence based on the extent to which standards of living have the greatest impact upon susceptibility to disease. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the impact of standards of living and other factors upon susceptibility to disease. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on the extent to which standards of living have the greatest impact upon susceptibility to disease. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the impact of standards of living and other factors upon susceptibility to disease. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence on the extent to which standards of living have the greatest impact upon susceptibility to disease. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the impact of standards of living and other factors upon susceptibility to disease. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that		standard of living in favouring disease vectors, including effects of climate change **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate the extent to which standards of living have the greatest impact upon susceptibility to disease could potentially include: • an evaluation of the significance of standards of living upon susceptibility to disease • an evaluation of the significance of other factors upon susceptibility to disease • understanding that factors affecting susceptibility to disease can be environmental, social, economic and political • consideration that scale differences from global to local inform an understanding of geographical differences in susceptibility to disease • understanding that susceptibility to disease varies over time during the epidemiological transition as changing rates of communicable and non-communicable diseases change the main cause of death and morbidity in a country • susceptibility to various types of disease is affected by the effectiveness of mitigation strategies which may depend on the policies of governments (which will vary depending on the type of political regime and the level of development of a country) and international agencies, wealth and education and awareness

			offers simple conclusions on the extent to which standards of living have the greatest impact upon susceptibility to disease. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
14*			**Evaluate the success of strategies used by government and international agencies to mitigate against communicable disease.** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of strategies used by government and international agencies to mitigate against communicable disease. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of strategies used by government and international agencies to mitigate against communicable disease. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of strategies used by government and international agencies to mitigate against communicable disease. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of strategies used by government and international agencies to mitigate against communicable disease. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the success of strategies used by government and international agencies to mitigate against communicable disease. Demonstrates **comprehensive** application of knowledge and	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of strategies used by government and international agencies to mitigate against communicable disease could potentially include: • investment in advanced medical technology / research and discovery of new drugs / treatments • public awareness / education / health campaigns • financial support • vaccination programmes • supply of medicines / medical equipment • construction of temporary hospitals during pandemics • work of international agencies / charities such as WHO, UNICEF, NGOs into research, prevention, diagnosis, treatment of specific diseases • work of international agencies in assessment of shifting disease burdens, recommendations for restrictions of international movement / quarantine • international agencies co-ordinate strategies of national governments, NGOs and local communities, including rapid response to disease outbreaks • delivery of SDGs and MDGs within the UN Development Programme such as SDG3 - Health **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate the success of strategies used by government and international agencies to mitigate against communicable disease could potentially include: • the success of direct strategies such as measures

			understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based on the success of strategies used by government and international agencies to mitigate against communicable disease. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the success of strategies used by government and international agencies to mitigate against communicable disease. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on the success of strategies used by government and international agencies to mitigate against communicable disease. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the success of strategies used by government and international agencies to mitigate against communicable disease. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence on the success of strategies used by government and international agencies to mitigate against communicable disease. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the success of strategies used by government and international agencies to		to eradicate mosquitoes; success might be judged in terms of population numbers affected, extent of area affected, the time period over which strategies are effective, and relative success in countries at differing levels of economic development • the success of indirect strategies such as education and mass publicity campaigns to inform the public • effectiveness of strategies at different geographical scales such as level of national government investment in ACs/EDCs/LIDCs and global policies such as those of WHO, UNICEF and NGOs • policies / strategies which have become increasingly effective over time within a country as they become refined / improved • success of strategies for different types of communicable disease as the risk changes such as Malaria or Covid-19 • the success of strategies in LIDCs where there are socio-economic obstacles such as wealth / ability of a government to benefit from medical technology • the success of international agencies and charities in research, diagnosis and treatment and their dependence on donations, legacies and charity events • in the case of Malaria, the ability of governments and international agencies to scale up malaria prevention and treatment over wide areas such as throughout sub-Saharan Africa

			mitigate against communicable disease. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions on the success of strategies used by government and international agencies to mitigate against communicable disease. **Quality of extended response Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
15*			**'Geo-political implications of changes in ice-cover are the most significant consequence of global warming in the Arctic region.' To what extent do you agree?** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region could potentially include: *Geo-political consequences of changes in ice-cover* • two of the world's superpowers confront each other over short distances – USA and Russia • Canadian and European interests are also prominent in the Arctic • tensions between competing powers have been increasing over claims for the sea bed / access to non-living resources as the extent of sea ice has retreated • militarisation of the Arctic is accelerating *Other consequences of global warming* • sustainable harvests of animals by indigenous peoples of the Arctic are affected by patterns of sea ice; this is fundamental to their survival in the region, their way of life and culture • warming melts both sea ice and the tundra; the tundra is being explored by TNCs for energy and mining • shipping companies are considering use of the NWP from Atlantic to Pacific and the NSR across the Siberia coast • growing international interest in the Arctic has increased the importance of management of the region • potential disruption to the Arctic marine ecosystem is being caused by thinning ice, decreasing ice cover and increasingly severe weather • a major concern is that as the area of ice cover

			evaluation that offers secure judgements leading to rational conclusions that are evidence based on the extent to which changes in ice-cover are the most significant consequence of global warming in the Arctic region. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on the extent to which changes in ice-cover are the most significant consequence of global warming in the Arctic region. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence on the extent to which changes in ice-cover are the most significant consequence of global warming in the Arctic region. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the success of geo-political implications of changes in ice-cover and other consequences of global warming in the Arctic region.		declines and ice is thinning that a threshold will be crossed when reduced albedo leads to further warming of the ocean in an irreversible cycle **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate on the extent to which changes in ice-cover are the most significant consequence of global warming in the Arctic region could potentially include: • an evaluation of the significance of the geo-political implications of changes in ice-cover • an evaluation of the significance of other consequences of global warming / changes in ice-cover • understanding that the impact of global warming in the Arctic has environmental, social, economic and political consequences • understanding that the consequences of global warming are interlinked • understanding that the changes in ice-cover are not only short-term, seasonal changes but are likely to be long-term and possibly irreversible • the idea that changes in ice-cover / global warming might pose both threats and opportunities • understanding of the significance of the response to the changes in terms of international management of the region • understanding that the impacts of global warming / loss of ice-cover in the Arctic region have far reaching consequences globally for areas beyond the region in terms of sea level, ocean currents, climate, urban populations, agriculture • understanding that global warming in the Arctic region might have consequences for countries at differing levels of development; for example ACs

			Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offe simple conclusions on the extent to which changes in ice-cove are the most significant consequence of global warming in the Arctic region. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		with an Arctic coastline have increasing access to resources, but also most other countries are affected by new shipping routes such as China making use of the NSR to Europe rather than the Suez route, and other EDCs and LIDCs will be affected by the global climatic and environmental implicationsx

Question			Answer	Mark	Guidance
16*			**'Off-shore oil production and transportation poses more threats to the physical environment than to human activity.' Discuss.** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of threats to the physical environment and human activity posed by off-shore oil production and transportation. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of threats to the physical environment and human activity posed by off-shore oil production and transportation. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of threats to the physical environment and to human activity posed by off-shore oil production and transportation. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of threats to the physical environment and human activity posed by off-shore oil production and transportation. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed analysis of how threats to the physical environment and human activity are posed by off-shore oil production and transportation. Demonstrates **comprehensive** application of knowledge and	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of threats to the physical environment and human activity posed by off-shore oil production and transportation could potentially include: *Threats to physical environment:* • marine ecosystem disturbance - caused by oil spills from shipping or oil rigs including mortality for coral, birds, fish, turtles, mammals such as dolphins • food chain / web disruption - caused by oil spills, laying of submarine pipelines • beaches polluted / beach sediment from oil • salt marsh ecosystems – oil accumulation in mud, limits bacterial activity • coastal land ecosystems damaged by construction of oil terminals, industrial development, housing, services *Threats to human activity:* • fishing industry – fishing stops in short-term • tourism – contaminated beaches • knock-on effects on related activity such as ancillary industries, services • impact on households - unemployment, loss of income • coastal communities affected by downward socio-economic spiral where overdependence on marine-related commercial activity **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate whether off-shore oil production and transportation

			understanding to provide detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on whether off-shore oil production and transportation poses more threats to the physical environment than to human activity. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear, developed analysis of how threats to the physical environment and human activity are posed by off-shore oil production and transportation. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on whether off-shore oil production and transportation poses more threats to the physical environment than to human activity. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of how threats to the physical environment and human activity are posed by off-shore oil production and transportation. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements, with limited use of links between conclusions and evidence on whether off-shore oil production and transportation poses more threats to the physical environment than to human activity. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of how threats to the physical environment and human activity are posed by off-shore oil production and transportation.		poses more threats to the physical environment than to human activity could potentially include: • evaluation of scale / extent / impact of threats to the physical environment • evaluation of threats to human activities • understand that the threats to human activities from oil spills can be related to environmental, social, economic and political factors • understand that threats to the environment from oil spills can affect both marine and land / coastal ecosystems • threats to the environment and human activities can be problematic in the short- and long-term • threats to the physical environment and human activities may also vary with level of economic development • impacts of oil spills can be direct and indirect • impacts can be small scale / local or larger scale / more widespread along a coastline • understanding of the idea that many of the planet's most diverse and ecologically important regions hold large underground deposits of oil and gas

			Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple use of links between conclusions and evidence on whether off-shore oil production and transportation poses more threats to the physical environment than to human activity. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
17*			**'It is the major food retailers that have the most important role and responsibility in influencing the global food system.' To what extent do you agree?** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of the role and responsibility of major food retailers and other organisations in influencing the global food system. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of the role and responsibility of major food retailers and other organisations in influencing the global food system. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the role and responsibility of major food retailers and other organisations in influencing the global food system. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the role and responsibility of major food retailers and other organisations in influencing the global food system. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the role and responsibility of major food retailers and other organisations in influencing the global food system.	**20** **AO1** **x10** **AO2** **x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of the role and responsibility of major food retailers and other organisations in influencing the global food system could potentially include: *Food retailers:* • economic role - supermarket chains dominate distribution and retailing of food throughout the world – developed and developing • social role - many major transnational food retailers like Tesco have responsibility to conform to the UN Global Compact and Corporate Social Responsibility such as not using products produced by forced labour, co-operation and equitability • ethical policies - corporations like Tesco aim / claim to donate food to charities, reduce food waste, sustainably source specific ingredients • socio-economic role - support local communities by offering fair and standardised prices for products such as bananas, use locally sourced products, and create jobs, especially in the lower tiers of supply chains • political role – responsibility for governance of food safety; influence policy regarding national and international food chains • environmental role – ensure foods are sourced where local farmers have been trained in sustainable practices *Other organisations:* • agribusiness – large scale, capital intensive corporate farming has the role of production, processing and distribution – past criticism over environmental issues in pursuit of profit

			Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based on the extent to which the major food retailers have the most important role and responsibility in influencing the global food system. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the role and responsibility of major food retailers and other organisations in influencing the global food system. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence on the extent to which the major food retailers have the most important role and responsibility in influencing the global food system. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the role and responsibility of major food retailers and other organisations in influencing the global food system. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of on the extent to which the major food retailers have the most important role and responsibility in influencing the global food system. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the role and responsibility of major food retailers and other organisations in		• TNCs – specialise in processing and distribution of food • fair trade organisations – promote fair trade, payment of fair prices, good working conditions, no forced labour, greater equality in international trade **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate on the extent to which the major food retailers have the most important role and responsibility in influencing the global food system could potentially include: • evaluation of the role and responsibility of major food retailers (such as maintaining ethical policies to support local communities, ensuring food safety and sourcing food from environmentally sustainable practices) in influencing the global food system • evaluation of the role and responsibility of other organisations in influencing the global food system • understanding that all organisations have a responsibility to ensure fairness, equitability within the global food system and that co-operation is important in achieving this. The relative impact of major food retailers and other organisations such as agribusiness, TNCs and fair trade organisations might be evaluated in terms of their effectiveness to achieve fairness in pricing, equitability in employment opportunities and working conditions, and levels of co-operation between local communities and these larger organisations • role of major food retailers can be economic, social, environmental, political • understanding that the actions / policies of major food retailers have impacts within the food system / food chains across the globe and affect people's daily lives • understand that the role and responsibility of major food retailers has changed; economic domination in the past

			influencing the global food system. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions on the extent to which the major food retailers have the most important role and responsibility in influencing the global food system. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		adversely affected small traders, putting many out of business; fast-food retail giants also criticised in past for lack of responsibility for people's health/diet

Question	Answer	Mark	Guidance
18*	**'Long-term strategies are more effective than short-term strategies in improving food security.' Discuss.** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of long-term and short-term strategies in improving food security. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of long-term and short-term strategies in improving food security. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of long-term and short-term strategies in improving food security. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of long-term and short-term strategies in improving food security. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the effectiveness of long-term and short-term strategies in improving food security. Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether long-	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of long-term and short-term strategies in improving food security could potentially include: *Long-term strategies:* • capacity building such as government projects in improving storage and distribution of food and infrastructure support to provide an efficient food-supply system • long-term system redesign such as changing the system of land tenure or securing fair trade agreements • small-scale bottom-up approaches such as involvement of local farmers in self-help schemes in improving resilience of local food systems for communities • large-scale technology such as use of GM crops, large-scale water projects and development of HYV crops • trade agreements – multilateral and bilateral, since trade is a critical component of food security across the development spectrum • education / training in farming techniques to ensure sustainable food production *Short-term strategies:* • food aid in improving access to food through the work of international agencies such as WFP / UN / UNICEF • emergency food relief in situations such as conflict or natural disaster • improving / clearing damaged infrastructure so that people can gain access to food markets / supply centres

			term strategies are more effective than short-term strategies in improving food security. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the effectiveness of long-term and short-term strategies in improving food security. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence as to as to whether long-term strategies are more effective than short-term strategies in improving food security. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the effectiveness of long-term and short-term strategies in improving food security. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether long-term strategies are more effective than short-term strategies in improving food security. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the effectiveness of long-term and short-term strategies in improving food security. Demonstrates **basic** application of knowledge and		**AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate whether long-term strategies are more effective than short-term strategies in improving food security could potentially include: • evaluation of effectiveness of long-term strategies; effectiveness might be judged in terms of percentage of population food secure, costs of schemes relative to the benefits, the duration / sustainability of strategies – short- or long-term effectiveness • evaluation of effectiveness of short-term strategies • effectiveness of strategies may depend on input and co-ordination of international agencies, national governments, NGOs and local communities • a combination of long- and short-term strategies may be necessary to meet the differing needs within a country or area • understanding that different strategies can be applied at different scales - regional / international, national, local • idea that it may be necessary to alter specific strategies; these can be changed over time depending on requirements • long-term small-scale approaches can be directed at places where there is specific risk of food security within a country or region such as small urban or rural communities e.g. 'sack' gardening in Kibera, Nairobi • co-operatives contribute to sustainability of food supply in the long-term, providing services such as education of local people or advice on crops resistant to drought or heavy rain, as well as providing a market

			understanding to provide an un-supported evaluation that offers simple conclusions as to whether long-term strategies are more effective than short-term strategies in improving food security. . **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		• understanding that many of the strategies apply to LIDCs, but food security is also important in ACs; they depend on government policy to establish long-term capacity building strategies such international trade deals, and national projects such as the Special Supplemental Nutrition Program for Women, Infants and Children

Question			Answer	Mark	Guidance
19*			**'Attempts to mitigate against vulnerability are more successful than attempts to mitigate against losses.' With reference to earthquakes, to what extent do you agree?** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of various earthquake mitigation attempts. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of various earthquake mitigation attempts. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of various earthquake mitigation attempts. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of various earthquake mitigation attempts. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the relative success of various earthquake mitigation attempts.	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of various earthquake mitigation attempts could potentially include: *Attempts to mitigate against vulnerability:* • monitoring earthquakes using seismometers • mapping high risk zones • practicing earthquake drills • educating the local population e.g. go-bags • earthquake-proof buildings • reinforcing infrastructure e.g. bridges, pylons, pipes etc *Attempts to mitigate against losses:* • international disaster relief agencies • NGOs e.g. the Red Cross and Shelter • field hospitals and clearance teams • insurance **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate the relative success of various earthquake mitigation attempts could potentially include: • an evaluation of the attempts to mitigate against vulnerability • an evaluation of the attempts to mitigate against losses • understanding that mitigating against vulnerability also mitigates against losses • consideration that the mitigation attempts are often more effective when used together

			Demonstrates **comprehensive** application of knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the relative success of various earthquake mitigation attempts. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the relative success of various earthquake mitigation attempts. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence as to the relative success of various earthquake mitigation attempts. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the relative success of various earthquake mitigation attempts. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the relative success of various earthquake mitigation attempts. **Level 1 (1-2 marks)** Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the relative success of various earthquake mitigation		• understanding that the mitigation attempts operate on different timescales • recognition that mitigating against losses is more reactive and death-prevention than mitigating against vulnerability • reliance on mitigating against losses is often due to low income and a lack of money to mitigate longer term against vulnerability e.g. LIDCs likely disproportionately spend on recovery compared to ACs which may prioritise prevention • LIDC attempts to mitigate likely to be low cost, low-tech, simple strategies, whereas ACs are likely to use high cost, hi-tech, sophisticated strategies. • Examples might include Tohoku, Japan (2011), Gorkha, Nepal (2015), Haiti (2010)

			attempts. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the relative success of various earthquake mitigation attempts. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Question			Answer	Mark	Guidance
20*			**'The environmental impacts of a volcanic eruption are always more significant than the economic impacts.' Discuss.** **AO1** **Level 4 (8-10 marks)** Demonstrates **comprehensive** knowledge and understanding of the environmental and economic impacts of volcanic eruptions. **Level 3 (5-7 marks)** Demonstrates **thorough** knowledge and understanding of the environmental and economic impacts of volcanic eruptions. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the environmental and economic impacts of volcanic eruptions. **Level 1 (1-2 marks)** Demonstrates **basic** knowledge and understanding of the environmental and economic impacts of volcanic eruptions. **AO2** **Level 4 (8-10 marks)** Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the significance of environmental and economic impacts of volcanic eruptions. Demonstrates **comprehensive** application of	**20** **AO1 x10** **AO2 x10**	**Indicative content** **AO1 - 10 marks** Knowledge and understanding of the environmental and economic impacts of volcanic eruptions could potentially include: *Environmental impacts:* • ash coverage • tsunamis if coastal area • release of gases e.g. sulphur dioxide which has a cooling effect on regional and sometimes global climates • deforestation and loss of ecosystems • choking of rivers • creation of islands/ new land • dimming • fertile land improves agricultural production long term *Economic impacts:* • loss of industry and employment, particularly in agriculture due to more failed harvests • migration – abandoned villages due to destruction of homes and failed agriculture leads to spiral of decline • healthcare costs due to injury and long-term respiratory issues • cost of rebuilding roads and buildings • cost of mitigating against vulnerability e.g. educating locals about risk and evacuation • temporary decline in tourism • long term increase in income due to fertile land and

			knowledge and understanding to provide detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether the environmental impacts of a volcanic eruption are always more significant than the economic impacts. **Level 3 (5-7 marks)** Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis of the significance of environmental and economic impacts of volcanic eruptions. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence as to the significance of environmental and economic impacts of volcanic eruptions. **Level 2 (3-4 marks)** Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis of the significance of environmental and economic impacts of volcanic eruptions. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether the environmental impacts of a volcanic eruption are always more significant than the economic impacts. **Level 1 (1-2 marks)**		tourism **AO2 - 10 marks** Application of knowledge and understanding to analyse and evaluate whether the environmental impacts of a volcanic eruption are always more significant than the economic impacts could potentially include: • evaluation of the significance of environmental impacts and economic impacts, e.g. number of people affected, duration of impacts, monetary cost, number and extent of indirect impacts, income levels and employment structure • idea that environmental impacts affect economic impacts • consideration impacts can change over time • consideration that some impacts are positive • consideration that impacts can vary in significance at different scales within the country with impacts upon people differing to those on a national scale (e.g. emotional trauma associated with deaths compared to loss of working population) • significance of the various impacts depends on the case study/ies in question; contrasting examples of countries from different stages of development could be used to exemplify this (e.g. E15 had no human fatalities whereas Merapi killed over 367 people; E15 caused global economic impacts through tourism losses whereas Merapi was more localised).

			Demonstrates **basic** application of knowledge and understanding to provide a simple analysis of the significance of environmental and economic impacts of volcanic eruptions. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether the environmental impacts of a volcanic eruption are always more significant than the economic impacts. **Quality of extended response** **Level 4** There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Level 3** There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. **Level 2** The information has some relevance and is presented with limited structure. The information is supported by limited evidence. **Level 1** The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.		

Assessment Objectives (AO) grid

Candidates answer either question 1, 2, 3, 4 or 5, either question 6, 7, 8, 9 or 10 and one of questions 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20.

Question	AO1	AO2	AO3	Marks
1, 2, 3, 4 or 5 (a)	4			4
1, 2, 3, 4 or 5 (b)	3	3		6
1, 2, 3, 4 or 5 (c)(i)			4	4
1, 2, 3, 4, or 5 (c)(ii)		3	3	6
1, 2, 3, 4 or 5 (d)	6	6		12
6, 7, 8, 9 or 10 (a)	4	4		8
6, 7, 8, 9 or 10 (b)	4	4		8
11, 12, 13, 14, 15, 16, 17, 18, 19 or 20	10	10		20
Total	31	30	7	68

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