OCR
RECOGNISING ACHIEVEMENT

GCE

Geography A

Advanced GCE **A2 7832**

Advanced Subsidiary GCE **AS 3832**

Mark Schemes for the Units

June 2006

3832/7832/MS/R/06

Oxford Cambridge and RSA Examinations

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MARK SCHEMES FOR THE UNITS

Mark Scheme 2680
June 2006

Hydrological Systems

1 (a) What is meant by the term 'infiltration'? [2]

The process by which water enters the ground (1) from the surface. (1) The source and destination should be identified for one mark each.

(b) Study Fig. 1 (insert), which shows the process of overland flow.

(i) State and explain <u>two</u> factors that may affect the position of the water table shown in Fig 1. [6]

***Indicative content*:** water table can be affected by the amount of precipitation, intensity of precipitation, the infiltration rate, the type of rock or soil, the climate of an area, loss rates due to evapotranspiration, vegetation growth, human activity (e.g. irrigation, abstraction). Slope steepness is acceptable if explained with surface runoff and less infiltration. Do not allow mirrored answers. Channel is not acceptable.

Level Two (5-6 marks): candidates state and explain two factors clearly. Effective use of geographical terminology. Maximum of 5 marks if only one factor done very well.

Level One (0-4 marks): candidates identify one or two factors with an element of development. Where factors are identified but there is no development 1 mark can be given for each factor. Inaccurate geographical terminology.

(ii) A rising water table is one cause of overland flow. Explain <u>one</u> other cause of overland flow. [4]

***Indicative content*:** can also occur where the rate of precipitation exceeds the infiltration rate of the soil. Impermeable surface can lead to overland flow. Frozen ground, baked surface, urbanisation, impermeable surfaces, deforestation and reduced interception, compacted surfaces.

Level Two (3-4 marks): candidates explain clearly another way in which overland flow can occur. The key to this level is the accurate use of geographical terminology and clear development.

Level One (0-2 marks): candidates have some idea of what else might lead to overland flow. It is weakly explained and there is inaccurate use of geographical terminology.

(iii) Suggest <u>one</u> reason why throughflow becomes slower with increased depth. [4]

***Indicative content*:** fewer roots and less vegetation to aid the passage of water; soil becomes more compact with smaller pore spaces and so more difficult for water to move. Less biological activity with increased depth. Reference to rock is not acceptable.

Level Two (3-4 marks): candidates correctly identify and explain a reason and explain why there is a difference in the speed of throughflow.

Level One (0-2 marks): candidates show some knowledge but this is thin.

(c) Using examples you have studied, describe and explain how different land uses will affect the flows, stores and outputs of water within a drainage basin. [10]

***Indicative content*:** land uses include woodland, farmland, and urban areas. The flows include surface runoff, throughflow, infiltration, percolation, channel flow and baseflow. Stores include the surface store, soil store, interception store and aquifers. Outputs include evaporation, transpiration, discharge of lines and evapotranspiration. The link between land use, the flow, store and output should be made clear. Output can be river discharge. Channel modification is not allowed (e.g. levees, straightening, and sluice gates). Deforestation and urbanisation are acceptable. Dams controlling the discharge of rivers is not acceptable but are allowed if there is reference to surface stores/reservoirs.

Level Three (8-10 marks): candidates clearly identify at least two different land uses and explain how the flows, stores and outputs are influenced. Accurate use of geographical terminology.

Level Two (5-7 marks): candidates identify two different land uses and explain how they influence two of the flows, stores or outputs. OR one land use done very well has a maximum of 7 marks. Reasonable use of geographical terminology.

Level One (0-4 marks): candidates identify different land uses but explanation is absent. Inaccurate use of geographical terminology.

Ecosystems

2 (a) (i) What is meant by the term 'vegetation succession'? [2]

The replacement of one plant community with another. Element of time, replacement or development is important. Time can be implied. Vegetation change is vague.

(ii) Study Fig. 2a (insert), which shows a typical succession.

Describe and suggest reasons for the changes over time shown in Fig 2a. [10]

***Indicative content*:** the figure shows a change in the number of species as well as the type of species. S1 shows 1 early coloniser with 4 pioneer species such as lichens. The number of pioneer species decreases and disappears in stages 4 and 5. Late colonisers appear in S4 and are dominant in S5. Reasons could include competition, increased soil or humus, increased shelter, better water supply. They should relate to the type of species.

Level Three (8-10 marks): candidates utilise the information in 2a and there is direct reference made to the information. Description and reasons are present. Accurate use of geographical terminology.

Level Two (5-7 marks): candidates utilise some of the information in 2a. Description and reasons are present although explanation might be a little thin. Reasonable use of geographical terminology.

Level One (0-4 marks): candidates describe changes in the ecosystem. There may not be direct reference to the information. Reasons are not given. Inaccurate use of geographical terminology.

(b) Study Fig. 2b (insert), which shows the trophic pyramid for a deciduous woodland.

(i) What is meant by the term 'trophic level'? [2]

A group of organisms that have the same method of feeding or obtaining energy. A feeding stage. Do not credit use of word 'level'.

(ii) Suggest reasons why the Net Primary Productivity (NPP) decreases up the trophic pyramid shown in Fig 2b. [6]

Indicative content: reasons include animals and plants dying off. Energy is used during respiration, chewing and mating. Animals will use energy looking for and catching food. Not all is eaten. Life processes (respiration and eating) and death and decay. Just description of numbers decreasing should not be credited.

Level Two (5-6 marks): Identification of ways in which energy is lost plus development of two different reasons.

Level One (0-4 marks): Identification of how energy is lost plus development of one reason at the top of this level. Point mark list of correct features to a maximum of 4 marks.

(c) State and explain two factors that might prevent an ecosystem from reaching its climax. [6]

***Indicative content*:** volcanic eruption, flooding, drought, human activity, introduction of alien species, fire may irreversibly affect an ecosystem. Coppicing can be allowed. Climate is not allowed.

Level Two (5-6 marks): candidates state and explain in some detail two factors. Accurate use of geographical terminology. One factor maximum of 5 marks if very well done.

Level One (0-4 marks): candidates state at the bottom of this level but there is little or no development. Inaccurate use of geographical terminology.

Atmospheric Systems

3 (a) Study Fig 3 (insert), which shows the air masses that affect the British Isles.

(i) What is meant by the term 'air mass'? [2]

Large body of air (1) with uniform characteristics (1) such as temperature or humidity or, for second mark, gained from the source area.

(ii) Explain why the air masses shown vary in their characteristics. [6]

Indicative content: Reference should be made to the source areas and the track. Tropical source areas means higher temperatures are adopted by the air mass with polar and arctic source areas offering lower temperatures. Those with a maritime track will assume a higher humidity than those with a continental track. In the top answers there might be reference to stability and how this changes as the air mass moves.

Level Two (5-6 marks): candidates explain about temperature and humidity with accuracy. The characteristics of more than one air mass are explained. Accurate use of geographical terminology.

Level One (0-4 marks): no direct comparison and limited use of information from the map. Inaccurate use of geographical terminology. List of four factors (e.g. hot from the south, cold from the north) can achieve top of level one.

(iii) Choose <u>one</u> air mass and suggest the weather it brings to the British Isles in winter. [6]

Indicative content: air mass should be clearly stated. The weather should include an indication of temperature, humidity precipitation and there might be reference to stability, visibility, frost. Tropical continental is unlikely to occur in our winter time.

Level Two (5-6 marks): candidates state clearly weather and go beyond temperature and precipitation (e.g. frost, storms). One element of the weather is developed OR two additional weather types will gain full marks.

Level One (0-4 marks): candidates state their air mass and consider temperature and/or precipitation.

(b) Study Fig. 4 (Insert), which shows the variation of global energy budgets with latitude. [6]

(i) Describe and suggest reasons for the pattern shown.

Indicative content: concentration of sun's rays due to earth's curvature; albedo; thickness of atmosphere in polar and equatorial regions. 2 marks for describe – polar deficits (1) and tropical surplus (1) and 4 marks for explanation.

Level Two (5-6 marks): reasons are described and suggested. One reason very well done can achieve max. of 5 marks. For 6 marks there must be reference to surplus and deficit.

Level One (0-4 marks): Basic idea of energy comes in at tropics and is lost at the poles.

(ii) Outline <u>two</u> ways in which energy is transferred from areas of surplus to areas of deficit. [4]

***Indicative content*:** Energy can be transferred by water or wind, both at the surface or aloft. Heating in the equatorial regions lead to the poleward transfer of this energy (e.g. North Atlantic Drift). Atmospheric transfers include jet streams, Hadley Cells, depressions and anticyclones and surface winds, although Trade Winds alone is not creditworthy as these are not from areas of surplus to areas of deficit. Convection and weather systems are allowed. Not conduction and radiation should be qualified (i.e. radiated from and to).

Point mark: 1 mark for each method and 1 further mark for development or an example given.

Lithosphere

4 Study Fig 5a (Insert), which is a photo of a valley in North Yorkshire. The valley is formed in limestone and trends east-west. Fig 5b (Insert) shows a sketch section across the valley.

(a) (i) State <u>two</u> inputs to a slope system. [2]

***Indicative content*:** Inputs include solar energy, kinetic energy (rain, wind), inputs of mass from rainwater, meltwater, water, weathered material and organic materials. Gravity, temperature change, decaying vegetation. Regolith. Rock fall. Rock type is not allowed. Hot climate or cold climate are allowed. Climate alone is not allowed.

(ii) State <u>two</u> outputs of a slope system. [2]

Indicative content: Outputs include surface flow, transpiration, evapotranspiration, heat, organic matter, mass movement/regolith removal, throughflow, groundwater flow, water. Maximum of 1 for mass movement. There should be an idea of movement.

(b) (i) Describe the sketch section across the valley. [4]

***Indicative content*:** a longer slope on the north facing side of the valley with a steeper gradient. The valley is asymmetrical. There is a free face on the north-facing slope whereas there is not on the south-facing slope. Height difference between north and south.

Level Two (3-4 marks): candidates clearly describe two key features of the valley cross section. Accurate geographical terminology.

Level One (0-2 marks): candidates provide a basic description and might not recognise key features. Inaccurate use of geographical terminology.

(ii) Identify and describe <u>two</u> factors that might control the slope form. [6]

Indicative content: the aspect of the slopes is key. The north-facing slope is steeper due to the slower rates of weathering and mass movement. It has experienced cooler temperatures. The south-facing slope is gentler due to warmer temperatures, higher rates of mass movement and more weathering. Accept geological structure, faulting, erosion by the ice, animal grazing, human activity. Accept plausible ideas.

Level Two (5-6 marks): candidates identify and describe clearly two factors that might control the slope form and there is either a link to the slope form or obvious reference to the photographs for at least one of the factors. Effective use of geographical terminology. Maximum of 5 marks if one factor is done very well.

Level One (0-4 marks): candidates identify one or two factors and there is an attempt to describe but this is weak. Inaccurate use of geographical terminology. One mark for each plausible idea (max. of 2 marks).

(c) Describe and explain the processes of mass movement that are likely to occur in this valley. [10]

***Indicative content*:** soil creep or slow heave as shown by the terracettes. Free fall or indicative avalanches or rock fall as shown by the screes. The mass movement processes must be relevant to the photographs. Solifluction is acceptable. Flows are not accepted. Landslides not accepted. Scree slides are acceptable. Alternate wetting and drying. Saturated soils leading to flows and slides are not allowed. Frozen ground leading to impermeable layer and flows and slides is acceptable.

Level Three (8-10 marks): candidates identify at least two types of mass movement process that can occur in the photograph and provide a clear explanation. Clear and accurate use of geographical terminology.

Level Two (5-7 marks): candidates identify two types of mass movement processes and provide an element of explanation or one done well can gain a max. of 7 marks. Reasonable use of geographical terminology.

Level One (0-4 marks): candidates identify types of mass movement processes with some description of the process(es) at the top of this level but there is no explanation. Inaccurate use of geographical terminology.

Mark Scheme 2681
June 2006

Population

1 Fig. 1 shows European population density by country, 2004. Fig. 2 shows the country names.

(a) With reference to Fig. 1 describe the spatial pattern of population density. [4]

Level 2 (3-4 marks)
A clear description of the pattern. The discriminator from Level 1 is that the Level 2 response will include a summative comment. Reference to areas of both higher and lower values is required for full marks.
Max 3 marks if no reference to figures or specific countries.

Level 1 (0-2 marks)
A basic description in which there is no recognition of pattern. There may be listing of countries. There may be reference to either areas of high density or areas of low density only.

Indicative content: Possible summative comments might include:
- Higher densities are found in a central spine/core; lower densities in the more peripheral areas
- Use of contrasting regional descriptors such as higher densities in southern and central areas; lower densities in northern and north eastern areas.
- Smaller countries have higher densities

(b) State and explain the influence of <u>physical</u> and <u>political</u> factors on population density. Support your answer with reference to a named location, or locations, at the national scale.

(i) Physical factors [6]

Level 2 (5-6 marks)
Clear understanding of the links between physical factors and their influence on population density. The discriminator from Level 1 is that there are at least two factors examined with explanation of the influence on population density of at least one physical factor.
Max 5 marks if no named location for at least one of the factors.

Level 1 (0-4 marks)
Basic understanding of the link between physical factors and population density. Explanation of the influence of one physical factor on population density may be awarded up to 4 marks. At the lower end of the mark range (max 2 marks) the link between physical factors and population density is very weak or non existent perhaps with simple description of physical factors alone.

Indicative content: Possible physical factors include:
- Altitude
- Slope
- Aridity
- Marsh
- Soils
- Temperature
- Vegetation
- Coastal location
- Resources e.g. minerals

(ii) Political factors [6]

Level 2 (5-6 marks)
Clear understanding of the links between political factors and their influence on population density. The discriminator from Level 1 is that there are two political factors examined and there is explanation of the influence on population density of at least one political factor.
Max 5 marks if no named location for at least one of the factors.

Level 1 (0-4 marks)
Basic understanding of the link between political factors and population density. Explanation of the influence of one political factor on population density may be awarded up to 4 marks. At the lower end of the mark range (max 2 marks) the link between political factors and population density is very weak or non existent perhaps with simple outline of political factors alone.

Indicative content: Possible political factors include:
- War–refugees
- Redirection of industry
- Development of new towns / housing estates
- Planning restrictions e.g. green belts
- Development of transport networks
- Migration policies
- Natalist policies

(c) State and explain <u>one economic</u> and <u>one social</u> consequence for an area which has experienced net migration gain. Support your answer with reference to a named location, or locations.

(i) Economic [4]

Level 2 (3-4 marks)
A clear account of one economic consequence. The discriminator from Level 1 is that the link between an economic consequence and net migration gain is explicit. Cause and effect are clear.
Max 3 marks if no named location.

Level 1 (0-2 marks)
A basic response in which the link between an economic consequence and net migration gain is not explicit or is vague.

Indicative content: Depending on scale and the characteristics of the migrants, possible economic consequences include:
- Specific labour shortages may be addressed in terms of both economic sectors and geographical locations e.g. unskilled fruit pickers, skilled doctors and nurses, IT sector
- Contribution to GDP with small net gains in per capita output to the host country
- Creates demand for goods and services within the host country, region or city
- Problems associated with a declining or an ageing population may be addressed
- Concentration of migrants in a few geographical areas - impact on budgeting at local levels of government

- Additional load on social welfare, education and health care (which is not compensated by higher tax payment)
- Costs of providing housing, income support / council tax benefit /equivalent in MEDCs
- Development of an informal economy in LEDC cities (and in time development of a more skilled labour force and a broadening of the skills base)
- Rise in house prices eg in suburbanised villages.

ii) Social [4]

Level 2 (3-4 marks)
A clear account of one social consequence. The discriminator from Level 1 is that the link between a social consequence and net migration gain is explicit. Cause and effect are clear.
Max 3 marks if no named location.

Level 1 (0-2 marks)
A basic response in which the link between a social consequence and net migration gain is not explicit or is vague.

Indicative content: Depending on scale and characteristics of migrants, possible social consequences include:

- Cultural change e.g. services, mosques / temples, food suppliers
- Housing / accommodation shortages in MEDCs
- Development of squatter settlements / the squatter problem in LEDC cities
- Gender imbalance - e.g. younger male workers or older females in retirement
- Anti-social behaviour / crime / racial tension / policing, especially in MEDC urban areas
- Social / racial segregation / tension (incl accommodation centres for asylum seekers)
- Overcrowding - spread of contagious diseases
- Impact on social services

[Total : 24]

Rural Settlement

2 Study the 1: 50000 OS map extract of part of Wharfedale in West Yorkshire.

(a) With reference to specific evidence from the OS map extract, identify <u>two</u> factors which have influenced the shape of Ilkley's built up area. [2]+[2]

In each instance award one mark for the stated factor and one mark for reference to specific OS evidence (either grid ref, place name or physical / human feature).

***Indicative content*:** Possible factors include:

- River Wharfe - as a barrier - e.g. 130483
- Flood hazard - flood plain avoidance - e.g. 1048
- Steep slope - Ilkley Moor
- Woodland (possibly protected) - western margin
- Golf course - south eastern margin
- Lower slopes / valley floor E - W axis either side of bridging point
- County boundary - deviation from R Wharf - growth north of bridging point
- Railway station - encouraged growth - Ben Rhydding
- Railway track - as a barrier e.g. 135477

(b) With reference to specific evidence from the OS map extract, identify <u>two</u> periods in the evolution of the settlement pattern in this part of West Yorkshire. [2]+[2]

In each instance award one mark for identification of period and one mark for reference to historical evidence on the OS map.

***Indicative content*:** Possible periods / evidence include:

- Prehistoric - tumulus, stone circle, cairn, fort 0949
- Roman - road (course of) 1554
- Anglo-Saxon - place names (Denton, Middleton, Addingham, Ilkley)
- Scandinavian - place names (-gill, -dale, beck)
- Enclosure - isolated farmsteads e.g. Beck Foot Farm 1348, Windsover Farm 1150.
- Medieval - Priory 0754, Myddleton Lodge 1148
- Recent planning - abrupt boundary of Burley in Wharfedale along rail track
  - settlement expansion in Addingham, housing estate 0749

(c) Using the evidence of the OS map extract, describe and explain <u>two</u> characteristics of the distribution of settlement in the area. [4]+[4]

Each response marked according to the same levels mark scheme.

Level 2 (3-4 marks)
A clear response in which there is focus on the distribution of settlement. The discriminator from Level 1 is the inclusion of explanation of the distribution in addition to its description.
Max 3 marks if no reference to the OS map.

Level 1 (0-2 marks)
A basic response in which there is description only of a characteristic of the distribution. Answers which refer to one settlement only may be awarded up to 2 marks.

***Indicative content*:** Possible characteristics of the distribution of settlement include:

- Nucleated settlement pattern of small towns and villages at lower altitudes - physical or cultural factors
- Dispersed pattern of farmhouses at higher altitudes (higher densities on south facing slopes of Denton and Middleton Moors) – physical or cultural factors
- Hierarchical pattern of settlement along the dale – threshold population / accessibility
- Largest settlements along the A65 / railway line – accessibility / lower slopes, ease of construction
- Flood plain / moor tops sparsely settled – hazard perception / environmental factors

(d) Describe the socio-economic changes in a named rural region in an MEDC in the last 40 years. Explain how they are the result of population changes. [10]

Level 3 (8-10 marks)
Detailed knowledge and understanding of a rural region in an MEDC. A Level 3 response should demonstrate explicit links between the two elements **of socio-**economic change and population change. Place names are likely to be stated and for full marks reference to population statistics or specific shops and services is expected. The discriminator from L2 is that at least two social and / or economic changes are linked to population change. Cause and effect are clear.

Level 2 (5-7 marks)
Clear knowledge and understanding of the relationship. The two elements are present but the links between socio-economic change and population change are merely implicit. Place detail is less secure. The discriminator from Level 1 is that at least one social and / or economic change is discussed. There may be less emphasis on explanation. Max 6 if general description.

Level 1 (0-4 marks)
Basic knowledge and understanding of the relationship. Possibly only social and / or economic change or only population change is evident in the answer. If both elements are present there is no understanding of the link between them. The answer may be entirely descriptive.

***Indicative content*:** Possible socio-economic changes include:

- Services
- Retailing
- Housing
- Manufacturing / industry
- Crime
- Transport systems
- Changes in population/structure

Possible population changes for villages / towns / districts include:

- Change in total population
- Change in population structure

It is expected that responses will refer to more than one settlement in the same rural region e.g. the rural hinterland of a large urban area; some might meet the full requirements of this question with reference to one settlement only.

Responses which refer to settlements from more than one rural region should be marked positively either by crediting the best of the named examples / regions or by awarding marks as in a generalised response, whichever is the greater.

Wholly generalised answers may be awarded up to 6 marks i.e. where valid points are made but there is no appropriate place knowledge.

[Total : 26]

Urban Settlement

3 Study Fig. 3, which shows the percentage of urban populations for selected countries in 1991 and 2004.

(a) With reference to Fig. 3, describe the main changes in the percentage of urban populations between 1991 and 2004. [4]

Level 2 (3-4 marks)
A clear response that describes the main changes in % of urban population between 1991 and 2004. The discriminator from Level 1 is that the response should include a some reference to areal differences. Reference to areas of different rates of change of increase is expected for full marks
Max 3 marks if no reference to a statistic, a country or an anomaly

Level 1 (0-2 marks)
A basic response in which there is description of change country by country or a simplistic reference to overall increase.

Indicative content: Possible comments include
- An MEDC (lower % increases) /LEDC (higher % increases) contrast
- Areas with lowest % in 1991 have shown greatest increase
- Use of continental/sub-continental descriptors such as high % increases in Sub-Saharan Africa or SE Asia/lower % increases in Europe or the Americans.

(b) What is meant by the term urbanisation? [2]

An increase in the proportion of people living in towns and cities in an area.
1 mark for a less accurate statement such as the movement of people from rural to urban areas/increase in built up area.

(c) Explain how a change in the physical environment of a rural area in an LEDC might give rise to rural-urban migration. [3]

- 1 mark for clear identification of a change in the physical environment;
- 1 mark for explaining why the change has caused people to leave the rural area;
- 1 mark for an explicit link to migration to an urban area.

Indicative content: Possible changes in the physical environment include:
- A shorter term event e.g. mudflow, volcanic eruption, earthquake, hurricane, flooding;
- A longer term cause of environmental degradation e.g. soil exhaustion / depletion, drought.

Explanation may include the impact on the rural economy / way of life e.g. loss of crops, livestock, jobs; loss of housing or services; contamination of water supplies; increasing inability to support high population density; disruption of communications.

(d) State and explain <u>two</u> possible socio-economic advantages of living in urban areas in LEDCs for rural-urban migrants. [6]

Level 2 (5-6 marks)
A response in which there is clear identification and understanding of at least two social and / or economic advantages. The advantages must be linked to conditions pertaining in urban areas in LEDCs. The explanation of at least one advantage (either to the migrant or why it is found in urban areas) should include comparison with rural areas. Exemplification may be credited where it is useful either in establishing Level 2 or in awarding full marks.

Level 1 (0-4 marks)
Basic understanding of advantages in which there is limited, if any, development of the advantage or where there is no comparison with rural areas. One advantage well explained may be awarded up to 4 marks. At the lower end of the mark range (max 2) there will be vague and simplistic comments such as 'better standard of living'

Indicative content: Possible advantages, which may be real or perceived, include:
- Acquisition of skills
- Wage earning / higher wages
- Greater employment opportunities (formal or informal)
- Access to health care
- Education
- Social mobility
- Better housing

(e) With reference to a named urban area in an LEDC, describe and explain the environmental problems caused by rapid urban growth. [10]

Level 3 (8-10 marks)
Detailed knowledge and understanding of an urban area in an LEDC. Environmental problems are exemplified clearly and they relate specifically to rapid urban growth. A Level 3 response is expected to include place names / specific features / figures relating to the chosen urban area. The discriminator from Level 2 is that at least two environmental problems are discussed in detail and linked to rapid urban growth. Full marks may also be achieved by reference to several environmental problems explained but with necessarily less detail.

Level 2 (5-7 marks)
Clear knowledge and understanding of an urban area in an LEDC. Environmental problems are discussed in more general terms and place information / details are less secure. There is more emphasis on description rather than explanation. The discriminator from Level 1 is that at least one environmental problem linked, however simply, to rapid urban growth is discussed.

Level 1 (0-4 marks)
Basic knowledge and understanding of an urban area in an LEDC. Environmental problems are briefly stated with little, if any, development. There is reference only to either rapid urban growth or to environmental problems with no link made between them. There is no explanation, merely description.

Indicative content: Possible environmental problems include:

- Water pollution / shortages
- Air pollution
- Ground pollution
- Deforestation / impact on natural ecosystems
- Health

The main causes, which are linked to rapid urban growth, include:

- Limited sewerage provision
- Inadequate waste disposal
- Increasing traffic
- Unregulated industry
- Construction on marginal areas
- Substandard housing

Wholly generalised answers (which could apply to any urban area), max 6 marks.

[Total : 25]

Mark Scheme 2682
June 2006

1 Five stages may be identified in an AS Geographical Investigation. These are:

- Identification of a question.
- Development of a strategy.
- Collection of data.
- Analysis, evaluation and interpretation.
- Presentation of a summary.

Describe and explain why, at any stage in your Investigation, there might be a need to revisit previous stages in the sequence 1 to 5 (see above) to revise work done within them. [20 marks]

Indicative content: not all points are required to achieve full marks:
General principle of feedback loops: the recognition that all the stages lead on from one to the next and therefore if it is found that one needs modification this will affect others – the 5th point leading back to the first e.g.:

- When the strategy was developed, it was decided that it would be realistic to collect a slightly different set of data to what had been expected by the central question. Therefore the central question was changed accordingly.
- It had been planned to collect certain secondary data, but it was not available, so the strategy was changed to make use of what was available.
- The primary data collection had to be changed because of time constraints, therefore the identification of the central question and the development of a strategy were adjusted.
- When the data analysis and interpretation were carried out, it was decided that some additional primary data would improve the answer to the central question, therefore more data collection was carried out in the field.
- In the conclusion, it was clear that the central question had not been fully addressed but due to the way the work had developed, it had covered a slightly different central question. Therefore the title was changed and so was the strategy section to remove reference to aspects that had not been done and to include what had been done.

The following skills are applied to each level:

- The level of detail
- The use of geographical terminology
- The clarity of the description and explanation

Level 3 (16-20 marks)
Description and explanation of need to revisit previous stages are discussed **in detail**.
There is reference to the candidate's actual study.
The answer is logically ordered.

Level 2 (8-15 marks)
Either **Description and explanation** of need to revisit previous stages are discussed **clearly**.
Or **One of description *or* explanation** of need to revisit previous stages is discussed **in detail** and the **other basically**.
There may be reference to the candidate's actual study.
There may be lapses in the logic of the answer.

Level 1 (0-7 marks)
Description of need to revisit previous stages is discussed **basically**. There is unlikely to be any explanation.
There is little or no reference to the candidate's actual study.
There are considerable gaps and/or errors in the answer.

2 (a) Describe, using a sketch diagram, one method by which the journey time to school data alone might be presented. Justify your choice of method.

[10 marks]

***Indicative content*:** not all points are required to achieve full marks and other methods may be acceptable:

- Pie chart:
  - Description: title, group the data, labelled components; key.
  - Justification: visually attractive; show proportions of different journey times to school; use of key.
- Histogram / bar chart:
  - Description: title, group the data, labelled axes, labelled points and/or lines/bars where appropriate.
  - Justification: visually attractive; show variations in journey times to school; show magnitude.
- Table is acceptable provided data from Fig 1 has been manipulated, e.g. grouped frequencies, tally chart. Bottom of Level 1 for repetition of Fig 1.
- Box plots, dispersion diagrams, compound bars, pictograms.

The following skills are applied to each level:

- The level of detail
- The use of geographical terminology
- The clarity and technical correctness of the diagram
- The clarity of the description and justification

Level 3 (8-10 marks)
Description and justification of appropriate method are discussed **in detail**.
Diagram includes **most or all** technically correct features.
The answer is logically ordered.
Workable choice, e.g. data likely to be grouped.

Level 2 (5-7 marks)
Either **Description and justification** of appropriate method are discussed **clearly.**
Or **One of description *or* justification** of appropriate method is discussed **in detail** and **the other basically.**
Diagram includes **some** technically correct features.
There may be lapses in the logic of the answer.
Includes poor but workable choice, e.g. likely that data remains ungrouped.

Level 1 (0-4 marks)
Description of a method discussed **basically**. There is unlikely to be any justification.
There may be no diagram or it may not be appropriate.
There are considerable gaps and/or errors in the answer.
Includes inappropriate choices, e.g. repetition of Fig 1 (lower end), use of two variables, line graph of ungrouped data.

(b) Describe, using a sketch diagram, one method by which both the journey time to school and the associated distance to school data for each individual pupil, might be presented to show the relationship between them. Justify your choice of method. [10 marks]

Indicative content – not all points are required to achieve full marks and other methods may be acceptable:

- Line graph:
  - Description: title, labelled axes (distance on x axis), labelled points where appropriate.
  - Justification: visually attractive; show relationships between the 2 variables.
- Scatter graph:
  - Description: title, labelled axes (distance on x axis), labelled points and line of best fit where appropriate.
  - Justification: visually attractive; show relationships between the 2 variables; can add line of best fit and show anomalies.
- Others may include: combination graph of bars and points or pairs of adjacent bars.

The following skills are applied to each level:

- The level of detail
- The use of geographical terminology
- The clarity and technical correctness of the diagram
- The clarity of the description and justification

Level 3 (8-10 marks)
Description and justification of appropriate method are discussed **in detail**.
Diagram includes **most or all** technically correct features.
The answer is logically ordered.

Level 2 (5-7 marks)
Either **Description and justification** of appropriate method are discussed **clearly.**
Or **One of description *or* justification** of appropriate method is discussed **in detail** and **the other basically.**
Diagram includes **some** technically correct features.
There may be lapses in the logic of the answer.
Includes poor but workable choice.

Level 1 (0-4 marks)
Description of a method discussed **basically**. There is unlikely to be any justification.
There may be no diagram or it may not be appropriate.
There are considerable gaps and/or errors in the answer.
Includes inappropriate choices, e.g. use of only one variable.

3 Describe and explain, using a real or hypothetical physical geography example of your choice, how a statistical method can be used to test for 'association' (relationship) between two variables. [20 marks]

Indicative content – not all points are required to achieve full marks:
Spearman's Rank Correlation Coefficient (R_s)

- Concept of association
  - Null hypothesis: no significant association/relationship between the 2 variables.
  - Drawing a scattergraph – and discussing its outcome - as a precursor to R_s.
  - Can be used as do not assume a normal distribution of data and is a non-parametric test.
- Carrying out the test (formula not necessary for full credit if principles are clear; calculation is not required):
  - Each data set is converted to an ordinal scale by ranking the numbers from the highest (rank 1) to the lowest (rank x).
  - The difference between the ranks of each of the paired variables (d) is found.
  - These differences are squared (d^2) and then summed (Σd^2).
  - The coefficient $r_s = 1 - [6\Sigma d^2 / (n^3 – n)]$ where n = number of ranked pairs.
- Meaning of the outcome and its significance (formula not necessary for full credit if principles are clear; calculation is not required):
  - r_s calc is between +1 and -1. 0 = no correlation; 1 = perfect correlation.
  - A test of significance (usually at 95%) is carried out to see whether the relationship could have occurred by chance.
  - Using n - 2 degrees of freedom, the value for r_s, is compared with the R_s table value: if r_s calc > R_s table value, accept the alternative hypothesis.

It is unlikely that a test other than Spearman's will be used. However, Pearson's and Chi Squared are appropriate.

The following skills are applied to each level:

- The level of detail.
- The use of geographical terminology.
- The clarity of the description and explanation.

Max. top Level 2 if use human geography example.
Max. top Level 1 if no example at all.
Environmental impact is acceptable as physical example.

Level 3 (16-20 marks)
Description and explanation of test for association are discussed **in detail**.
There is **reference** to real or hypothetical physical geography variables.
Discusses general principle, how to carry out test, meaning of outcome and its significance level.
The answer is logically ordered.

Level 2 (8-15 marks)
Either **Description and explanation** of test for association are discussed **clearly**.
Or **One of description *or* explanation** of test for association is discussed **in detail** and the **other basically.**
There may be **reference** to real or hypothetical physical geography variables.
Discusses 2 or more of general principle, how to carry out test, meaning of outcome and its significance level.
There may be lapses in the logic of the answer.

Level 1 (0-7 marks)
Description of test for association is discussed **basically**. Unlikely to be any explanation. There is **little or no reference** to real or hypothetical physical geography variables. Discusses 1 or more of general principle, how to carry out test, meaning of outcome and its significance level. There are considerable gaps and/or errors in the answer.

Mark Scheme 2683
June 2006

Generic Mark Scheme

AO1 Knowledge (0-11 marks)

Section A		Section B
6-7	**Level 3** Substantial knowledge of themes, processes, concepts, environments, and where appropriate specific examples.	4
4-5	**Level 2** Sound knowledge of themes, processes, concepts, environments, and where appropriate specific examples.	2-3
0-3	**Level 1** Basic knowledge of themes, processes, concepts, environments and examples.	0-1

A02 Critical Understanding of Content (0-10 marks)

Section A		Section B
4	**Level 3** Authoritative understanding of concepts, theories and content including examples where appropriate.	5-6
2-3	**Level 2** Sound understanding of concepts, theories and content including examples where appropriate.	3-4
0-1	**Level 1** Basic understanding of concepts, theories and content and examples where appropriate.	0-2

AO3 Application of knowledge and critical understanding to unfamiliar contexts (0-12 marks)

Section A		Section B
3	**Level 3** Clear application of relevant knowledge and understanding to the question set.	8-9
2	**Level 2** Sound application of relevant knowledge and understanding to the question set.	5-7
0-1	**Level 1** Limited application of relevant knowledge and understanding to the question set.	0-4

AO4 Skills and techniques including communication skills (0-12 marks)

Section A		Section B
5-6	**Level 3** Clear structure and organisation. Communication is clear with maps, diagrams, statistics, if appropriate. Confident use of geographical terms.	5-6
3-4	**Level 2** Sound structure and organisation. Communication is sound with maps, diagrams, statistics, if appropriate. Some accurate use of geographical terms.	3-4
0-2	**Level 1** Poor structure and organisation. Much inaccuracy in communication and limited and/or ineffective use of different forms. Little confidence in the use of geographical terms.	0-2

Section A
Group A Options

Option 1: Coastal Environments

1 (a) Describe the causes of changing sea levels. [20]

(b) Explain how both the relative rise and fall in sea level can create distinctive coastal landforms. [25]

(a) The focus here is on eustatic and isostatic changes. A response containing a clear understanding of relative or net change should be awarded in AO2 at Level 3.
Points include:

- both terms refer to long-term and significant sea level changes
- eustatic refers to absolute changes in global sea level
- isostatic refers to the vertical movement of land
- eustatic mainly results from glacio-eustacy that is the transfer of water within the hydrological cycle. During a period of glaciation water is locked up as ice on the land, thereby lowering sea levels. Some 18 000 BP sea levels were approx. 130 metres lower than today.
- as deglaciation occurs ice melts so that water is free to continue through the hydrological cycle and return to the sea, which therefore rises in level. Some 10 000 BP sea level had risen to approx. 35 metres below today. Approx. 6 000 BP this relatively rapid rise in sea level had taken sea level to about 10 metres below today. Since then there has been a relatively slow rise in sea level to its present position, although there were higher sea levels during some inter-glacials.
- isostatic mainly results from glacio-isostacy. Continental ice sheets exert great overburden pressure causing the land to subside. When these sheets melt, the land is released from this downward pressure and so 'rebounds' or undergoes uplift. The regional tilt of the British Isles should be widely known by the candidates.
- glaciated areas such as western Europe have complicated relative sea level histories as when ice sheets melt, both sea and land rise.
- tectonics can also lead to relative upward or downward movement of the land. This is commonly seen at a local scale such as the localised tertiary movements evident in N. Wales e.g. Lleyn peninsula.
- eustacy associated with the thermal expansion of water and melting of ice as consequences of global warming / thermal contraction during glacials
- isostatic changes due to denudation/deposition balance e.g. S America.

(b) The key assessment here is the level of application of the processes to landform development. A0s 1 + 2 will reward the coastal landforms, A03 the link between landform and sea level change and A04 has potential to reward diagrams and sketch maps as well as text. The question mentions both rising and falling sea level so a determined effort to comply should lift the A03 mark to Level 3. Only rising/falling will not exceed Level 1 in AO3.
Points include:

- Eustatic changes
- shingle beaches (spits; bars; tombolos) that have been driven onshore by rising sea levels post-glacially.
- drowned valleys. Fjords and rias.
- fossil shore platforms, beaches and cliff lines resulting from falling sea level
- slope over wall cliffs
- Isostatic changes
- fossil shore platforms, beaches and cliff lines resulting from rising land level

2 Study the 1:50 000 OS map extract of part of the coastline of south-west Wales.

(a) Describe the coastal landforms between Trewent Point (022 973) and Little Furzenip (885 994) [20]

(b) Explain the formation of the coastal landforms. [25]

(a) There are plenty of coastal landforms for candidates to identify. Some responses will start at one end of the specified stretch of coastline and work their way along to the other end; others might attempt to deal with the erosional features and then the depositional for example. Either approach can achieve the higher level marks in all AOs. The better responses will quote from the map, using either grid references (4 and 6 figure) or place names, we will not be too particular regarding the more complex Welsh names! There are also good map reading opportunities for dimensions to be attempted such as cliff height (91 94) and the width and depth of bays e.g. Freshwater Bay (01 97).

(b) There does not have to be an equal treatment of all the erosional and depositional features but there needs to be more than just a couple of features in this sub-part to reach the highest level marks. The question asks about this specific stretch of coastline so responses that explicitly take this up should be awarded higher marks in AO3. No reference to map, maximum Level 1 in AO3. A combination of map / non-map Level 2 in AO3, e.g. explanations of other coastal locations.
It is important to remember that all the candidates have is the map and so we must be careful not to assume the level of place knowledge and understanding we might enjoy ourselves. There are also opportunities for AO4 marks via diagrams.

3 (a) Describe how sediment is transported and deposited within the coastal zone. [20]

(b) Account for variations in beach profiles. [25]

(a) Sediment is an important component in the real world coastal systems that the candidates will encounter. Their knowledge and understanding of how sediment is transported and deposited will determine the AO1 + 2 marks. There need not be an equal treatment of both transport and deposition but the omission of one will leave the response at Level 1 in AO3. The processes are the focus here not landforms. Points include:

- smaller calibre material entrained more readily than larger – a point that might indicate a level 3 response in AO2
- contrast amongst bedload / suspended / solution load – likely to indicate a level 3 response in AOs 1, 2 + 3.
- transport along a coast – especially along a straight coastline. Responses indicating that LSD is not the regular process many diagrams indicate might represent a Level 3 response in AO2
- transport on and off shore; references to wave type, rip currents and changing sea level appropriate.
- deposition related to any situation when energy of the moving water drops below that needed to maintain the sediment's movement. There are a number of natural sediment traps in coastal locations e.g. bay-head beaches.
- tidal flats; mud flats, salt marsh, mangroves. Process of flocculation key here.
- role of wind; sand dunes
- role of vegetation – salt marsh, mangroves, sand dunes
- human activity

(b) Variations in beach profile should be well known to candidates and this might be an opportunity for some to include material from field work. Material concerned with plan is irrelevant. If wave input or sediment are the only factor mentioned then AOs 1, 2 + 3 limited to top of Level 1.

- wave type – there is some confusion in the literature available to candidates and staff. The same term is not applied consistently and so we must be sure how the candidate is using certain terms before allocating marks.
- high energy (surfing) waves tend to result in wide and flat beaches. Such waves have a strong backwash relative to their swash and so material tends to be moved towards the sea. A breakpoint bar can be formed in the offshore zone.
- low energy (surging) waves have a relatively strong swash compared with a weaker backwash and so material is moved onshore. This produces a steep profile with distinctive berms.
- seasonal changes
- sediment size – the coarser the sediment the steeper profiles that can be sustained.
- permeability of beach material. Shingle allows much percolation and so swash is more effective than backwash resulting in relatively steep angles. Sand has lower percolation and so swash tends to be longer and backwash more powerful resulting in relatively low slope angles.
- influence of water table – high = flatter profile
- role of wind
- human activity

Option 2: Fluvial Environments

4 (a) Describe the seasonal variations in river regime in different parts of the world. [20]

(b) Show how seasonal variations in river regime result from the interaction of several factors. [25]

(a) Annual flow regimes are mentioned in the Spec. under the heading of energy balance related to transport of water and sediment; here we are only concerned with the transport of water. The term 'river regime' is applied to average annual variations in discharge. If the 'place' element is minimal then bottom of Level 2 in AO1 is the maximum. There is considerable potential for diagrams to earn not only AO4 marks but also those available in AOs 1+2. Before allocating marks we should be reassured of the labelling of, for example, axes on hydrographs.
Points include:

- contrast between rivers maintaining constant flow albeit at varying levels and those channels that are intermittent e.g. in semi-arid/arid/peri-glacial environments. Also winter bournes in areas such as chalk geology. This generic point needed for Level 3 in AO2.
- dramatic annual fluctuations occur in many different locations e.g. Indian sub-continent / northern Canada / south-west USA.
- some locations show more equable flow pattern e.g. many rivers in lowland Britain
- human activity affecting seasonal variations e.g. Colorado

(b) For Level 3 in AO3 a response will have to be clear as to the inter-action of factors for particular rivers. A shopping list approach which simply lists the factors will reach Level 2 in AO3 but not beyond. One possible approach that might be a more secure route is to take various rivers and explain why they experience the regimes they do using a systems approach identifying the inputs and stores and processes that result in a particular pattern of output. Points include;

- variations in inputs e.g. monsoon / snow or ice-melt
- variations in stores and processes within the basin e.g. geology / land-use
- human activity e.g. dams and reservoirs / abstraction

5 (a) With the help of labelled diagrams, describe the following landforms: alluvial fan; crevasse splay; unpaired terraces. [20]

(b) Explain the formation of depositional landforms of fluvial origin typically found in the lower reaches of a river. [25]

(a) These three landforms are explicitly mentioned in the Spec under the heading of valley and channel landforms. The quality of Communication through the diagrams is assessed under AO4 and it is important that assessments of Knowledge and Understanding are not prejudiced by the quality of diagrams.
Points include:

- alluvial fan – a fan or cone-shaped mass of material, usually of sand or gravel deposited by a stream where it emerges from the constriction of a narrow valley at a mountain front and spreads onto a wider valley or plain. The apex of the fan points upstream and the deposits become thinner as they are traced downwards and outwards – this last point is probably indicative of a Level 3 response. The stream breaks up into a number of distributary channels across the fan. Sediment calibre reduces downwards across the fan. Patterns of channels across the fan can be dynamic especially in semi-arid / arid environments. Most have a radius of under 8 km but they can greatly exceed this in arid areas. Mean surface angle generally in range $1^0 – 5^0$ with an increase towards the apex.
- crevasse splay – when levees present, initially flood water is held back when bankfull discharge is exceeded. As water level rises crevasses formed as water breaks through levees. Accelerated flow through narrow gap carries relatively coarse suspended load which is quickly deposited as flow disperses to form fan-shaped crevasse splay.
- unpaired terraces – former portion of floodplain now abandoned and left at a higher level as river downcuts. They are relatively flat benches. Usually made up of alluvium but can be cut into bedrock (strath terrace). Unpaired are those that do not match from one side of the valley to another.

(b) The role of energy is perhaps a helpful way into this topic. Simply taking energy as 'the ability to achieve work' then deposition occurs when rivers have insufficient energy to erode or transport sediment, that is they deposit their load. Responses can only be given credit for fluvial deposition but we should not be rigid in our interpretation of 'lower reaches'. Lower reaches can include estuary features. All four AOs can be rewarded through diagrams.
Points include;

- floodplain – the distinction between lateral and vertical accretion is likely to be a Level 3 indicator in AOs 1, 2 + 3
- levees
- ox-bow lakes
- crevasse splay
- terraces
- point bar deposits
- mud flats in estuaries

6 (a) Describe the cross-sections and plans for both meandering and braided river channels. [20]

(b) Explain why river channels change position. [25]

(a) Meandering and braided channels are explicitly mentioned in the Spec. and this question focuses on both their cross-sections and planforms. There need not be an equal treatment of both these two elements but the omission of one will leave the response at Level 1 in AO3. All four AOs can be rewarded through diagrams.
Points include; Meandering channels:

- sinuous form – higher level scripts could well mention measures of sinuosity i.e. comparing the straight-line distance between two points in a river channel with the channel distance. Meandering generally regarded as > 1.5
- wave length and amplitude can be included with mention of the relative consistency for a large proportion of rivers – wave length 7-10 x channel width and c. 5 x mean radius of curvature; radius of curvature 2-4 x channel width
- cross-section features – asymmetric form i.e. river cliff or bluff on outside of meander and a point bar/slip-off slope on the inside

Braided channels:

- a network of interconnected converging and diverging channels
- cross-section - river depth is generally shallow so that intervening bars and islands are exposed, some permanently, some at times of particularly low flow

(b) Channels change position in response to changes in controlling variables. Perhaps a helpful approach would be a systems one by which candidates could identify the inputs, stores and processes that are responsible for the form of river channels. Channel movements in the Spec. are in the sub-section concerned with meandering and braided channels but an equal treatment here is not required but the omission of one will leave the response at top of Level 1 in AO3. Processes of erosion and deposition are important to all channel movements.
Points include;

- meander migration – lateral extension to broaden the flood-plain + downstream movement. Cut-offs and ox-bow lakes relevant.
- braided channels – load-discharge relationship
- glacial diversion
- river capture
- flooding diversion e.g. Hwang Ho
- mass movement diversion e.g. land slides
- tectonic diversion e.g. localised uplift
- human activity e.g. Exe or Lavant

Option 3: Glacial and Periglacial Environments

7 (a) Describe how a valley glacier behaves as an open system. [20]

(b) Explain how advances and retreats of a valley glacier create distinctive landforms within the valley. [25]

(a) The glacier as a system is a major section within the Specification. At its most basic we are looking for a response to show knowledge and understanding of inputs, stores and processes and outputs for the AO 1, 2 + 3 marks. The question is clearly set in the context of a valley glacier but we should not be too rigid here, that is comments about 'ice masses' are acceptable. If a candidate includes material that is concerned with ice sheets / caps then AO3 should reflect this lack of application of knowledge and understanding. The idea of an open system, that is flows across boundaries should be clear for Level 2 in AO2 + 3. There is additional potential for AO4 marks from diagrams here.
Points include:

- glacial mass balance – accumulation, ablation and the relationship between the two as regards mass balance
- stronger responses might make reference to non-ice components such as rock debris as an input and output
- idea of flows of materials and energy across the boundaries of the valley glacier such as all outputs and inputs such as precipitation. Candidates who are aware that snow / ice can flow into a valley glacier e.g. diffluent flows into Cwm Idwal are likely to be at Level 3 in AOs 1, 2 +3

(b) The way a glacier functions as a system influences how a glacier moves and creates distinctive landforms. The question is clear in its reference to valley glaciers and so reference to landforms not found in such landscapes will influence the mark in AO3 although it is possible for a wide range of landforms to be found in a valley. Erosion and deposition by ice and glacio-fluvial activity can be accepted. The inclusion of both advance and retreat is intended as a guide to candidates but there need not be an even balance of material within a response. It is important that for the very highest marks, especially in AO3, candidates explicitly link movement with landform development rather than just offering a catalogue of glacial landforms. It might be a sign of a higher Level response when comments about subsequent advances and retreats modifying/destroying earlier landforms are included. Where the corrie is the main focus, bottom of Level 2 max.
Points include:

- till/boulder clay
- moraines – lateral/terminal/recessional/medial/push
- hummocky moraine
- drumlins
- kames and kame terraces
- ribbon lakes
- varves in ribbon lakes – not strictly landforms but worthy of credit
- esker
- valley train
- striations
- roche mountonees
- glacial trough itself

8 (a) Describe how a glacier erodes and transports sediment. [20]

(b) Explain how periglacial landforms result from the interaction of weathering and slope processes. [25]

(a) Processes of glacial erosion and transport are explicitly mentioned in the Spec. and are fundamental to a knowledge and understanding of glacial landforms and landscapes. There need not be an equal treatment of both erosion and transport, but the omission of one will leave the response at Level 1 in AO3. Level 3 responses are likely to offer detailed descriptions of the respective processes including the conditions under which they occur and the different types of sediment produced and moved. Comments about glacio-fluvial erosion and transport when these are clearly within a glacier are acceptable.
Points include:

- abrasion (mostly basal erosion),
- plucking/quarrying(including pressure melting + regelation)
- extending + compressing flow and relationship to erosion and transport
- fracturing (well jointed and bedded rocks where pressure from the overlying ice can force ice and debris into cracks thereby opening them up)
- sub-glacial stream erosion
- supra-, en-, and sub-glacial load including material carried by sub- and en-glacial streams

(b) For Level 3 in AO3 a response will have to be clear as to the inter-action of weathering and slope processes with periglacial landforms. A shopping list approach which simply lists the factors will reach Level 2 in AO3 but not beyond. Landforms of mass movement are likely to dominate responses but we must be open to any link a candidate makes that is supported by convincing knowledge and understanding.
Points include:

- solifluction / gelifluction sheets – vast expanses of smooth terrain, often at uniform angles as low as 10 - 30
- lobes and terraces – step like slopes with steep risers of 2/3 metres and low-angled treads. Lobes form where solifluction is concentrated into well-defined linear paths. Terraces associated with more uniform movement.
- asymmetric valleys – one slope steeper than the other due to the effect of aspect on micro-climate – sun-facing slopes experience longer periods of thawing, more meltwater and so greater solifluction, thus they are lowered more than non-sun facing
- freeze-thaw + generation of scree slopes

9 (a) Describe the contrasting sediment characteristics resulting from direct deposition by ice and glacio-fluvial water. [20]

(b) Explain how water contributes to erosional processes in glacial environments. [25]

(a) Candidates here are invited to consider the contrast in sediment characteristics, size, shape and patterns of deposition between that laid down directly by ice and that by glacio-fluvial water. There need not be an equal treatment of both sediment environments but the omission of one will leave the response at Level 1 in AO3. If there is no contrast made, that is the response consists of simply two lists then AO3 will be at Level 1.
Points include:

- ice – poor sorting (large range in grain size) / water deposition – better sorting in particular the absence of fine particles
- ice – lack of stratification / water – stratification often present such as graded bedding (progressive change in grain size with depth)
- ice – predominantly sub-angular but not rounded and smoothed / water – similar to fluvial deposits in terms of roundness and smoothness
- ice – can show a preferred orientation / water no orientation

(b) The focus here is on the role of water in its liquid form but within the glacial environment. Material on the role of glacio-fluvial water is likely to be prominent and this alone is capable of achieving top of Level 2 in AOs 1, 2 + 3. The important role of water in glacial erosion can move a response into Level 3.
Points include:

- meltwater channels – can be up to 100 metres in depth and extend for tens of km. Can be subglacial, usually parallel to direction of ice movement or marginal e.g. Ironbridge Gorge cut by overflow from Lake Lapworth. Often steep-sided. In long profile some have up-gradients reflecting the effect of hydrostatic pressure. Material on jökulhlaups relevant.
- sichelwannen – elongated crescentic depressions up to 5m or more across thought to be the result of high-velocity, sediment charged subglacial meltwater flows
- basal water – can reduce effective pressure on bed beneath glacier and thus abrasion rates diminished. However, basal sliding may increase and so this increases the rate of abrasion
- melting and refreezing of subglacial water possibly promoting plucking e.g. corrie headwall development; roches moutonées formation

Option 4: Hot arid and Semi-arid Environments

10 (a) Describe the weathering processes commonly found in hot arid and semi-arid environments. [20]

(b) Explain how wind erodes and transports material in hot arid and semi-arid environments. [25]

(a) Within the section on 'processes' the Spec. specifies thermal fracture, exfoliation and chemical weathering. The quality of the description of each of these will inform the mark for the AOs.
Points include:

- without salt weathering max Level 2 in AOs 1+2
- thermal fracture – cracking of rocks due to rapid changes in temperature.
- exfoliation – breaking, splitting and peeling off of outer rock layers. Essential factor here, and with thermal fracture, is the variation in coefficients of expansion of the materials making up the rock e.g. different minerals. The term insolation weathering is likely to be widely employed
- freeze thaw
- pressure release
- chemical weathering – wherever water is more freely available almost any of the types of chemical weathering can occur. Some types overlap with the mechanical category e.g. salt weathering. Rock surfaces commonly impregnated with soluble salts as evaporation > precipitation. Salts can then disintegrate rocks by the growth of crystals from solutions and the expansion of hygroscopic salts on hydration

(b) The importance of wind has been given a changing emphasis in desert geomorphology. At times it was pre-eminent, at others relegated to a minor role. Today, wind erosion is regarded as significant in some deserts. This question asks about both erosion and transport by wind; comments about dunes are irrelevant.
Points include:

- abrasion – physical impact by wind-borne particles – widely thought that sand sized particles most effective but some research indicates that silt sized particles can be effective. Abrasion confined to within 1-2 m of surface and most effective at <50cms.
- deflation – removal of loose particles – sand sized movement tends to be localised but silt and clay sized particles can be lifted by atmospheric turbulence and carries in suspension great distances. Responses containing comments about the importance of local variations in wind and surface characteristics determining effectiveness of deflation are likely to be Level 3 in AO 1 + 2
- transport – velocity and turbulence of wind; surface roughness + cohesion + grain size of particles; saltation; creep

11 (a) Describe the characteristics of the hot desert hydrological cycle.

[20]

(b) Explain how human activity can affect the hydrological cycle in hot desert environments. **[25]**

(a) The focus here is on the basin hydrological cycle encountered at AS but as found in hot desert locations. Responses that are convincing in their knowledge and understanding of the inputs, stores and processes and outputs resulting in desert hydrological regimes will reach Level 3 in the AOs. There are opportunities here for AOs to be assessed through diagrams such as hydrographs.
Points include:

- inputs – high variability in precipitation temporally and spatially. The inclusion of both of these might indicate a Level 3 response in AOs 1 + 2. Variability often in the 80 – 150% range. Precipitation often high intensity e.g. 25mm per hour. Precipitation in coastal deserts includes moisture from fog – likely to be a Level 3 point in AO2.
- stores and processes - the nature of the surface is a key influence on what happens to water once it reaches the surface. Unconsolidated active dunes and sand sheets are highly permeable so infiltration is rapid thus reducing surface stores and flows. Dormant dunes and areas with surface crusts hold water at the surface and can channel water into gully systems. Water can percolate to aquifers to sustain oases. Soil store very limited.
- outputs – evaporation rates very high. Desert vegetation reduces transpiration as much as possible. Surface flow common in areas of impermeable materials e.g. hardpans. Pattern is typically of very flashy responses separated by extended periods of little or no flow. Much of the water does not reach the sea. Some basins are closed. A Level 3 point would be the acknowledgement that some rivers in deserts have their sources outside the desert region, exogenous rivers e.g. Nile and Indus.

(b) The key assessment is the degree to which a response links the hydrological cycle with human activity, reflected in AO3. A purely descriptive response will not go beyond bottom of Level 2 in AO3. The Spec. specifies use and misuse of surface and ground water resources and it may be that the latter predominate. Those who include sustainable uses as well as misuse are likely to reach Level 3 in AO2 + 3.
Points include:

- inputs – comments about regional and local deforestation disrupting flows of water. Aforestation schemes to restore the balance.
- stores – surface water e.g. dams of various scales; stone walls; exploiting ground water
- processes – types of irrigation e.g. spray has high loss from evaporation but drip / trickle reduces such loss
- outputs – most human activity reduces output e.g. Colorado river but in some areas measures now being taken to restore some of the flow

12 (a) Describe the main characteristics of desert climates. [20]

(b) Explain the variations in aridity in desert environments. [25]

(a) Fundamental to a study of hot arid and semi-arid environments is a knowledge and understanding of desert climates. It is unlikely that a response will rise beyond Level 1 in AOs 1+2 if it describes aridity simply in terms of low precipitation and does not go on to describe the importance of evaporation.
Points include:

- arid – between 250 and 100mm and semi-arid between 500mm and 250mm.
- various schemes devised to extend description to include some idea of water balance e.g. Thornthwaite's aridity index.
- evapo-transpiration rates very high with PE rates very high; low absolute humidity 15-30% characteristic for inland locations
- temperature range – deserts have high temperature ranges both diurnal and annual, probably a point representative of top of Level 2 in AOs 1+2.
- precipitation – with decreasing annual total comes increasing variability. Some response might mention the variability index, often over 30% and can reach 60%. (Mean deviation from mean/mean X 100 = variability %)
- extreme storm events
- winds – many desert locations subject to strong local and seasonal winds e.g. harmattan; sirocco

(b) This sub-part continues the climatic theme by looking at the diversity that exists amongst desert regions in terms of their climate. An understanding that there is this diversity is important as it helps students understand the contrasts amongst arid environments.
Points include:

- latitude – both to the north and south of arid areas in both hemispheres rainfall totals increase e.g. to the south of the Sahara in West Africa locations begin to experience increased rainfall associated with savannah; some locations are at latitudes which receive rain bearing systems such as depressions at certain times of the year e.g. Jiddah, Saudi Arabia and southern California
- altitude – can ameliorate temperatures and increase rainfall c.f. equivalent latitudes. The inclusion of deserts below sea level e.g. Death Valley, might be an indication of a Level 3 response.
- coastal / continental locations – coastal can experience moderating effect of sea e.g. cool ocean current as well as experience relatively high incidence of fog c.f. inland locations
- wind direction and strength – local winds can vary considerably seasonally and bring precipitation or aridity as well as temperature contrasts
- El Nino effects can be included here and might indicate a Level 3 response

Option 5: Applied Climatology

13 (a) Describe how buildings modify the climate around them. [20]

(b) Explain the relationship between urban morphology and urban climate. [25]

(a) The section 'Urban climates' in the Spec. has the modification by buildings of the climate adjacent to them separate from the bullet point concerning the contrasting energy budgets of urban areas and their surroundings. Many candidates will see this question as an opportunity to describe both the small-scale influences of buildings as well as the larger scale issues of urban heat islands. We should credit both aspects but those who focus only on the whole urban area should not receive more than Level 2 in AO3.
Points include:

- temperature – buildings cast shade
- sunlight – shade
- wind – higher wind speeds between buildings, especially high-rise
- wind – smaller scale eddies and turbulence are also found
- with increasing height of building the frictional effect reduces and so wind speeds are higher

(b) The built environment changes many aspects of the natural environment, in particular thermal stores and transfers, surface roughness and hydrology. These combine to create urban climates. When the response has a clear and detailed focus on this relationship, then Level 3 in the four AOs is a likely outcome.
Points include:

- urban morphology – shape in three dimensions is relevant
- winds and air movement - enhanced friction over urban areas leads to lower wind speeds in general. Within an urban area there will be variations in friction e.g. lower friction over open areas (parks; playing fields; lakes)
- winds and air movement – funnelling of wind through urban 'canyons' e.g. CBD and shopping centres
- temperature – role of river valleys e.g. cold air sinks within urban heat island
- temperature – shape in terms of plan will influence pattern of isotherms

14 (a) Describe the circumstances under which a shelter belt or wind break would be used. [20]

(b) Explain the relationship between forest type and the resultant climate. [25]

(a) Shelter belts and wind breaks tend to be artificially generated barriers specifically designed to reduce wind speeds. Their influence also extends to other factors such as evaporation rates and the water balance in a small area. As so many shelter-belts / wind breaks are deliberately generated they are designed to have a beneficial effect on human activities, most notably agriculture. A range of possible contexts are possible and it is possible for a Level 3 response to be achieved either through a broad approach covering many different applications or through a more detailed study of one or two particular examples.
Points include:

- shelter for cattle – sometimes these take the form of a tunnel of vegetation in which livestock can shelter e.g. upland areas
- wind breaks to reduce wind speed in areas of low relief where arable enterprises are important. At certain times of the year the soil will not have a well developed cover of vegetation and so be susceptible to soil erosion by wind e.g. Dutch polders, Fens
- shelter for isolated buildings e.g. farmsteads on Polders
- vegetation belts to trap snow for increased soil moisture in summer e.g. Canadian Prairies

(b) The question has forest type as its focus and so a response that follows this is likely to be Level 3. The Spec is not specific regarding forest type but Level 3 could be achieved with a comparison between deciduous and evergreen and the impact of seasonality. It would be good if candidates studying this Option had contrasted temperate with tropical rainforest for example.
Points include:

- albedo – coniferous typically 8-14% c.f. deciduous 12-18%. Semi-arid savannas for example much higher
- trapping energy – deciduous in full leaf can trap 80% of incoming radiation. Evergreen generally trap high %s as can tropical rainforest. Both these bullet points relate to temperatures on forest floors. Both as well will vary with season for deciduous, likely to be Level 2/3 response.
- modification of thermal regime – daily maximum temperatures are lower and minimum higher – a more equable regime
- modification of airflow – generally reduced significantly. There are some interesting studies concerning variations with height within a forest e.g. vertical structuring in rainforests with significant canopy – undergrowth contrasts
- modification of humidity – generally higher forest air humidity as evaporation from forest floor reduced (decreased direct sunlight/lower wind velocities/lower max. temperatures)
- modification of precipitation – a more difficult issue due to complexities in recording data. Generally reduced precipitation as evaporation from surface store of leaves

15 (a) Describe the contrasting energy budgets of a north and south facing slope in the British Isles. [20]

(b) Explain how high altitudes can offer both advantages and disadvantages for human activity. [25]

(a) The climate of slopes and valleys is mentioned under the major heading of Topo-climates and climatology at the local scale. Here the context is specified for the candidate and they are also given the focus of energy budgets. The question asks for a contrast between a north and south facing slope and without this the response is limited to level 1 in AO3.
Points include:

- inputs – role of aspect. Seasonal variations would indicate a Level 3 response in AOs 1, 2 + 3
- stores and processes – because the input can vary so can the vegetation type and cover. This might affect the absorption of incoming energy.
- outputs - albedo e.g. more albedo on north facing slopes as there might be more bare rock and soil c.f. forested south-facing slope.

(b) The more convincing responses will deal both with negative and positive influences – these are likely to reach Level 3 in AO3. The quality of the links between altitude and human activity will inform in particular the Level in AO3.
Points include:

- low latitudes – attraction of highland areas e.g. East Africa for certain types of agriculture; altitude zonation of agriculture prominent in Andes for example
- high and mid-latitudes – same point with increasingly extensive agricultural systems higher up until forestry and then 'wilderness' take over. Use of highest areas for national parks. System of transhumance is relevant here introducing a seasonal element in the argument.

Section B

Group B Options

Option 6: Agriculture and Food

16 (a) Describe how variations in population density can influence agricultural systems. [20]

(b) Explain how changes in agricultural systems may result from changes in consumer demand. [25]

(a) These two factors appear under the heading of 'The influence of human and cultural factors on agricultural systems'. Although these two factors are linked in the Specification variations in people per unit area can influence farming in a number of ways and candidates are likely to be inventive as to the links; be prepared to credit any possible influences in AO3 as well as the knowledge and understanding in AOs 1 + 2. There is also effective material of a historical nature such as farming around major metropolitan areas in late 18th and 19th centuries.
The relationship between markets and farming patterns is a traditional area of investigation and with more recent involvement of governments some interesting additional dimensions have been added.
Points include:

- countries with low population densities often have large average farm sizes; those with high densities can have small average farm sizes – probably a Level 3 point under A02
- link between agricultural land values and population density as outlined by Ricardo: where pop. density is high there is keen competition for land, which forces up land prices and so influences agricultural systems.
- high pop. density in areas such as Bangladesh / Java contribute to intensive agriculture.

(b) Consumer demand is a key element in understanding markets and the past few decades has seen significant shifts in consumer attitudes and preferences towards food. Over 60% of UK agricultural production is under contract to food processing firms and supermarket chains. Where a response has the link between agricultural systems and changing demand explicit then Level 3 in AO3 is possible, where not then bottom of Level 2 is the maximum.
Points include:

- increased affluence – decreasing demand for basic foodstuffs especially those needing preparation: increasing demand for processed and convenience foods. This can lead to changes in varieties grown or reduction in certain crops in total
- changing taste – e.g. less liquid milk and more processed in particular yoghurts; increase in chicken consumption and decline in beef
- increasing preference for organic foods; changing farm enterprises
- increased ability to pay for foods out of season in one location e.g. UK influences change at locations where crops can be grown e.g. strawberries from Spain

17 (a) Describe how farmers in different parts of the world modify the physical environment in order to increase agricultural output. [20]

(b) Explain the influence of relief on agricultural systems. [25]

(a) The impacts of the physical environment on agricultural systems are a major part of this Option. Here it is the possible human modifications of this environmental context that is to be described. The spatial context requires '… different parts of the world…' and a response that ignores this will be at Level 1 in AO3. A response that is genuine in its attempt to describe 'different parts' will be Level 2 in AO3 as a minimum. There are a variety of approaches candidates might take, any of which are valid. Some might organise their responses around contrasting locations while others might go through the major elements of the physical environment in turn.
Points include:

- climate – greenhouses/poly-tunnels/shelter belts
- soils – fertilisers/drainage/deep ploughing to break pans
- relief – terracing
- hydrology – drainage/irrigation

(b) This sub-part is linked with the first through its focus on the physical environment. Here though the key feature for assessment is the link between relief and agricultural systems. AO3 will reflect the degree to which a response explicitly achieves this with bottom of Level 2 the maximum if the link is unclear. Responses that see relief not just in a negative manner are likely to be at Level 3 in AOs 1, 2 + 3.
Points include:

- three key elements of relief – altitude, slope and aspect. The inclusion of all three is likely to place a response at Level 3 across the AOs. Less than three then Level 2 max in AOs 1, 2 + 3.
- altitude – mostly its relationship with climate. In lower latitudes then increased altitude allows a wider range of agricultural systems c.f. higher latitudes where increased altitude tends to make agriculture marginal
- slope – impact on ability to use machinery
- aspect – restricts or encourages certain agricultural systems depending on north/south facing and which hemisphere

18 (a) Describe the distribution of commercial and non-commercial agricultural systems at the global scale. [20]

(b) Explain how non-commercial agricultural systems respond to changing social and economic influences. [25]

(a) Top quality responses will pick up 'distribution' in their description of both types of agricultural systems. A limited response, such as one focussing on a single type of system will not reach above Level 1 in AOs1 + 3. Appropriate exemplar material could lift a response into a higher Level in AOs 1 + 2.
Points include:

- fundamental contrast between commercial in MEDCs and non-commercial in LEDCs. Without this the response is unlikely to reach above Level 1 in AOs 1, 2 +3.
- a subset of non-commercial is peasant agriculture and is almost exclusively in LEDCs although comments about regions such as Eastern Europe would probably indicate a Level 3 response.
- another subset of non-commercial is redistributive – China still to some extent and North Korea for example
- commercial also found in LEDCs e.g. plantations and larger scale local farmers
- non-commercial found in MEDCs e.g. crofting although few true examples survive

(b) This sub-part follows on from (a) by looking at non-commercial. Responses focussing either entirely on commercial or including some material on this category will be at Level 1 in AO3 or bottom of Level 2 respectively. Level 3 responses will directly address the link between changing social and economic influences and non-commercial agricultural systems. There is a great variety of material that candidates could harness to construct their response. We must be open to whatever they chose and assess it according to the nature and extent of the links being made.
Points include:

- non-commercial is very rarely simply subsistence but involves a degree of market involvement – this point might indicate top of Level 2 in AO2
- economic influences - increased demand for produce e.g. when tourist developments occur in location / road developments e.g. metalled
- social influences – pressures on traditional inheritance practices due to population pressure on land / changing labour availability due to rural to urban migration

Option 7: Manufacturing Industry: Location, Change and Environmental Impact

19 (a) Describe the advantages of the rural-urban fringe as a location for modern manufacturing industry in MEDCs. [20]

(b) With reference to urban areas, explain how manufacturing growth and decline can have advantages and disadvantages to particular social groups. [25]

(a) Manufacturing location and change are key elements of this Option and here they are placed in the context of the rural-urban fringe. Candidates who do not focus on the fringe will be at Level 1 in AO3. We must be careful as to what constitutes the fringe as it not always straightforward to define what constitutes this zone: the use of the word 'modern' in the question does limit responses to current trends, not historical. A simple listing of advantages is likely to leave the assessment of AO2 at Level 1 as at A2 we can expect the link between advantage and manufacturing to be made explicit. Those who drift into tertiary activity should not receive credit for this material unless they explicitly link this with manufacturing, such as the location of HQ and or R&D locations. There is much potential for exemplar material based on local fieldwork.

Points include:

- improved access to road transport networks for industries using this mode as their primary transport method for materials in and out
- space requirements – modern manufacturing plants almost exclusively single storey c.f. 19th century e.g. textile mills
- cost of increased space – greenfield sites can be cheaper c.f. land centrally located
- cost of developing greenfield sites often cheaper than brownfield to develop
- improved access to decentralised workforce
- improved environmental context for some types of industries that helps in attracting workforce

(b) This sub-part continues within the urban theme but switches attention to the effects of change on particular social groups. Advantages and disadvantages and growth and decline are clear in the question and whilst an equal treatment is not a prerequisite for Level 3 the absence of one of the pairings will restrict the assessment to top of Level 1 in AO3. The absence of one element of the four will restrict the response to top of Level 2 in AO3. Any locations within an urban area are relevant here and this can include industry on the fringe much of which is functionally part of the urban area. The sub-part is also open to material from MEDC or LEDC contexts.

Points include:

- growth – advantages e.g. positive multiplier; employment for those with appropriate skills; disadvantages e.g. increased pollution/traffic congestion in particular on those who have limited housing choice and so often live close to industrial areas
- decline – advantages e.g. cleaner environment for those living in ex-industrial areas ; disadvantages e.g. loss of employment not just that directly within manufacturing but also linked and in tertiary

20 (a) Under what circumstances do raw materials and energy influence the location of manufacturing industry. (20)

(b) Account for the changing influence of raw materials and energy on the location of manufacturing industry. (25)

(a) Candidates have been dismissive of the role raw materials and energy have on manufacturing locations in the past. The question is clear in asking for 'circumstances' related to location and this done well will reach Level 3 in AO3. Where there is simply a description of Weber's theory this is likely to be a bottom of level 2 response in AOs 1 + 2. Weberian style locations are important but it is the conditions / circumstances under which they arise that are the focus.
Points include:

- significant weight-loss continues to exert a strong locational pull e.g. copper smelting / cement manufacturing / pulp / flour milling
- significant input of energy e.g. aluminium smelting
- significant perishability of raw materials e.g. in some food processing such as sugar beet / milk products
- where transport networks remain poorly developed e.g. some LEDC locations
- where energy distribution remains poorly developed e.g. some LEDC locations
- where industrial processes are relatively inefficient in their use of raw materials and or energy
- historical exemplification valid e.g. Lancashire cotton textile industry

(b) A key assessment feature here is how well the response picks up on 'changing influence' and 'location'. Where this is not convincing then top of Level 2 in AO3 is the maximum and where one of these two elements is absent top of Level 1 in AO3 is the maximum.
Points include:

- decreased demand for the quantity of raw materials required to produce one unit of the finished product due to improved efficiency in processing e.g. iron + steel making
- increased capacity and reliability of transport modes and networks e.g. bulk carriers and rail and road networks
- increased flexibility in form of energy e.g. conversion of coal into electricity allows increased distance over which energy can be transported; also role of pipelines e.g. oil / gas and even some solids converted to slurries
- increased mechanisation in the handling of raw materials and energy allows increased economies of scale and so reduction in transport cost per unit weight
- decline in the economic viability of raw material / energy reserves in some locations e.g. many MEDCs turns focus to supplies elsewhere
- decline in the real cost of transport
- changing nature of manufacturing industry in MEDCs e.g. heavy to light

21 (a) Describe the measures governments can take to influence the location of manufacturing industry. [20]

(b) Explain how industrial growth can lead to the emergence of a core region. [25]

(a) The question is clear in its expectation of a link being made between government policies and manufacturing locations; without this link responses will not reach above Level 1 in AO3. Many candidates may feel it appropriate to respond making intensive use of case studies focussed on a couple of countries but equally valid will be those answers structured using different government policies as their framework; both routes can gain level 3 marks in all AOs. There is the potential to make valuable points about direct and indirect government policies influencing manufacturing location, a likely indicator of a Level 3 response in AO2 at least, but vague assertion about infrastructure development will command little credit unless it is explicitly associated with manufacturing.
Points include:

- different types of government e.g. command; free market; mixed
- scale of government e.g. supra-national - EU, national and regional / local
- direct measures – regional policies including financial aid; state ownership of industry – responses that go beyond the command economies or nationalised industries in Western Europe, often now 'former', to the state industries of NICs such as South Korea, Pohang Iron and Steel for example are likely to be at Level in AO1 and 2; tariff protection
- indirect e.g. macro-economic fiscal measures e.g. currency support; infrastructure developments e.g. Severn Bridge crossings; educational programmes e.g. in many LEDCs

(b) This sub-part focuses on the links between industrial growth and core regions developing. It is possible to deal with this theoretically but the use of appropriate exemplar material will enhance an answer and may help confirm the quality of knowledge and understanding. Responses need to be secure in their grasp of what constitutes a core region, that is a location where economic power, technical progress and productive activity are concentrated. If the response simply discusses an industrial region then bottom of Level 2 in AOs 1, 2 + 3 is the maximum. Historical examples are welcome here. For example the emergence of textiles in Lancashire and Yorkshire in late 18th and early 19th gave this region core status for a while. If a response manages to make a point about cores on a world scale e.g. NE USA, Western Europe, then this is likely to indicate a level response in AO2 a least.
Points include:

- starting point is the location of a new industry in a region
- end result is the emergence of a core region with strong agglomeration economies
- cumulative causation works against peripheral regions
- resources e.g. labour, investment attracted to the core as backwash effects set in and local industries decline under competition from the core

Option 8: Service Activities: Location, Change and Environmental Impact

22 (a) What is meant by bid-rent theory and trade area analysis? [20]

(b) Explain the recent changes in retailing and office activities in central areas of cities. [25]

(a) Within the section on theories and models on the location of service activities, bid-rent theory and trade area analysis are explicitly mentioned. Responses that confine themselves to these two topics are likely to be Level 3 in AO3. There does not need to be an equal treatment of the two but the omission of one restricts AO3 to Level 1 and AOs 1+2 to Level 2.
Points include:

- Bid-rent theory – the rent people are prepared to pay against distance from some point, usually the city centre. Rent bids generally decrease with increasing distance from a city centre. This K and U needed for Level 1 in AOs 1+2. Comments about the contrasting gradients for different land-uses would suggest a Level 2 response in AOs 1+2 while Level 3 will be indicated in responses suggesting that subsidiary peaks of bidding exist at various locations throughout an urban area e.g. neighbourhood service centres. Level 3 might also be indicated in responses suggesting that the recent trend of out-of–town locations for some services reverses the traditional gradient.
- Trade area analysis – classical central place theory often gives the impression of a deterministic rigid structure of spheres of influence. A response that suggests the change from a zone of dominance immediately around a centre through a zone of competition to a zone of marginal influence is likely to be at level 3 across the AOs. There have been various schemes suggested for assessing trade areas surrounding central places; analysis of public transport services; local delivery areas; catchment areas of schools/police; newspaper circulation

(b) The main changes in retailing and offices are well known, that is the decline in retail numbers and the change in type and locations of both retailers and offices. Where one of the two of retail or office is absent top of Level 1 in AO3 is the maximum. The focus here is on the reasons that lie behind the changes in central areas only. Responses that deal with changes throughout the urban area will not reach more than top of Level 1 in AO3, although comments about the disadvantages of central locations vis a vis peripheral places are relevant.
Points include:

- increased personal mobility allowing customers to travel longer distances to services
- car-borne retailing allows greater quantities of goods to be purchased supporting larger scale peripheral outlets
- increasing costs of operating in central
- with increasing economies of scale central sites are less appealing
- technological changes renders central locations for offices less appealing and with more retailing via internet central locations less prominent
- planning influences
- difficulty in attracting and retaining staff due to congested journey to work patterns

23 (a) Describe how retirement migration and the increase in the number of second and holiday homes have affected rural services. [20]

(b) Explain the measures taken in different regions to address the issue of changing demand for rural services. [25]

(a) If the link between retirement migration and second / holiday homes with rural services is not explicit then Level 1 in AO3 is the maximum. There does not need to be equal treatment of retirement migration and homes but the omission of one restricts AO3 to Level 1 and AOs 1+2 to Level 2.
Points include:

- retirement migration – alters population structure so changing demand for services – decline in threshold for schools, increase in services such as health care. Can alter economic structure with wealthy retirees increasing threshold for some services.
- second and holiday homes – alters thresholds of both retail and public services such as schools / libraries; until very recently such accommodation attracted reduced council tax therefore local authorities had lowered income to spend on services; can increase provision of some services aimed for tourist trade e.g. more services aimed at wealthy second home owners

(b) It is important that 'different regions' is picked up in a response as without this bottom of Level 2 in AO3 is the maximum. The link between the measure and changing demand for rural services needs to be explicit for Level 3 in AO2 + 3. We can expect most responses to focus on decline but the additional inclusion of an increasing demand for certain types of services when rural population changes in total and type might be an indication of Level 3 in the AOs.
Points include:

- rationalisation of public services in the face of falling threshold
- use of key settlement policy to try to ensure the presence of services
- different planning responses to include approaches to house purchase
- approach of supra-national bodies such as EU

24 (a) Describe the impact of economies of scale and IT on locational patterns of retail provision. [20]

(b) Explain how the role of shopping as a leisure activity has been changing locational patterns of retail provision. [25]

(a) The focus on retail activity is clear so that comments concerning offices will adversely effect the assessment under AO3. Perhaps the two key themes are the decentralisation of retailing and the growth of national and trans-national chains at the expense of smaller scale retailers especially independent ones. There does not need to be equal treatment of economies of scale and IT but the omission of one restricts AO3 to Level 1 and AOs 1+2 to Level 2. The top Level responses will make the link between the two factors and patterns of retailing explicit.
Points include:

- economies of scale – average store size increased in some retailing sectors so that locations offering space at affordable costs are sought after e.g. greenfield locations for food / diy / furniture; goes hand in hand with increasing scale of transport for deliveries to the stores so reinforcing the pull of such locations. Traditional locations either CBD or neighbourhood tend not to offer such locational advantages. Such trend tends to fuel growth of national and trans-national retailers and reduce viability of independent smaller scale retailers
- IT – development of internet retailing reduces need for customers to visit stores in person. Can be linked with home delivery that now extends to food. This trend also tends to fuel growth of national and trans-national retailers and reduce viability of independent smaller scale retailers.

(b) It is the quality of the explanation of the link between the two aspects that will inform the assessment in AO3. The trend towards shopping as a leisure activity is well established amongst both shoppers and retailers. Responses that simply explain changes in retailing will not exceed level 1 in AO3.
Points include:

- people spending most of a day at a retail location lead to large scale agglomerations of retailers often at edge of town sites
- development of regional shopping centres e.g. Bluewater / Metro Centre which include not only retailers but also a variety of food retailers and leisure facilities such as cinemas / gyms
- in some urban areas inner areas have been revitalised with a combination of retailing and leisure activities e.g. Albert Dock Liverpool; Baltic Exchange Newcastle

Option 9: Tourism and Recreation and their Environmental Impacts

25 (a) Describe how tourist enclaves and resorts start and develop. [20]

(b) Explain how patterns of international tourism have responded to changing economic and social conditions since 1950. [25]

(a) These two types of tourist development are explicitly mentioned in the Spec. There does not need to be equal treatment of enclaves and resorts but the omission of one restricts AO3 to Level 1 and AOs 1+2 to Level 2. Comments about the evolution of a classic seaside resort, including references to the Butler model are relevant but need to made proportionately in the context of this particular question.
Points include:

- enclave – concentrated areas of tourist development. Largely confined to LEDCs. Foreign owned with capital for investment in facilities from MEDCs. Little if any interaction between tourists and local area and people – often beach based closed to local people. Often represent the early phase of tourist developments. e.g. Gambia in 1970s
- resort – oldest types of tourist development. First were inland spas and seaside resorts. Most are concentrated around a natural resource e.g. beach. Have developed in a diversity of ways including decline. More popular resorts today have mixture of domestic and foreign investment and a variety of scales of facilities. Some resorts develop specialist functions e.g. Las Vegas; Disneyland.

(b) The patterns of international tourism are to be explicitly linked with changing economic and social conditions in order to reach Level 3 in AOs 2 + 3. Where one of these two elements is absent top of Level 1 in AO3 is the maximum.
Points include:

- economic – growth in disposable incomes in MEDCs allow greater choice in destinations including more remote tourist locations e.g. tourism in LEDCs and specialist tourism e.g. eco-tourism
- economic – real cost of travel reduced e.g. air travel plus no VAT charged on kerosene meant that air travel is available to as wide a range of people as it has ever been. This allows a greater variety of destinations and at increased distances to be included in the pastern of international tourism. A catalogue of transport changes will not be more than a Level 1 point in AO3. Increasing scale of aircraft generate economies of scale reducing the real cost of a ticket.
- economic – increasing ease of currency exchange; growth of euro zone facilitates foreign travel
- social – more paid time off work for more people encourages people to chose overseas holidays
- social – greater exposure to overseas cultures and languages encourages international tourism
- social – changes in tourist fashion as regards destinations that are ‘in’ and then ‘out’ – holidays as status symbols.
- social + economic – increasing importance of the ‘grey’ tourist i.e. retired and still fit and active and wealthy enough to opt for international holidays

26 (a) Describe the measures taken to promote domestic tourism within MEDCs since 1950. [20]

(b) Explain the changing spatial pattern of domestic tourism within MEDCs since 1950. [25]

(a) The context is clear here, MEDCs. As is the main focus; the promotion of domestic tourism. 1950 is included as a guide to help in the planning of the response and should help avoid lengthy accounts of changes in domestic tourism beginning in the 18th century: these responses would be unlikely to rise out of Level 1 in AO3. Measures should receive a wide interpretation in terms of government and non-government bodies.

Points include:

- national scale organisations e.g. National Trust / RSPB / Caravan Club actively seek new members and encourage these to take advantage of their facilities and activities
- local scale organisations seek to attract visitors to their facilities e.g. preserved railways / Shakespeare Trust
- national government can use infrastructure developments to encourage tourism e.g. upgrading of A55 into North Wales facilitates access
- regional development bodies market their regions tourist potential
- urban areas market their tourist potential
- governments of all scales can use their planning powers to allow developments designed to attract tourism e.g. Eden project / London Eye
- use of IT to promote tourism at all scales
- National parks

(b) As in the first sub-part the context has been deliberately restricted to post Second World War for the same reasons. Comments must refer directly to domestic tourism although some may have an application to all scales of tourism. It is, however, important for the assessment of AO3 that the response makes clear the significance of a factor to domestic issues. Where that is not so then bottom of Level 2 in AO3 is the maximum. A catalogue of the decline of the seaside resort will not reach beyond level 1 in the AOs as decline is only part of the story as many locations have seen considerable growth in their tourist industries.

Points include:

- economic factors – changing disposable income allows greater choice; to some extent this has led to a decline in the traditional fortnight by the sea as people journey overseas, but is has allowed short breaks to be taken domestically
- increasing personal mobility – similar points to economic factors above
- growth of urban tourism with a 'rediscovery' of urban tourist resources
- holiday villages / centres e.g. Centre Parcs

27 (a) Describe the ways in which governments use tourism to promote social and economic development. [20]

(b) Explain the advantages and disadvantages of using tourism as a means of promoting social and economic development. [25]

(a) The question does not prescribe LEDCs or MEDCs and there is good material available to candidates from both settings. If a response is based on just one detailed example of a particular country or region then top of Level 2 in AO3 is the maximum. There need not be a clear distinction made between social and economic as in reality it is often difficult to separate these two set of factors. One possible indicator of a Level 3 response might be the recognition of the influence of different scales of government and we must be open to the inclusion of a wide range of possible ways.
Points include:

- tourist promotion to attract increased numbers to generate wealth; this in turn creates local employment and so reduces / prevents out migration
- tourism identified as a 'key sector' which then promotes a positive multiplier effect in a location as it compliments other sectors of the economy e.g. construction / farming
- in LEDCs tourism brings in 'hard' currencies
- tourism to 'justify' infrastructure developments e.g. roads / water / power networks
- national parks
- ease of obtaining tourist visas

(b) It is likely that candidates may take each of their points raised in (a) and deal with their respective advantages and disadvantages. In many cases the concern will be the social and economic sustainability of tourist based development. Where a response offers an unbalanced response, perhaps overwhelmingly dealing with the disadvantages of tourism, then bottom of Level 2 in AO3 will be the maximum. More balanced responses have the potential to reach Level 3 in AO3.
Points include:

- social/cultural - may support indigenous culture due to tourist interest / dilute or destroy indigenous culture
- social/cultural - widen outlook of people living in region e.g. enhance role and status of women in some locations / similar disadvantage to point above
- social/cultural - encourage education if jobs available and these need certain skills / can lead to some people not pursuing education as there is 'easy' money to be made from tourists in illegal activity e.g. drugs + prostitution
- economic - wealth creation e.g. employment; tax revenues / leakage of monies
- economic - helps fund infrastructure that locals can use all year round / infrastructure planned around tourist needs not the locals
- economic - helps diversify local economies / tourism comes to dominate and when tourist numbers fall for whatever reason the local economy struggles

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People and Environment Options

GENERIC ASSESSMENT CRITERIA

1 Knowledge of content (0-8 marks)

Level 4	Candidates have detailed knowledge of appropriate themes, processes and specific environments and places. They have detailed knowledge of relevant concepts, principles and theories, and of a wide range of geographical terms. They have detailed knowledge of the connections between different aspects of geography represented in the specification.	**7-8 marks**
Level 3	Candidates have clear knowledge of appropriate themes, processes and specific environments and places. They have clear knowledge of relevant concepts, principles and theories, and of a range of geographical terms. They have clear knowledge of the connections between different aspects of geography represented in the specification. There must be evidence of synoptic connections with other parts of the specification to achieve more than level 2.	**5-6 marks**
Level 2	Candidates have sound knowledge of some appropriate themes, processes and specific environments and places. They have sound knowledge of some relevant concepts, principles and theories, and of some geographical terms. They have sound knowledge of some connections between different aspects of geography represented in the specification.	**3-4 marks**
Level 1	Candidates have basic knowledge of some appropriate themes, processes and environments and places. They have basic knowledge of some relevant concepts, principles, theories, and geographical terms. They have basic knowledge of some connections between different aspects of geography represented in the specification.	**0-2 marks**

2 Critical understanding of content (0-22 marks)

Level 4	Candidates have detailed critical understanding of the content of the specification and have detailed critical understanding of the connections between the different aspects of geography represented in the specification.	**18-22 marks**
Level 3	Candidates have clear critical understanding of the content of the specification and have clear critical understanding of the connections between the different aspects of geography represented in the specification. There must be evidence of synoptic connections with other parts of the specification to achieve more than level 2.	**12-17 marks**
Level 2	Candidates have sound critical understanding of some of the content of the specification and have sound critical understanding of some of the connections between the different aspects of geography represented in the specification.	**6-11 marks**
Level 1	Candidates have basic critical understanding of some the content of the specification and have basic critical understanding of some connections between the different aspects of geography represented in the specification.	**0-5 marks**

3 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)*

Level 4	Candidates apply their knowledge and critical understanding of the specification content and connections to different aspects of geography represented in the specification, relevantly and where appropriate at a range of scales. They evaluate arguments, ideas, concepts and theories in detail.	**18-22 marks**
Level 3	Candidates apply most of their knowledge and critical understanding of the specification content and connections to different aspects of geography represented in the specification, relevantly and where appropriate at a range of scales. They evaluate arguments, ideas, concepts and theories clearly. There must be evidence of synoptic connections with other parts of the specification to achieve more than level 2.	**12-17 marks**
Level 2	Candidates apply some of their knowledge and critical understanding of the specification content and connections to different aspects of geography represented in the specification, relevantly. They attempt a basic evaluation.	**6-11 marks**
Level 1	Candidates explain contexts using basic ideas and concepts.	**0-5 marks**

* **Maximum 11 marks for application and 11 marks for evaluation**

4 Communication (0-8 marks)

Level 4	Candidates use an appropriate range of communication skills fluently and in different formats; present information within a logical and coherent structure; where appropriate, synthesise information from a variety of sources; use spelling, punctuation and grammar with a high level of accuracy; and employ geographical terminology with confidence.	**7-8 marks**
Level 3	Candidates use an appropriate range of communication skills clearly in different formats; present information within an effective structure; use spelling, punctuation and grammar with accuracy; and use a range of geographical terms.	**5-6 marks**
Level 2	Candidates use a limited range of methods to communicate knowledge and understanding; make some effort to structure their work; and use spelling, punctuation and grammar with some accuracy; and have a basic knowledge of geographical terminology.	**3-4 marks**
Level 1	Candidates use a limited range of methods to communicate knowledge and understanding; make only a basic attempt to structure their work; use spelling, punctuation and grammar with variable accuracy, and have only sparse knowledge of geographical terminology.	**0-2 marks**

Option 1: Geographical Aspects of the European Union

1 'The free international movement of people, capital and goods brings economic benefit to all regions'. Discuss with reference to the EU. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of a range of international movements of people (migration for work, leisure, asylum etc) , capital (investment by TNCs, governments, banks etc) and goods (imports, exports) and the economic benefits they bring. These should be well exemplified. Candidates may also demonstrate knowledge of models or concepts to give context e.g. backwash.

Level 3 5-6 marks
Candidates will have clear knowledge of a range of international movements of people, capital and goods and the economic benefits they bring. These should be exemplified.

Level 2 3-4 marks
Candidates will have sound knowledge of some of the international movements of people, capital and goods and some of the economic benefits they bring. These will be limited in exemplification.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the international movements of people, capital and goods and few of the economic benefits they bring.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the intentions of and challenges faced by the free international movement of PCG and the implication for regions and regional policy. A clear cause-effect between the nature of the movements and their regional impacts can be expected. This may be underpinned by an effective use of concepts or theories to explain causes of differences in regional development in the EU.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the intentions of and challenges faced by the free international movement of PCG and the implication for regions and regional policy. A cause-effect between the nature of the movements and their regional impacts can be expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of some of the intentions of and challenges faced by the free international movement of PCG and at least two of the implications for regions. A limited, if any, appreciation of the cause-effect between the nature of the movements and their regional impacts can be expected.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of the links between the free movement of PCG and their regional impact.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the inter-relationship of such free movements and the resulting impacts on a range of regions to assess whether all regions of the EU gain economic benefits from such movements. Candidates at this level will argue that the level of benefit varies with location (core v periphery, north v south etc) scale (size of region) or with time/development (e.g. poorest regions have had the greatest benefits or is it the richer regions?). At this level candidates should appreciate the conflicts that arise with the regional policies as freedom of movement may make contrasts greater (as in core-periphery model).

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the interrelationship of such free movements and the resulting impacts on a range of regions to assess whether all regions of the EU gain economic benefits from such movements. Candidates at this level will argue that the level of benefit varies with location. At this level candidates may appreciate the conflicts that arise with the regional policies as freedom of movement may make contrasts greater.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the inter-relationship of free movements and the resulting impacts on a limited range of regions to assess whether all regions gain economic benefits from such movements.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of the inter-relationship of free movements and the resulting impacts on a limited range of regions to offer a limited discussion and little, if any, evaluation.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

2 "Exploitation of fish stocks is unsustainable and has caused irreversible damage to marine ecosystems'. Discuss with reference to the EU. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of the exploitation of fish stocks and its impact on marine ecosystems e.g. food chains. A single detailed case study could be appropriate. e.g. the impact on herring or cod in the North Sea. Also detailed knowledge of the range of responses (immediate and longer term, direct and indirect, environmental v political v economic etc) by the EU is expected.

Level 3 5-6 marks
Candidates will have clear knowledge of the exploitation of fish stocks and its impact on marine ecosystems. A single detailed case study could be appropriate. Knowledge of the range of responses by the EU is expected.

Level 2 3-4 marks
Candidates will have sound knowledge of the exploitation of fish stocks and its impact on marine ecosystems. Limited knowledge of the range of responses by the EU is expected.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the exploitation of fish stocks and its impact on marine ecosystems.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the cause-effect of over-fishing on the sustainability of fish stocks and marine environments. A detailed understanding of the types of damage to ecosystems and the relative effectiveness of the types of response can be expected.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the cause-effect of over-fishing on the sustainability of fish stocks and marine environments. An understanding of the types of damage to ecosystems and the relative effectiveness of the types of response can be expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the cause-effect of over-fishing on the sustainability of fish stocks and marine environments. A superficial understanding of the types of response can be expected.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of the cause - effect of over-fishing on the sustainability of fish stocks and marine environments.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the impact of exploitation of fish stocks and the range of remedial strategies to evaluate the accuracy of the statement. They may also effectively show how EU responses may be helping or hindering the solution of this damage. Candidates may recognise that the accuracy of the statement will vary with scale (local v regional, EU waters v international) location e.g. Mediterranean or/and North Sea, and with the scale/type of fishing e.g. purse seine v long line. At this level a clear evaluation of whether any damage is 'irreversible' is expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the impact of exploitation of fish stocks and the range of remedial strategies to evaluate the accuracy of the statement. They may also clearly show how EU responses may be helping or hindering the solution of this damage. Candidates may recognise that the accuracy of the statement will vary with location and with the scale/type of fishing. At this level an evaluation of whether any damage is 'irreversible' is expected.

Level 2 6-11 marks
Candidates apply some their knowledge and critical understanding of the impact of exploitation of fish stocks and the range of remedial strategies to evaluate the accuracy of the statement. They may also show how EU responses may be helping or hindering the solution of this damage.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of the impact of exploitation of fish stocks and the range of remedial strategies to offer a limited or vague evaluation of the statement.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

3 To what extent does location in the geographical core result in economic advantage? Discuss with reference to the EU. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 Marks
Candidates will have detailed knowledge of the geographical core of the EU and its resulting economic advantages (accessibility, labour supply, market, linkages, infrastructure etc). At this level a clear knowledge of the processes of cumulative causation or similar models/concepts can be expected.

Level 3 5-6 marks
Candidates will have a clear knowledge of the geographical core of the EU and its resulting economic advantages. Knowledge of the processes of cumulative causation or similar models/concepts can be expected.

Level 2 3-4 marks
Candidates will have a sound knowledge of the geographical core of the EU and at least two of its resulting economic advantages. Vague knowledge of the processes of cumulative causation or similar models/concepts can be expected.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the geographical core of the EU and any of its resulting economic advantages.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how and why location in the core results in economic advantages and why location in the periphery has disadvantages. A clear cause-effect will be demonstrated between location and relative advantage. There should also be a clear appreciation that such a core location can also have economic disadvantages (high labour costs, high rents/rates, congestion, competition etc).

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of how and why location in the core results in economic advantages and why location in the periphery has disadvantages. Cause-effect will be demonstrated between location and relative advantage. There should also be an appreciation that such a core location can also have economic disadvantages.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of how and why location in the core results in economic advantages. A limited cause-effect will be demonstrated between location and relative advantage.

Level 1 0-5 Marks
Candidates will demonstrate a limited or vague understanding of how and why location in the core results in economic advantages.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and understanding of location and the resulting relative economic advantages to evaluate the validity of the statement. Contrasts can be expected such as poverty in the core area such as London or Paris and wealth in remote but scenic or mineral rich areas such the more accessible Greek islands. An appreciation that this is not a straight forward evaluation and it will vary with scale, location (within an area/region), over time (idea of spread replacing backwash) and may vary with individual groups/aspects (i.e. whose economic advantage) can be expected at this level. Some may contrast economic with social or environmental advantage.

Level 3 12-17 marks
Candidates apply their knowledge and understanding of location and the resulting relative economic advantages to evaluate the validity of the statement. Contrasts can be expected and an appreciation that this is not a straight forward evaluation and it will vary with location and over time.

Level 2 6-11 marks
Candidates apply some of their knowledge and understanding of location and the resulting relative economic advantages to evaluate the validity of the statement. A superficial appreciation that this is not a straight forward evaluation and it will vary with location and over time may be offered.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and understanding of location and the resulting relative economic advantages to produce a limited or vague evaluation.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Option 2: Managing Urban Environments

4 Discuss the statement that cities will never be free of slums. [60]

'Slums' is a term open to a range of interpretations but is usually grossly substandard housing which lack some or all of the essential facilities and services.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of examples of the urbanisation process and the resulting creation of slums.

Knowledge of appropriate models and concepts such as urban land use models, rent-bid, core-periphery model, urbanisation transition etc can be expected.

Level 3 5-6 marks
Candidates will have clear knowledge of examples of the urbanisation process and the resulting creation of slums. Knowledge of appropriate models and concepts may be expected.

Level 2 3-4 marks
Candidates will have sound knowledge of examples of the urbanisation process and the resulting creation of slums.

Level 1 0-2 marks
Candidates will have only limited or vague knowledge of the urbanisation process and resulting creation of slums.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the causal links between the process of urban growth and the resulting creation of substandard housing. An understanding that physical factors (age, relief, drainage etc) economic factors (lack of funds, little employment, poor transport etc) and socio-political factors (land use zoning, ghettoisation etc) all contribute to creating such housing can be expected.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the causal links between the process of urban growth and the resulting creation of substandard housing. An understanding of some of the physical, economic and socio-political factors that contribute to creating such housing may be expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the causal links between the process of urban growth and the resulting creation of substandard housing.

Level 1 0-5 marks
Candidates will demonstrate limited or little understanding of the causal links between urban growth and the creation of sub-standard housing.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of why cities have areas of substandard housing to evaluate the statement. Most will tend to agree as social and economic forces tend to discriminate – i.e. there will always be a 'bottom' to housing (a clear idea of rent-bid). At this level more able candidates will challenge the implication of negativity and see such areas as zones of hope or potential e.g. LEDC so suggesting that there will always be slums. Others may question the definition of 'slums' as largely political as many LEDC shanty dwellers would envy slums, as defined, in the UK census. Some may go on to reject the notion of inevitability by looking at planned cities and/or those in centrally planned societies.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of why cities have areas of substandard housing to evaluate the statement. Most will tend to agree as social and economic forces tend to discriminate so suggesting that there will always be slums. Some may go on to reject the notion of inevitability by looking at planned cities and/or those in centrally planned societies.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of why cities have areas of substandard housing to offer a limited evaluation the statement. Most will tend to agree that they are inevitable.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and understanding of why cities have areas of substandard housing to offer a limited, if any, evaluation of the statement.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

5 To what extent have policies of decentralization solved the environmental problems of cities? [60]

Most candidates will probably see this as based on MEDC but there is no requirement and a contrast with LEDC (such as Egypt or India) might be effective.
Higher order responses may consider a range of policies but many will focus on the process of decentralisation.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of various environmental problems of cities such as air/water pollution, water supply, waste disposal, congestion etc and of a range of decentralisation policies e.g. New Towns, expanded towns/villages, movement out of offices/industry etc. Detailed examples are expected from one or more cities.

Level 3 5-6 marks
Candidates will have clear knowledge of the various environmental problems of cities and of the process of decentralisation. Exemplification is expected from one or more urban areas.

Level 2 3-4 marks
Candidates will have a sound knowledge of at least two of the environmental problems of cities and of decentralisation processes. Exemplification may be limited.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the environmental problems of cities and of the decentralisation. Exemplification will be limited or missing.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate a detailed understanding of the cause-effect relationship between the various types of decentralisation policies and their impact on a range of environmental problems.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the cause-effect relationship between a range of types of decentralisation and their impact on a range of environmental problems.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the cause-effect relationship between at least two of the types of decentralisation and their impact on environmental problems.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of the cause - effect relationship between decentralisation and environmental problems.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the effectiveness of such policies to evaluate if they have 'solved' all or some of the environmental problems or more able candidates may discuss where they have made things worse for both the urban area and the area decentralised to. A debate of the term 'solved' can be expected. An appreciation that this relative success may vary over location (e.g. inner v outer city, city v surrounding rural area, LEDC v MEDC etc) scale, time or even between cities is expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the effectiveness of such policies to evaluate if they have 'solved' all or some of the urban environmental problems. A brief debate of the term 'solved' can be expected. An appreciation that this relative success may vary over location or even between cities is expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the effectiveness of such policies to evaluate if they have 'solved' all or some of the urban environmental problems. Brief appreciation that this relative success may vary is expected.

Level 1 0-5 marks
Candidates apply only limited or vague knowledge and critical understanding of the effectiveness of such policies to offer a limited or vague evaluation if they have 'solved' all or some of the urban environmental problems.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

6 'Despite government policies, spatial inequalities in wealth within urban areas remain as wide as ever.' Discuss this statement. [60]

'Government policies' are open to a wide range of interpretations - they could include foreign policy, trade policy, taxation etc but they should be linked to spatial inequalities in wealth. Also they can be central or local government. Again higher level candidates may focus on policies but others will take them as read and focus on why inequalities persist (or not !).

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will demonstrate a detailed and well exemplified knowledge of the spatial inequalities in wealth within urban areas (a single case study could be effective), their causes and the types of policies governments use to reduce such inequalities. At this level candidates may know the direct (e.g. taxation) and indirect policies (e.g. education and training).

Level 3 5-6 marks
Candidates will demonstrate a clear and soundly exemplified knowledge of the spatial inequalities in wealth within urban areas, their causes and possibly the types of policies governments use to reduce such inequalities.

Level 2 3-4 marks
Candidates will demonstrate a sound and exemplified knowledge of the spatial inequalities in wealth within urban areas and some of the ways that reduce such inequalities.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the spatial inequalities in wealth within urban areas and the ways or policies governments use to reduce such inequalities.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how such government policies seek to reduce inequalities and why they might vary in their success usually related to the initial causes of the inequalities in wealth. At this level there should be some understanding of why governments want to reduce inequalities.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of how such government policies seek to reduce inequalities and why they might vary in their success. At this level there may be a limited understanding of why governments want to reduce inequalities.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of how such government policies seek to reduce inequalities and at least two of the reasons why they might vary in their success.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of how government policies reduce inequalities with very limited grasp of the cause-effect factors involved.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the role of various types of government policy to evaluate and assess (with reasons) whether they have reduced, increased or had little impact on inequalities in wealth in urban areas. At this level an appreciation of scale e.g. large cities v market towns, location e.g. LEDC v MEDC and variations over time (has there always been inequalities?) can be expected. A clear evaluation of the statement is expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the role of various types of government policy to evaluate and assess (with reasons) whether they have reduced, increased or had little impact on inequalities in wealth in urban areas. At this level appreciation of scale and location can be expected as is an evaluation of the statement.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the role of various types of government policy to offer a limited evaluation of whether they have impacted on inequalities in wealth in urban areas. At this level superficial appreciation of location can be expected.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of the role of various types of government policy and offer little, if any, evaluation of the statement.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Option 3: Managing Rural Environments

7 The management of remote rural areas in MEDCs presents a greater challenge than managing less remote rural areas.' How far do you agree with this statement? [60]

'Management' is open to a variety of interpretations from Regional planning or National Park policy down to individual landowners.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of remote and less remote rural areas and the scale and range of the types of challenges (changing population numbers/types, changing infrastructure, environmental issues, accessibility etc) various aspects of management (environmental, economic and social) face in such areas. Higher level responses may link these concepts via a suitable model such as core-periphery.

Level 3 5-6 marks
Candidates will have a clear knowledge of remote and less remote rural areas and the range of the types of challenges various aspects of management face in such areas. Some may offer a suitable model.

Level 2 3-4 marks
Candidates will have a sound knowledge of remote and less remote rural areas and the types of challenges management faces in such areas.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of rural areas and their challenges to management.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how and why rural areas have to be managed (and by whom) and how the level of challenge this poses will vary with its remoteness (geographical or economic or social !) and/or other factors e.g. the physical geography.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of how and why rural areas have to be managed (and by whom) and how the level of challenge this poses will vary with its remoteness and/or other factors.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of why rural areas have to be managed and how the level of challenge this poses will vary with its remoteness.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of why rural areas have to be managed.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the management challenges to evaluate whether the remoteness of an area makes them more difficult to manage. Some challenges are common to both e.g. declining thresholds but some are greater for more accessible areas e.g. house building. There should be an appreciation of the way the level of challenge to managing may vary with scale (level of remoteness), location (upland v lowland) and over time or how they may impact on different aspects/types of management e.g. environmental v social.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the management challenges to evaluate whether the remoteness of an area makes them more difficult to manage. There should be appreciation of the way the level of challenge to managing may vary with the level of remoteness scale and they may impact on different aspects/types of management.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the management challenges to offer a limited evaluation of whether the remoteness of an area makes them more difficult to manage.

Level 1 0-5 marks
Candidates have limited or vague application of knowledge and critical understanding of the management challenges and so offer little, if any, evaluation.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

8 To what extent are population changes the cause as well as the consequence of rural economic and social problems? [60]

Candidates may use the synoptic element of this paper to develop an approach based on MEDC v LEDC. This is acceptable but does require appropriate exemplification of rural environments from both areas to be fully successful.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of population changes (number and type - age, ethnicity, socio-economic groups etc) and rural economic (service provision, house prices, employment etc) and social (poverty/deprivation, infrastructure, population structure, socio-economic groups etc) problems.

Level 3 5-6 marks
Candidates will have a clear and exemplified knowledge of population changes (number and type) and rural and social problems.

Level 2 3-4 marks
Candidates will have a sound knowledge of population change and at least two of the rural and social problems.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of a few examples of rural areas undergoing population change.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the cause-effect interrelationship of population changes and economic and social problems in rural areas - the role of a range of physical, economic, social and political factors will be understood e.g. wealthy incomers may force up house prices. At this level an understanding of the relative roles of net migration and natural increase is expected.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the cause-effect interrelationship of population changes and economic and social problems in rural areas. At this level understanding of the relative roles of migration and natural increase could be expected (but is not essential).

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the cause-effect interrelationship of population change and economic and social problems in rural areas.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the interrelationship of population change and economic and social problems in rural areas.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the inter-relationship of population changes and economic and social problems to evaluate the extent to which population change is a cause or/and consequence. At this level an appreciation that not all rural economic and social problems can be blamed on population change (e.g. unemployment reflects growth of agri-businesses) and how this may differ with scale e.g. individual village v rural region, location and variations over time can be expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the interrelationship of population changes and economic and social problems to evaluate the extent to which population change is a cause or/and consequence. At this level appreciation that not all rural economic and social problems can be blamed on population change and how this may differ with location can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the inter-relationship of population changes and economic and social problems to offer a limited evaluation of the extent to which population change is a cause or/and consequence.

Level 1 0-5 marks
Candidates are limited and vague in the application of their knowledge and understanding to discuss some of the impact of population change on rural areas.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

9 To what extent should the rural environment be allowed to change in national parks and other protected landscapes? [60]

A fundamental issue of preservation v conservation.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of the main types of protected landscapes (AONBs, country parks, heritage coasts, national forests etc) and the economic and social pressures leading to change e.g. afforestation, recreation, resource development, modern farming etc. These will be well exemplified probably based on one or more case studies.

Level 3 5-6 marks
Candidates will have a clear knowledge of the main types of protected landscapes and the main economic and social pressures leading to change. These will be exemplified probably based on one or more case studies.

Level 2 3-4 marks
Candidates will have a sound knowledge of the main types of protected landscapes and at least two of the economic and social pressures leading to change. Exemplification may be limited.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the types of protected landscapes.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the cause-effect relationship between the nature of inherent change in rural environments and the role (or need for) of protection and why there is a tension between change and protection. An understanding of the environmental, economic and political pressures that underlie this debate should be demonstrated.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of the cause-effect relationship between the nature of inherent change in rural environments and the role (or need for) of protection and why there is a tension between change and protection. An understanding of the environmental and economic and/or political pressures that underlie this debate should be demonstrated.

Level 2 6-11 marks
Candidates will demonstrate sound understanding of the cause-effect relationship between change in rural environments and the role of protection and why there might be a tension between change and protection.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the need to protect rural environments.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding of the impact of protecting landscapes to evaluate whether change should be allowed, managed or discouraged. Higher level answers will look at the innate conflict between protection and change and suggest some compromise! At this level an appreciation of the role of scale, location e.g. New Forest v highlands of Scotland and variations over time can be expected together with this varying with the nature of the area e.g. soil fertility, relief its local population size/type e.g. area near to large population clusters, etc.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the impact of protecting landscapes to evaluate whether change should be allowed, managed or discouraged. An appreciation of the role of location can be expected together with this varying with the nature of the area including its local population.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the impact of protecting landscapes to give a limited evaluation of whether change should be allowed, managed or discouraged.

Level 1 0-5 marks
Candidates apply only limited or vague knowledge and critical understanding of the impact of protecting landscapes to offer very limited, if any, evaluation of the viewpoint.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Option 4: Hazardous Environments

10 Discuss the view that in hazardous environments the real killer is poverty, not the forces of nature. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of a variety of hazardous environments (earthquake prone areas, hurricane prone areas, mountains, volcanic areas etc) together with knowledge of the level of fatalities in a number of case studies e.g. Hurricane Katrina in New Orleans. Also knowledge of short term v long term hazards can be expected at this level.

Level 3 5-6 marks
Candidates will have clear and exemplified knowledge of a variety of hazardous environments together with knowledge of the level of fatalities in a number of examples. Also limited knowledge of short term v long term hazards can be expected at this level.

Level 2 3-4 marks
Candidates will have a sound knowledge of some hazardous environments together with superficial knowledge of the level of fatalities in a number of limited or vague examples.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of hazardous environments and their level of fatalities.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate a detailed understanding of the inter-relationship between the level of fatalities and the severity and/or type of hazard as well as the role of human factors (preparation, planning, accessibility, level of warning, density of population etc) including poverty. At this level the impact of poverty should be understood in a range of ways (increases vulnerability, fewer resources to cope, less education/awareness, lack of communication etc). The focus of the question is on fatalities rather than simply the scale of the disaster

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the inter-relationship between the level of fatalities in a hazardous area and the type of hazard as well as the role of human factors (economic, social and political) including poverty.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the inter-relationship between the level of fatalities and the type of hazard as well as the role of at least two of the human factors including poverty.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the interrelationship of poverty and deaths from hazards.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding to evaluate if poverty is the 'real killer' or whether other human factors e.g. level of preparation or physical factors such as the characteristics or magnitude of the hazard event are more important in determining the death toll. At this level poverty may be seen as influencing the ability of individuals and governments to plan, level of protection, type of communication etc. An appreciation that this view may vary with scale e.g. local v regional, location e.g. LEDC v MEDC and vary over time can be expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding to evaluate if poverty is the 'real killer' or whether other human factors or physical factors are more important in determining the death toll. An appreciation that this view may vary with location e.g. LEDC v MEDC and vary over time can be expected.

Level 2 6-11 marks
Candidates apply their knowledge and critical understanding to evaluate if poverty is the 'real killer' with a limited appreciation that this statement's accuracy will vary with a variety of factors may be demonstrated. A limited, if any, conclusion to the evaluation may be offered.

Level 1 0-5 marks
Candidates apply only limited or vague knowledge and understanding of the topic and offer little or vague evaluations of why the level of death varies.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

11 To what extent are storm surges the most hazardous aspect of hurricanes? [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of the main types of primary (wind speed) and secondary (surges, flooding, landslides etc) hurricane hazards. This will be supported by clear exemplification e.g. Hurricane Katrina again! They will also demonstrate detailed knowledge of the hurricane mechanism (especially the role of atmospheric pressure) and why it produces storm surges.

Level 3 5-6 marks
Candidates will have clear knowledge of the main types of primary and secondary hurricane hazards. This will be supported by exemplification. They will also demonstrate knowledge of the hurricane mechanism and why it produces storm surges.

Level 2 3-4 marks
Candidates will have sound knowledge of the main types of primary and secondary hurricane hazards. This may be supported by exemplification. They will also demonstrate limited, or vague, knowledge of the hurricane mechanism and why it produces storm surges.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the main types of hurricane hazards and there will also be limited or vague knowledge of examples.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the cause-effect of storm surges and the resulting hazards and impacts (coastal flooding, disease, impact on rivers, salt penetration etc) together with the relative impact of other hurricane generated hazards (e.g. destruction of communications by landslides etc). Many may focus on casualties or use cost figures.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the cause-effect of storm surges and the resulting hazards together with the relative impact of other hurricane generated hazards.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the effect of storm surges and at least two of the resulting hazards together with a limited understanding of the relative impact of other hurricane generated hazards.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the effect of storm surges.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding to evaluate the extent to which storm surges are the most hazardous events associated with hurricanes. Some may argue that it will vary with the characteristics of the hurricane with flooding and landslides having a greater impact especially in inland areas. Some appreciation that this will vary with scale (e.g. local v regional), location (e.g. LEDC v MEDC, inland v coastal) and vary with the nature of the population and/or level of warning can be expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding to evaluate the extent to which storm surges are the most hazardous events associated with hurricanes. Some may argue that it will vary with the characteristics of the hurricane whilst some appreciation that this will vary with location and/or level of warning can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding to evaluate in a limited way the extent to which storm surges are the most hazardous events associated with hurricanes.

Level 1 0-5 marks
Candidates offer only limited or vague discussions of storm surges and their impacts. There will be no attempt at evaluation.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

12 Discuss the view that rapid urbanisation in the past 50 years has significantly increased the vulnerability of populations to earthquake hazards. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of both rapid urbanisation (e.g. Mexico, California et c) and the main types of primary (shock waves, building collapse, landslides, etc) and secondary (fires, pollution and disease etc) earthquake hazards. Detailed case studies of actual earthquake events will be known.

Level 3 5-6 marks
Candidates will have clear and exemplified knowledge of both rapid urbanisation and the main types of primary and secondary earthquake hazards. Case studies of actual earthquake events will be known.

Level 2 3-4 marks
Candidates will have sound knowledge of both rapid urbanisation and the main types of primary and secondary earthquake hazards. Case studies of actual earthquake events may be limited.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of both rapid urbanisation and the main types of primary and secondary earthquake hazards showing very limited knowledge, if any, of appropriate examples.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of urban growth and why this makes the population more vulnerable to the primary and secondary impacts (disease, fire, landslides, floods etc) of earthquakes (such as greater density of buildings, more high rise, more slums/shanties, more people etc). Cause and effect will be well understood.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of urban growth and why this makes the population more vulnerable to the primary and secondary impacts of earthquakes. Cause and effect will be understood.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of urban growth and at least two of the reasons why this makes the population more vulnerable to the primary and secondary impacts of earthquakes. Cause and effect will be understood in a limited way.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the link between urban growth and why this makes the population more vulnerable to the impacts of earthquakes.

A03 Application of knowledge and critical understanding in unfamiliar contexts (0-22 marks)

Level 4 18-22 marks
Candidates apply their detailed knowledge and critical understanding to evaluate and assess the extent to which rapid urbanisation does increase the population's vulnerability to earthquake hazards. The more able may point out urban areas may reduce the hazard by having better planning/preparation, better infrastructure, greater resources, more resistant buildings. Some may focus on 'rapid' and point out that it is the LEDC areas that are so vulnerable as growth has been so rapid unlike MEDC. An appreciation that this is not a simple assessment but that vulnerability may vary with scale e.g. size of urban area, location e.g. LEDC v MEDC, time, level of preparation, nature of the hazards etc can be expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding to assess the extent to which rapid urbanisation may increase the population's vulnerability to earthquake hazards. An appreciation that this is not a simple assessment but that vulnerability may vary with location e.g. LEDC v MEDC, level of preparation, nature of the hazards etc can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding to assess the extent to which rapid urbanisation does increase the population's vulnerability to earthquake hazards. A superficial appreciation that this is not a simple assessment can be expected.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and limited critical understanding to assess in a limited, if at all, way the extent to which rapid urbanisation does increase the population's vulnerability to earthquake hazards.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Mark Scheme 2686
June 2006

Generic Mark Scheme

	Level 1	Level 2	Level 3
Max 4 marks	• Limited answer with little/no basic understanding • Little development of ideas • Poor use of geographical terminology • Poor level of written communication is attained		
Max 13 or 15 marks	• Lacks substance – offering only basic levels of knowledge and understanding • Only one of either description or explanation is present • Little or no development of ideas • No use made of examples/data/ evidence • Basic (if any) links made • Little/no use of appropriate geographical terminology • Basic level of written communication is attained	• Sound answer with perhaps reasonable knowledge but less convincing understanding • Both description and explanation are present • Some development of ideas • Sound use of examples/data/ evidence • Some attempts at linkages made • Some use of appropriate geographical terminology • A reasonable level of written communication is attached	• Clear answer with good knowledge and understanding • Both knowledge and explanations clearly presented • Development of new ideas • Examples/data clearly integrated into the answer • Links are effectively made • Effective use is made of geographic terminology • Communication skills are well developed

SECTION A

To gain access to Level 3 marks all Section A questions demand specific reference to the candidate's 1000 word report.

A1 (a) Justify your choice of data presentation methods in your investigation and suggest alternative methods you might have used. [15]

Indicative content:
- Clarity
- Effectiveness in showing patterns and trends
- Recovery of information
- Ease of construction
- Data range and scales employed.

Level 3 (12-15)
An emphasis on reasons for choosing the data presentation methods. Clear and accurate choice and explanation.

Level 2 (7-11)
Description of methodology only. Sound justification.

Level 1 (0-6)
Justification as "most appropriate / best" only.
May have name dropping and lists of tests

(b) In the context of your investigative study discuss the view that statistical analysis is an essential part of geographical investigation. [15]

Indicative content:
- A need for evaluation and a discursive approach
- Some reference to their report will be expected
- An appreciation of the purpose of statistical analysis, significance and objective sampling.

Level 3 (12-15)
Well argued with an evaluation of how useful their statistical analysis was in their report.

Level 2 (7-11)
Well argued with some reference to their report.

Level 1 (0-6)
Excessive generalisation, lacking depth and no links to their report.
No discursive answers.

A2 (a) Explain how considerations of scale influenced the methods of data collection and data analysis used in your investigation. [15]

Indicative content:

- An appreciation of the importance of scale
- Recognition that an appropriate scale will achieve meaningful results
- Recognition of the need for a realistic scale of study given time constraints
- Recognition that scale could also be interpreted as a type of measurement e.g. ordinal, nominal and ratio
- Recognition that this may control the data analysis techniques employed.

Level 3 (12-15)
Higher level answers may deal fully with the scale issues in the context of both data collection and analysis. There may be a range of examples to illustrate the answer e.g.:

- downstream changes in river characteristics
- beach transects and sediment sorting.

Level 2 (7-11)
An answer that mainly concentrates on one or other of data collection or analysis. A variety of examples may illustrate the answer. It may have an explanatory element.

Level 1 (0-6)
Candidates may talk in general terms about map scales and time scales.

(b) Discuss the view that, in geographical investigations, the real world is always more complex than theory. [15]

Indicative content:

- Reality is more complex than they anticipated
- Good use should be made of their own study
- Unpredictability of human behaviour
- Problems of obtaining representative samples
- Scale issue
- Objectivity in measuring features
- Problems of obtaining suitable documentary evidence.

Level 3 (12-15)
Candidates may present several reasons, argue them cogently and illustrate from their own enquiry. Discussions which challenge the assertion are equally valid.

Level 2 (7-11)
Candidates will present one or more reasons, argue them in more general terms and perhaps illustrate using their enquiry. There will be a reasonable depth of understanding and discursive content.

Level 1 (0-6)
Candidates may have made unsubstantiated sweeping statements or fail to mention their own work. Poorly argued with vague references and little exemplification.

A3 (a) Comment on the accuracy and suitability of the sampling strategy used in your investigation. [15]

Indicative content:

- Brief description of sampling strategy used (type, size and method)
- Comments on accuracy
  - Size of sample
  - Methods of selection
  - Human inaccuracies
- Problems of sampling strategies
  - Stratification
  - Representativeness
  - Randomness

Level 3 (12-15)
A clear appreciation of the types and appropriateness of sampling strategies. A good understanding that sampling problems lead to compromised strategies causing results to be in serious doubt. A good balance between accuracy and practicality.

Level 2 (7-11)
Answers may concentrate on either accuracy or suitability and will have a lack of balance. Candidates may hint at the compromise between accuracy and reliability. Some links back to the candidate's report.

Level 1 (0-6)
Lack of technical knowledge and little balance shown in any aspect of the answer.

A3 (b) Discuss the extent to which the conclusions of your investigation were consistent with your expectations.

Indicative content:
Even if conclusions are consistent with expectations there are likely to be several caveats:

- Well structured answers give clear ideas of hypothesis to be tested
- A brief statement of outcomes should be included
- Discussion should centre on discrepancies between the two.

Level 3 (12-15)

- Higher level answers may be discursive and make frequent and effective reference to the candidate's investigation
- A detailed discussion of the theory behind the investigation and the local factors influencing the outcome
- An understanding of the complexity of the real world and that conclusions are rarely as simple as theory suggests.

Level 2 (7-11)

- A less conclusive answer with some discussion and some reference to the candidate's work
- A sound grasp of the theory behind the enquiry
- Some idea about external issues influencing the outcome

Level 1 (0-6)

- A limited answer showing little/no grasp of relevant theory
- Little mention of the candidate's work and a belief that the theory should be mirrored in the results achieved.

Section B

B1 Study Fig 1 2001 parish populations and population densities and Fig 2, the sketch map of parishes in north-east Norfolk.

(a) Outline the main characteristics of dot maps. [4]

Indicative content:
- A type of statistical map
- Show spatial distributions
- Each dot is s constant size and a given quantity
- Placement reflects the location of the phenomenon
- Should be possible to count the dots
- Dot placement may be random but is usually determined by other distributions.

Level 2 (3-4 marks)
Most of the above points clearly expressed two well developed points.
One point for a mention and one point for development.

Level 1 (0-2)
Lack of clarity and understanding shown

(b) Describe and explain the steps you would follow to construct a dot map to show the distribution of population by parish in north-east Norfolk. [13]

Indicative content:
- Need settlement map (1:100000) for guidance
- Other factors (woodland / marsh) may need to be taken into account
- Dot value vital … too small map is crowded and difficult to retrieve data from map
- Too large a value and spatial patterns will not emerge as some settlement will not be represented. Dots may merge
- Dot size will depend upon the scale of map
- Care needed with dot placement close to parish boundaries as population distribution is continuous and abrupt breaks in dot pattern will be misleading.

Level 3 (11-13)
- Application of most of the steps
- Full consideration of data for north-east Norfolk
- Range of values, scale of map and appropriate dot value

Level 2 (6-10)
- Many of the key points mentioned with less application to the data and the Norfolk area
- A less well argued answer

Level 1 (0-5)
- A lack of understanding of basic concepts
- Little application of the data given
- Poor content based upon sweeping generalisations.

(c) Assess critically the value of dot maps compared to other statistical maps for representing the distribution of population at a parish scale in areas such as north-east Norfolk [13]

Indicative content:

- Possible alternatives are choropleth maps, proportional symbol maps and isopleths maps
- Dots have advantage as they show population distribution within areal units
- Choropleths generalise the data
- Proportional symbols tell nothing about intra parish population distributions
- Isopleth maps suggest that the distribution is continuous and they are highly subjective in construction
- Dot maps can give a false sense of accuracy as dot placement can be subjective
- Dot maps are difficult and time consuming to construct

Level 3 (11-13)

- An effective appreciation of statistical mapping
- A specific reference to north-east Norfolk
- A discursive approach showing a balance between positive and negative aspects of dot maps.

Level 2 (6-10)

- Many of the key points mentioned with less application to the data and the Norfolk area
- Answer may concentrate on either the positive or negative aspects of dot maps
- One or two aspects of mapping may be mentioned.

Level 1 (0-5)

- A lack of understanding of basic concepts and dominated by inappropriate methodology
- A lack of discursive approach
- Poor content based upon sweeping generalisations.

B2 (a) Outline two requirements of an effective questionnaire designed for completion through street interviews. [4]

Indicative content:
- Brevity
- Lacking ambiguity
- Avoidance of unexplained technical terms
- A clearly targeted population
- Personal questions
- Sensitive questions

Level 2 accurate knowledge outlined (3-4)
Level 1 a list of poorly outlined answers (0-2)

(b) Examine the problems of obtaining representative samples of shoppers through street interviews in a town centre such as the one shown in Fig 3a and 3b. [13]

Indicative content:
- Defining a representative sample is a real issue
- Criteria for a representative sample must be established
- Stratification needed to avoid bias sample of older people and women
- Responsiveness of the sample
- Timing issues … lunchtime/market days/pension days/school run
- Location of survey points … car parks/public transport/shopping centres

Level 3 (11-13)
- Make use of the stimulus material
- Three or four problems accurately explained with detail

Level 2 (6-10)
- Some use of stimulus material
- A degree of accuracy and detail
- Several problems tackled but lacking depth

Level 1 (0-5)
- Little use of stimulus material
- Lack of structure, understanding and knowledge
- No depth to answers

(c) Examine the main features of the Chi-squared test and assess critically the suitability of the test for analysing the data in Fig 5. [13]

Indicative content:
- Test of significance of the difference between two frequencies
- One feature is observed in Fig 5
- The other feature is hypothesised under the assumption of randomness
- If random, then expect the number of shoppers visiting each area to be the same
- Chi-square test compares observed with expected

- Greater the value the greater the significance of the differences observed … Not occurred by chance
- Chi-squared test is distribution free
- Can be used with skewed data distributions
- Can use nominal data
- Use frequency counts converted into actual numbers … not %
- Unreliable when 2+ expected values are less than 5

Level 3 (11-13)
- A sound understanding of Chi-squared
- Several points clearly explained using the data supplied
- Discursive approach adopted for the suitability aspects of the answer
- Limitations may be explored
- A clear conclusion may be reached about the suitability of the test

Level 2 (6-10)
- Some of the characteristics may be explained
- An understanding of the principle parts of the test is shown
- A descriptive rather than discursive approach adopted
- Some limitations

Level 1 (0-5)
- An unsound grasp of the test
- Few if any limitations shown
- Little reference to the data given
- Suitability issues may be thin if considered at all

B3 (a) Outline the main characteristics of stratified sampling [4]

Indicative content:
- Statistical populations are not uniform
- Samples are selected from sub sets in proportion to their importance (e.g. numerical, areal) in the population
- The selection of samples within these strata uses either random or systematic sampling

Level 2 (3-4)
- Showing development of the answers through exemplification
- May have two or more of the indicative content points

Level 1 (0-2)
- May have only one or two of the indicative content points but with limited, if any, exemplification

(b) Using the resources in Fig 6 and Fig 7 only, describe and explain how you would obtain a stratified random sample of land use in this area to reflect the influence of geology. [13]

Indicative content:
- Several steps should be involved
- Estimate of total area covered by the three rock types … Tracing the geology sketch map, superimposing the tracing paper onto graph paper and counting squares
- Random numbers used to generate 6 figure GRs. Number of GRs on each of the three rock types will be proportional to the area they cover on the map extract
- The random GRs are located on the land use map and the type of land use at each random point is identified and recorded

Level 3 (11-13)
- Structured and well organised
- May not have all of the indicative content but will present a feasible strategy which relates to land use
- Clear description and explanation needed

Level 2 (6-10)
- Some structure to the answer with ideas that are partly developed
- An imbalance between description and explanation
- Strategy may have some feasibility

Level 1 (0-5)
- Underdeveloped strategies lacking feasibility
- A lack of either explanation or description

(c) Assess the value of stratified random sampling in this example, compared to alternative methods of spatial sampling. [13]

Indicative content:

- One of several possible sampling methods
- Random sampling
  - Simpler and less time consuming
  - Need large sampling size to ensure proportionality on rock types achieved
  - Systematic sampling based on intersections of coordinates
  - Much quicker and gives full map coverage
  - Care needed over the size of the grid
  - Could be combined with stratification to give a speedy coverage and higher level of accuracy
  - Transect lines chosen at random may present more problems and are likely to misrepresent the importance of each geological type

Level 3 (11-13)

- A good understanding of some of the alternative methodologies
- A clear assessment of the issues raised
- Specific consideration of Fig 6 and 7 will be used
- The exemplar material may be incorporated into the material

Level 2 (6-10)

- Some of the alternative methods are mentioned but some of the ideas are not clearly expressed
- Reasonable use made of the exemplar material
- Assessment is poor with some comparison of the different methodologies

Level 1 (0-5)

- Muddled explanation
- Little/no use of exemplar material
- Assessment lacks focus and conclusions

Advanced GCE
June 2006 Assessment Series

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2680	Raw	100	65	58	51	44	37	0
	UMS	120	96	84	72	60	48	0
2681	Raw	59	45	40	35	31	27	0
	UMS	90	72	63	54	45	36	0
2682 01 **2682 02**	Raw	60	40	36	33	29	25	0
	Raw	15	12	10	8	7	6	0
2682 Opt A	Raw	75	52	46	41	36	31	0
	UMS	90	72	63	54	45	36	0
2683	Raw	90	68	60	52	45	38	0
	UMS	90	72	63	54	45	36	0
2684	Raw	120	86	77	68	60	52	0
	UMS	120	96	84	72	60	48	0
2685	Raw	90	76	68	60	52	44	0
	UMS	90	72	63	54	45	36	0
2686	Raw	90	68	60	52	44	36	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3832	300	240	210	180	150	120	0
7832	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3832	25.9	46.9	65.4	81.1	91.3	100	4795
7832	30.6	60.5	83.7	96.3	99.6	100	4340

4340 candidates aggregated this series

For a description of how UMS marks are calculated see;
www.ocr.org.uk/OCR/WebSite/docroot/understand/ums.jsp

Statistics are correct at the time of publication

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Information Bureau

(General Qualifications)
Telephone: 01223 553998
Facsimile: 01223 552627
Email: helpdesk@ocr.org.uk

www.ocr.org.uk

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Telephone: 01223 552552
Facsimile: 01223 552553