OCR
RECOGNISING ACHIEVEMENT

GCE

Geography A

Advanced GCE **A2 7832**

Advanced Subsidiary GCE **AS 3832**

Combined Mark Schemes And Report on the Units

January 2006

3832/7832/MS/R/06J

Oxford Cambridge and RSA Examinations

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MARK SCHEMES FOR THE UNITS

REPORT ON THE UNITS

Mark Scheme 2680
January 2006

Hydrological Systems

1 (a) (i) What is meant by the term 'drainage basin'? [2]

Drainage basin is the area of land drained by a river and its tributaries. Credit the idea of area (1) and reference to the drainage of a river and tributaries (1).

Area defined by watershed = 1 mark
Catchment area = 1 mark

(ii) Name <u>two</u> outputs of the drainage basin hydrological cycle. [2]

1 mark each for any of the following:
Evaporation, evapotranspiration, channel flow, transpiration, discharge, river flow, rivers, interbasin transfer.

(iii) Explain the effects of soil and rock type on the flows of water in drainage basins. [6]

***Indicative content*:** Answers should refer to the permeability and porosity of the rocks and soils. Essentially we would expect to see the contrast with a rock such as limestone which is permeable and with a rock such as granite or clay which are relatively impermeable. Water will pass through chalk whilst it will not pass through granite and will be absorbed into clay at a significantly slower rate. A sandy soil will allow far easier infiltration and percolation than a clay soil, for example.

Level Two (5-6 marks)
Candidates explain rock type and soil. Examples are given. Accurate use of geographical terminology. Maximum of 5 marks if only one is done well.

Level One (0-4 marks)
Candidates explain rock type and / or soil with less detail. Examples are thin and geographical terminology is sometimes used inaccurately.

(b) Study Fig. 1 (insert), which shows two areas, a housing development and an adjacent deciduous woodland area, in West Yorkshire.

(i) Describe and explain the different flows and stores of water in these two areas in response to a storm event. [10]

Indicative content: Building site will be relatively impermeable and will have a greater surface run off. Woodland area will have less surface runoff due to greater interception and roots facilitating greater infiltration. The slope will affect the flow of the water, with the site of the housing development being relatively flatter than the woodland. Greater interception storage in the deciduous woodland compared to the housing development.

Level Three (8-10 marks)
Candidates consider flows and stores of both areas and explain the differences clearly. Accurate use of geographical terminology.

Level Two (5-7 marks)
Candidates consider flows and stores but the explanation is not detailed. Alternatively the difference between flows or stores might be described and explained. Reasonable use of geographical terminology.

Level One (0-4 marks)
Candidates consider flows and / or stores but there is no explanation. Inaccurate use of geographical terminology and limited knowledge and understanding is shown.

(ii) Suggest the likely flows and stores of water in the area of the housing development when it has been completed. [6]

Indicative content: There will be decreased surface ponding due to the drainage that is installed. Therefore the surface store is reduced. The houses will be designed to remove water as efficiently as possible and so gutters and drains will ensure this. The ground store will be depleted due to the drainage systems. The flows will be more efficient, although there will inevitably be less infiltration, percolation and throughflow.

Level Two (5-6 marks)
Candidates describe both the stores and flow of the water and there is some development and / or explanation of each. Accurate use of geographical terminology.

Level One (0-4 marks)
Candidates describe either flows or stores or both but they are not developed. Inaccurate use of geographical terminology.

Ecosystems

2 (a) Study Fig. 2 (insert), which shows the nutrient cycle of a deciduous woodland ecosystem.

(i) Describe the flows within the nutrient cycle shown. [4]

***Indicative content**:* The largest transfer is from the soil store followed by the recycling from the soil store to the biomass. The input of minerals from the rocks is next and then there is the hydrological input of precipitation with run off being the smallest.

Level Two (3-4 marks)
Candidates describe the flows and there is reference to at least two flows. There is direct reference to the diagram and to the relative size of the flows.

Level One (0-2 marks)
Candidates describe the cycle. There is limited reference to the diagram and no reference to the relative importance of the flows.

(ii) Explain the relationship between the flows and stores within the nutrient cycle shown. [6]

***Indicative content*:** Biomass is the largest store of nutrients due to immobilisation of the nutrients over long periods of time. Leaf litter is decomposed fairly quickly due to presence of decomposers. Soil store is slightly smaller due to removal of nutrients by vegetation. Important transfers occur between litter and soil due to decomposition. Loss of nutrients through leaching is greater than input by weathering due to relatively cool temperatures and so relatively slow chemical weathering.

Level Two (5-6 marks)
The link between stores and transfers are explained. At least one relationship is explained at the bottom of this level with more development for the top. Effective use of geographical terminology.

Level One (0-4 marks)
Links are identified and described. Inaccurate use of geographical terminology. Mechanical repetition of the diagram maximum of 2 marks.

(iii) Describe and explain the ways in which the nutrient cycle would be affected if mature trees were cut down. [6]

***Indicative content*:** The biomass would become smaller as would the soil store and the amount of leaf litter. There would be a smaller transfer from the biomass to the leaf litter due to the removal of the trees. There would consequently be a reduced transfer from the leaf litter to the soil store. The input of minerals from the weathered rocks would remain the same, as would precipitation. Run off would be increased due to reduced interception by the vegetation. If the trees are left once fallen the flows and stores might follow a different pattern.

Level Two (5-6 marks)
Candidates describe and explanation is present. Accurate use of geographical terminology. The best candidates recognise that change within the nutrient cycle is relative.

Level One (0-4 marks)
Candidates describe how the nutrient cycle will be affected. There is description of both flows and stores at the top end whilst at the bottom end there might be an imbalance or one absent.

(b) With reference to a sand dune ecosystem you have studied, describe and explain the process of plant succession over time. [10]

Indicative content: Reference should be made to the changing vegetation species further inland (i.e. over time), the increased biodiversity, the soil conditions, moisture conditions and the microclimate. Also the role of pioneer species, dead organic matter provided for the next stage, the role of saltating sand, changing pH levels. Allow reference to human activities in the context of case studies. Competition is a factor of plant succession.

Level Three (8-10 marks)
Candidates describe and explain the process of succession clearly. Reference is made to specific plant species. The concept is clearly described and explained. Three factors or stages are explained. Accurate use of geographical terminology.

Level Two (5-7 marks)
Candidates describe and explain the process of plant succession. Explanation is not so detailed and fewer than three factors or stages might be explained. Nonetheless explanation is present. Reasonable use of geographical terminology.

Level One (0-4 marks)
Candidates describe changes that take place but explanation is absent. There is limited knowledge evident. Inaccurate use of geographical terminology.

Atmospheric Systems

3 (a) (i) What is meant by the term 'temperature inversion'? [2]

The warming of air temperature with increased height.
Warm air overlying colder air.

(ii) Draw a graph or diagram in the box below to show a temperature Inversion temperature. [2]

Credit should be given for the idea of cooling, followed by warming at a sensible altitude.

(iii) Explain <u>two</u> ways a temperature inversion might occur. [6]

***Indicative content*:** These can occur naturally such as in valley locations where cold, dense air will accumulate at the bottom of the valley and force the warmer air to be displaced. Inversions can also be formed due to human activity such as in urban areas where there is industry, which releases warmer air above the cold air.

Level Two (5-6 marks)
Candidates describe and explain two ways in which temperature inversions can occur. Knowledge and understanding are clear and there is accurate use of geographical terminology. Maximum of 5 marks is only one method is done very well.

Level One (0-4 marks)
Candidates describe one or two ways in which temperature inversions can occur but there is no explanation. Inaccurate use of geographical terminology.

(b) (i) What is meant by the term 'reflected solar radiation'? [2]

Short wave energy/light/energy/insolation (not heat) (1) reflected or bounced
Albedo needs to be qualified.
Input and idea of output credited.

(ii) Describe and explain <u>two</u> ways in which <u>local</u> energy budgets differ between day and night. [6]

Indicative content: Incoming solar radiation during the daytime; this is absent over night. Higher surface temperatures during the daytime. More outward longwave radiation during the daytime due to the higher amount of incoming solar radiation. More heat is absorbed by soil during the daytime whereas at night there is a deficit of heat. This is due to the lack of incoming solar radiation and, if the night is clear, the ease with which solar radiation is lost. There is a deficit of radiation over night.

Level Two (5-6 marks)
Candidates describe and explain two differences between day and night. Maximum of 5 marks if only one difference is described and explained in detail.

Level One (0-4 marks)
Candidates describe two differences. At the bottom end there is no explanation. If two situations are identified max of 2 marks can be awarded.

(**c**) **State and explain <u>two</u> ways in which human activity might influence <u>local</u> energy budgets.** **[6]**

Indicative content: Prevention of frost of plastic cloches, smudge pots, wind machines, spraying of crops, increased fog due to greater particulate matter in the atmosphere; urban areas, industry, transport.

Level Two (5-6 marks)
Candidates state and explain two influences of human activity. Accurate use of geographical terminology. There is a link with the LEB.

Level One (0-4 marks)
Candidates state two influences but there is no explanation. Inaccurate use of geographical terminology. Maximum of 4 marks if one influence is well explained.

Lithosphere

4 (a) Study Fig 3 (insert), which shows an outcrop of granite in the Namib desert, southern Africa and the climate data for the same area.

(i) Using evidence from Fig 3, identify and describe a mechanical weathering process that is likely to be occurring on the granite outcrop. [4]

***Indicative content*:** Heating and cooling or exfoliation are the most likely. This is an arid region with a large diurnal temperature range. The rocks therefore expand in the daytime with temperatures of +35°C and contracts at night with temperatures occasionally being subzero. This temperature change affects the outermost layers of the rock more than the middle. This cycle is repeated. Allow onion skin weathering. Allow pressure release, wetting and drying. Insolation, salt crystallisation Freeze thaw is not likely.

Level Two (3-4 marks)
Candidates describe an appropriate mechanical weathering process in detail and uses evidence from figure 3. Cycles should be referred to or implied for the top of level 2.

Level One (0-2 marks)
Candidates describe an appropriate mechanical weathering process but knowledge is not convincing. Inaccurate use of geographical terminology.

(ii) Name and describe a chemical weathering process that might occur on the granite.

***Indicative content*:** Hydrolysis is most likely. Water is a weak carbonic acid. Hydrogen in water reacts with minerals in granite, in particular feldspar. Output is kaolinite. Oxidation and hydration are acceptable.

One mark for naming the correct process and three further marks for the development.

(b) Describe and explain the effect of vegetation on weathering rates. [6]

***Indicative content*:** Vegetated areas might have increased rates of weathering due to increased amounts of chelation and root action. There will be increased plant growth coupled with more water and so the rate of chemical reaction will be increased.

Level Two (5-6 marks)
Candidates describe and explain the effect of vegetation on chemical or mechanical weathering processes. Answers are detailed with accurate use of geographical terminology. The rate of weathering must be referred to.

Level One (0-4 marks)
Candidates describe the effect of vegetation on either physical or chemical weathering. There is no attempt at explanation and use of geographical terminology is inaccurate.

(c) Describe and explain the influence of human activity on weathering and mass movement processes. [10]

Indicative content: Answers are likely to include reference to increased acidity of rainwater due to industrialisation and the amount of sulphur dioxide and nitrous oxide being emitted into the atmosphere. This in turn has increased the amount of chemical weathering, particularly in urban areas. Walking and footpath erosion exposes more rock surface which is vulnerable to weathering. Farming and the addition of organic materials might increase the amount of chelation. Planting of vegetation might increase the amount of biological and chemical weathering. Afforestation and deforestation can affect the amount of mass movement that takes place. Undercutting during construction can increase rate of mass movement.

Level Three (8-10 marks)
Candidate identifies at least two human activities and considers weathering and mass movement. These are described and explained in detail. The influence of human activity is clear. Good use of geographical terminology.

Level Two (5-7 marks)
Candidate identifies up to two human activities and considers weathering and / or mass movement. At least one of these is explained and the influence is clear. Reasonable use of geographical terminology.

Level One (0-4 marks)
Candidate describes human activities and considers weathering or mass movement. There is no explanation. Inaccurate use of geographical terminology.

Mark Scheme 2681
January 2006

1 Rural Settlement

Fig. 1 shows population change by parish, 1991–2001, in the valleys of the rivers Derwent and Cocker in northwest Cumbria. This is an upland area in the English Lake District which has experienced rural depopulation. Cockermouth is a small town; population 8070, (2001). The location of this area is shown on Fig. 2.

(a) What is meant by the term rural depopulation? [2]

The absolute loss of population from a rural area. (2 marks)
For 1 mark a less precise response such as reference to one of the processes e.g. 'migration from the countryside' or simply 'loss of population' without reference to rural areas.

(b) Describe the pattern of population change, 1991 – 2001, shown in Fig. 1. [4]

Level 2 (3-4 marks)
A clear coherent description. The discriminator from level 1 is that the response should include a summative comment. This should relate to the overall pattern of population change. Reference to areas of both loss and gain is expected.
Max 3 marks if no reference to at least one specific parish name or one statistic or an anomaly.

Level 1 (0-2 marks)
A basic description which is fragmentary with the overall pattern of change not stated. There may be reference only to areas of loss or to areas of gain / no change. There may be mere listing of parishes and their respective statistics.

Indicative content.
A possible summative comment might state:

- The north and west / lower valley has experienced gain / no change and the south and east / upper valley has experienced loss.

(c) Fig. 3 is a photograph of part of the parishes of Buttermere and Above Derwent (see Fig. 1).

With specific reference to the photograph, suggest two reasons for the population change in Buttermere and Above Derwent between 1991 and 2001. [6]

Level 2 (5-6 marks)
A clear response in which two developed reasons for loss of population are given, each linked to a specific piece of evidence visible on the photograph.
Max 5 marks if only one piece of photographic evidence.

Level 1 (0-4 marks)
An answer with basic statement of two reasons in outline may be awarded up to 4 marks.

A response in which one reason for loss of population is well developed and includes specific reference to the photograph may be awarded up to 4 marks.

At the lower end of the mark range (max 2) responses may be entirely descriptive for example listing evidence from the photograph only.

Indicative content.
Photographic evidence and possible reasons include :-
Moorland / steep slopes / pastoral farming - few employment opportunities - supports only low density population

- Only one small settlement / village – low threshold population – limited number and range of services / low order services only
- Upland area - harsh environmental conditions (e.g. higher rainfall, lower temperatures, higher incidence of snowfall, strong winds) – low incomes in farming / higher costs of living e.g. fuel, food – dissatisfaction with rural way of life / rural poverty
- Narrow, minor roads / low density network–poor accessibility - longer travelling times affects vital services and / or journeys to larger settlements for higher order services / entertainment facilities

(d) (i) Describe and explain the possible effects of depopulation on service provision in rural areas. [6]

Level 2 (5-6 marks)
A clear response in which there is understanding of the link between loss of population in rural areas and change in service provision. A discriminator from Level 1 might be the correct use of the term threshold population in explaining the changes. Two well developed effects are expected at this level. Exemplification in terms of types of services and / or place might be helpful in establishing the level or in the award of full marks.

Level 1 (0-4 marks)
A basic response in which there is more emphasis on description of the effects of rural depopulation on service provision.
One well developed effect of rural depopulation on service provision may be awarded up to 4 marks.
At the lower end of the mark range there is listing of effects with very brief undeveloped statements (up to 2 marks).

Indicative content.
Possible effects include :-

- Overall decline in number of services
- Decrease in range of services
- Amalgamation of functions in the same premises
- A change to mobile services e.g. mobile libraries, fish and chip/butchers van
- Loss of the higher order services
- Fewer functions of the same type / less duplication
- Change in type of services / replacement e.g. serving tourists
- Rationalisation of public services e.g. schools, surgeries
- Branch closures e.g. banks
- Reduction in frequency of bus services

Possible explanations include:

- Threshold populations not met
- Change in population structure (ageing)
- Negative multiplier / vicious circle of decline
- Planning decisions

(ii) Explain how the changes in service provision, referred to in part (i), affect the lives of some rural dwellers more than others. [6]

Level 2 (5-6 marks)
A response in which there are clear links between changes in service provision and the effects on the lives of rural dwellers. Explanation of the effects on two clearly identified socio-economic groups are expected at this level.

Level 1 (0-4 marks)
A basic response in which the links between changes in service provision and the effects on rural dwellers are less explicit. Explanation of an effect on one socio-economic group may be awarded up to 4 marks.
At the lower end of the mark range (max 2) there is listing of effects with very brief undeveloped statements with groups of rural dwellers not clearly identified.

Indicative content.
Possible rural groups include :-

- Old people
- Young mothers
- Schoolchildren
- Car / non-car owners
- High / low income
- Permanent residents / holiday and second home owners

[Total: 24]

2 Population

(a) Fig. 4 shows the population pyramids for Italy (MEDC) and Ethiopia (LEDC), 2004.

(i) With reference to Fig. 4, compare the 0–19 age groups of Italy and Ethiopia. [4]

Level 2 (3-4 marks)
A clear description which compares the 0-19 age groups of the two countries. The discriminator from Level 1 is that the description contrasts size and shape. Max 3 marks if no reference to figures.

Level 1 (0-2 marks)
A basic description in which there is mere listing of figures for individual bars or in which there is reference only to Italy or Ethiopia.

Indicative content.
Possible descriptive comments could include:-
- Ethiopia 58%, Italy 19%
- Wide base and rapid tapering of the progressive Ethiopian pyramid / narrow(ing) base of the regressive Italian pyramid.

(ii) Suggest reasons for the differences in the 0–19 age groups of Italy and Ethiopia. [6]

Level 2 (5-6 marks)
Clear understanding with at least two valid factors, which account for differences in the 0-19 age groups. The explanation of at least one of the factors must include specific reference to contrasting circumstances in Italy and Ethiopia for full marks.

Level 1 (0-4 marks)
Basic understanding of the differences. A response which includes one appropriately developed reason may be awarded up to 4 marks.
At the lower end of the mark range (max 2) the explanation might not go beyond 'high birth rates are responsible for the larger 0-19 population in Ethiopia whereas low birth rates account for lower numbers 0-19 in Italy' or there might be reference to only one of the countries.

Indicative content.
Possible factors include :-
- Children as economic assets / financial burdens
- Infant mortality rates
- Availability of contraception
- Levels of female literacy
- Relative success of family planning / government birth control policies
- Age at which females have their first child / pursue career

(b) State and explain the possible consequences arising from Ethiopia's population structure. [6]

Level 2 (5–6 marks)
A clear explanation of at least two consequences.
The better responses will concentrate on the effects of large numbers in the 0-19 age groups on economic, social and physical environments.
For full marks at least one consequence must be explicitly linked to population structure.

Level 1 (0-4 marks)
A basic response in which the link between consequence and population structure is not clear.
One well developed consequence with an explicit link may be awarded up to 4 marks.
At the lower end of the mark range (max 2) there may be mere listing of consequences in brief.

Indicative content.
Possible consequences for an LEDC such as Ethiopia include the effect of large or increasing numbers on :-

- Food supply
- Education
- Health care
- Housing
- Employment
- Farming of marginal land
- Water supply e.g. damming of rivers
- Migration

(c) With reference to a named country or countries, describe <u>two</u> national population policies and explain their effects on age–sex structure. [10]

Level 3 (8-10 marks)
Detailed knowledge of national population policies and their effects on age-sex structure. Explanation should include understanding of the link between the policy and its effects on population structure.
The discriminator from Level 2 is that answers should explain the effects of two national population policies on age and / or sex structure. For full marks at least one of the effects should relate to specific dates / periods of time.
Discussion of more than two effects with necessarily less development is acceptable for full marks.

Level 2 (5-7 marks)
Clear knowledge of national population policies and understanding of their effects on age-sex structure. The link between national population policy and population structure is less well understood and factual knowledge is less secure than in Level 3.
The discriminator from Level 1 is that there is explanation of at least one effect of national population policy on age and / or sex structure. There is more emphasis on description rather than explanation.

Level 1 (0-4 marks)
Basic knowledge and understanding of the link between national population policy and age-sex structure. There may be description only of perhaps either national population policy or age-sex structure.
At the lower end of the mark range (max 2) answers will include only limited remarks concerning national population policy with no attempt to link to age-sex structure.

Indicative content.
A wide range of responses is possible. Candidates might consider, as appropriate, the effects on :-

- Numbers of young dependants
- Numbers of old dependants / ageing population
- Size of the working population
- Gender differences for young and / or old elements

Either
(a) for one country through time (such as China linked to its various policy changes) and / or
(b) from place to place within a country (such as rural-urban contrasts in China) and / or
(c) for contrasting countries with differing national policies (e.g. anti-natal / pro-natal)

Diagrams, such as population pyramids, may be credited as appropriate.

[Total: 26]

3 Urban Settlement

(a) Study the 1:50,000 OS map extract of the City of York (181,094 population 2001).

(i) Using the evidence of the OS map, identify and locate <u>three</u> different types of land use which are typical of the outer suburbs of Westfield ward. [3]

1 mark in each instance for stating type of land use and its location (grid reference or place name).

Indicative content.
Possible land uses include :-
Residential / housing e.g. Chapel Fields
Open space / playing fields e.g. 5750
Schools e.g. in Acomb
Minor roads / cul-de-sacs e.g. 570498 or 5649
Churches e.g. with spire 568513

(ii) What is meant by the term suburbanisation? [2]

The expansion of the built up area into the rural-urban fringe / surrounding countryside.
1 mark for a less complete response, which refers only to either the growth of the town / build up of an area or to outward population migration.

(iii) State and explain two reasons for suburbanisation. Support your answer with evidence from the OS map extract. [6]

Level 2 (5-6 marks)
An answer in which there is clear understanding of the reasons for suburbanisation. A level 2 response will include two developed reasons.
Only one reason needs to be supported with map evidence for full marks e.g. place name, grid reference, by-pass junction etc.
i.e. max 5 marks if no reference to the OS map.

Level 1 (0-4 marks)
A response in which there is more basic statement of reasons for suburbanisation.
One well developed reason may be awarded up to 4 marks.
At the lower end of the mark range (max 2) responses will be brief undeveloped phrases, possibly simple descriptive statement of suburban features shown on the map.

Indicative content.
Possible reasons / evidence include:-

- Improvements in transport technology (railways, trams, buses) / development of urban transport systems allowing people to escape the high density housing of central areas e.g. early ribbon development along roads A1079, A59, A1036
- Rising incomes / increased personal mobility have allowed more people to spend money on the journey to work in order to benefit from the more spacious and less polluted suburbs e.g. Rawcliffe 5854, Heworth 6253

- Local authority planned housing schemes / council estates on peripheral greenfield sites - high costs of redeveloping inner city / brownfield sites e.g. 6251, 6153
- Development of local services (e.g. schools, neighbourhood shops) since thresholds are easily met e.g. school, Fulford, 6149
- More space has been available at a lower price on the periphery through time attracting industry, warehousing, retailing, leisure facilities e.g. university 6250.
- Accessibility – development near by pass junctions e.g. housing (6257); shopping centre (6047) near A64 / A 19 junction; industrial estate / business park at Clifton Moor (5955)
- Historic central core / public buildings - protected from redevelopment – suburbs built beyond this area e.g. (Victorian) terraced housing South Bank, 6050, modern housing estates (cul-de-sacs), Woodthorpe, 5749.

(iv) Give <u>one</u> reason to explain why the population density of Westfield ward (50 persons per ha) is greater than that of Guildhall ward (35 per ha). Support your answer with evidence from the OS map extract. [4]

Level 2 (3-4 marks)
A clear response that includes one well developed reason for the difference. For full marks there must be comparison and reference to OS map evidence with an explicit link between the evidence and population density.
Max 3 marks if no reference to the OS map.

Level 1 (0-2 marks)
A basic response in which there is description of OS evidence or statement of relevant Census data but the link to population density is only implicit.
An answer which explains the density of only one ward without comparison may be awarded up to 2 marks.

Indicative content.
Possible reasons / evidence include :-

- The lower densities of Guildhall relate to the limited availability of space – Guildhall includes the CBD with a high % of non-residential public buildings e.g. churches, town hall, York Minster, museum, castle Westfield is a residential area in the suburbs with a relatively high proportion of housing / families as indicated by cul-de-sacs, schools, churches within the ward
- Guildhall's lower densities relate to competitive bidding leading to higher land and rental values in the central area – residential property is expensive, hence residential land use is limited.
  Westfield is located further from centre on the outskirts of York; lower land values attract housing development. Larger houses / lower rents more affordable than in the central area.

(b) With detailed reference to a named urban area in an MEDC, describe and explain the environmental problems caused by urban sprawl in the last 40 years. [10]

Level 3 (8-10 marks)
Detailed knowledge and understanding of an urban area. The focus is on environmental problems explicitly linked to urban sprawl. Intra-urban place knowledge is convincing such as named suburbs, neighbourhoods, roads, open spaces, areas of the rural-urban fringe and any relevant physical features. Level 3 answers should consider at least two environmental problems in some detail.

Level 2 (5-7 marks)
Clear knowledge and understanding of an urban area. The focus is still on the link between environmental problems and urban sprawl but the link is merely implicit. Place detail is less secure with few if any intra-urban place names mentioned. There may be emphasis on description rather than explanation. The discriminator from Level 1 is that there is description and explanation of at least one environmental problem linked to urban sprawl.

Level 1 (0-4 marks)
Answers show basic knowledge of environmental problems with an unconvincing link to urban sprawl. The response is likely to be purely descriptive. Either environmental problems or urban sprawl are omitted. If both environmental problems and urban sprawl are mentioned there may be no link made between them.

Max 6 marks for detailed and accurate answers which are wholly generalised.

Indicative content.
Possible environmental problems linked to urban sprawl include :-

- atmospheric pollution – increase in commuting / use of cars
- flooding
- impact of building on natural ecosystems
- environmental costs of meeting demand for water
- waste disposal

[Total : 25]

Mark Scheme 2682
January 2006

State the title of your Geographical Investigation below.

1 (a) Describe and justify the content that should be included in the final stage, the Presentation of the Summary, of an AS Geographical Investigation Report.
[10 marks]

Indicative content – not all points are required to achieve full marks:

- The presentation of the summary of the final answers or conclusions with comment on the need to explicitly link back to the initial question or hypothesis.
  - *E.g. the summary should say whether or not the question asked in the first section has been answered. Evidence from the analysis will show whether it has been answered.*
  - *E.g. The summary may give identify reasons for the acceptance or rejection of the hypothesis.*
- The candidate's judgement/evaluation of the reliability of these answers and conclusions where the reliability and accuracy of the data is important.
  - *E.g. the relationship between slope angle and discharge may not be reliable because the slope was very difficult to measure as there was not a proper instrument available.*
- The limitations identified by the candidate in the preceding stages of the investigation, for example resource limitations.
  - *E.g. only one day was available to take measurements but it was too far to return to the site to check results.*

The following skills are applied to each level:
- The level of detail.
- The use of geographical terminology.
- The clarity of the description and justification.

Candidates need not refer to their own report for this question (as opposed to (b)).
NB: typical justification indicators are: because, so that, as, in order to.

Level 3 (8-10 marks)
Description and justification of the final stage's content are discussed in detail. The answer is logically ordered.

Level 2 (5-7 marks)
Either Description and justification of final stage's content are discussed clearly.
Or One of description *or* justification of final stage's content is discussed in detail and the other basically.
There are lapses in the logic of the answer.

Level 1 (0-4 marks)
Description of final stage's content is discussed **basically**. There is unlikely to be any justification.
There are considerable gaps and / or errors in the answer.

(b) Describe and explain how the final stage of your own Geographical Investigation Report, the Presentation of the Summary, might have been improved. [10 marks]

Indicative content – not all points are required to achieve full marks:

- The presentation of the summary of the final answers or conclusions should have been more explicitly linked back to the initial question or hypothesis.
  - *E.g. it did not give enough detail about the exact results that were reported in the findings; or the summary did not say whether the question asked in the first section had been answered.*
  - *E.g. The summary did not explain why the hypothesis was accepted or rejected*
- The summary did not indicate/evaluate the reliability of the answers and conclusions.
  - *E.g. it did not state that the relationship between slope angle and discharge was not reliable because the slope was very difficult to measure as there was not a proper instrument available.*
- The summary did not indicate the limitations in the preceding stages of the investigation, for example resource limitations.
  - *E.g. it did not state that only one day was available to take measurements but it was too far to return to the site to check results.*

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 (8-10 marks)

Description and explanation of improvements are discussed **in detail**.
The answer is logically ordered.

Level 2 (5-7 marks)

Either **Description and explanation** of improvements are discussed **clearly**.
Or **One of description *or* explanation** of improvements is discussed **in detail** and the **other basically**.
There are lapses in the logic of the answer.

Level 1 (0-4 marks)

Description of improvements are discussed **basically**. There is unlikely to be any explanation.
There are considerable gaps and / or errors in the answer.

2 You have been asked to make a geographical investigation of the distribution of socio-economic groups within an urban area. Describe and justify the sampling scheme you would use. [20 marks]

Indicative content – not all points are required to achieve full marks:

- Socio-economic groups can be measured according to various characteristics – most commonly housing type, income/employment and age distribution, but also, BR/DR, ethnicity, crime levels, education, health, household composition.
- Sampling scheme may be *specified* as systematic, random, stratified systematic, stratified random, opportunistic. Sampling could be line transects or area based.
  - Systematic: even coverage, no personal preference.
  - Random, equal chance of being selected, no bias.
  - Stratified systematic/random: the relative proportion in each group is taken into account.
  - Opportunistic: needs must sampling.
- Sampling scheme may *not identify specific* type.
  - *E.g. every third house along every 10th street sampled to obtain good coverage and a fair distribution due to the way the urban area has developed over time.*
- Sampling methodology may be objective *(e.g. type of house):* quantitative measurement can be very accurate; or subjective *(e.g. age of house)* cannot be measured any other way therefore need to make an informed judgment.
- Number of each sample to be collected has to be representative and practical to collect.
- Organisation of resources to carry out data collection.
  - *E.g. 24 people divided into teams of 4 to collect data as quickly as possible as there is a time limit.*
- Variations in the sampling process in response to site conditions.
  - *E.g. go to adjacent house when no one was available for interview in order to collect enough data per street (if collecting primary data)*.
- Different socio-economic characteristics may need to be sampled in different ways.
  - *E.g. primary sources such as on-street surveys of housing and residents; secondary sources such as Census data.*
- Discussion of an appropriate data collection form.
  - *E.g. questionnaire and relevant contents such as housing type and age.*
  - *E.g. environmental quality survey related to socio-economic variation.*

The following skills are applied to each level:

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

The answer should be *appropriate* to an investigation of socio-economic grouping.

Level 3 (16-20 marks)

Description and justification of sampling scheme are discussed **in detail**.

The answer is logically ordered.

Level 2 (10-15 marks)

Either **Description and justification** of sampling scheme are discussed **clearly**.

Or **One of description *or* justification** of sampling scheme is discussed **in detail** and the **other basically.**

There are lapses in the logic of the answer.

Level 1 (0-9 marks)

Description of sampling scheme is discussed **basically**. There is unlikely to be any justification. E.g. there is no decision about the sampling scheme to be used.

There are considerable gaps and / or errors in the answer.

3 The data shown in Fig. 1 was collected in an investigation of the soil moisture contents (% by volume) in two forests. Twenty randomly distributed soil moisture readings were taken in a deciduous forest and twenty in a coniferous forest.
Describe and explain how an appropriate statistical method, or methods, may be used to answer the central question of the investigation, 'To what extent do soil moisture contents differ between the two forests?' [20 marks]

Indicative content – not all points are required to achieve full marks:
Descriptive Statistics: central tendency and spread/variation

1 Mean and Standard Deviation / coefficient of variation (also variance, mean deviation, relative variability, t-test, standard error of difference of means, dispersion diagrams)

- General principle
  - Mean gives one summative value from many individual values.
  - Mean used to calculate standard deviation which accounts for all values in dataset, giving weight to extreme values.
  - Compare means and standard deviations of the 2 soil moisture datasets.
- How to calculate (calculation is not required)
  - Mean: $\Sigma x / n$
  - Standard deviation: $\sigma = \Sigma(x - x^2) / n$.
  - Coefficient of variation: $V = (\sigma / \text{mean}) 100\%$
- How to interpret
  - Consider by how much the mean and σ or V differ. V standardises the 2 different datasets, so good for comparison.

2 Median and Interquartile Range (also percentile/quartile deviation, index of variability)

- General principle
  - Median gives one value from many values.
  - Interquartile range takes account of 50% of the values.
  - Compare the medians and Interquartile ranges of the 2 moisture datasets.
- How to calculate (calculation is not required)
  - Median: arrange dataset in rank order from lowest to highest. Median is mid-point value.
  - Interquartile range: arrange dataset in rank order from lowest to highest. Lower Quartile: take 25% lowest values and find mid-point between their highest value and the next value up. Upper Quartile: take 25% highest values and find mid-point between their lowest value and the next value down. /nterquartile range = Upper Quartile – Lower Quartile.
- How to interpret
  - Consider by how much the median and interquartile range differ.

3 Mode and Range

- General principle
  - Mode shows most common value in each dataset.
  - Range takes account of all values.
  - Compare the modes and ranges of the 2 moisture datasets.
- How to calculate (calculation is not required)
  - Mode: most frequent observation.
  - Range: difference between largest and smallest observation.
- How to interpret
  - Consider by how much the mode and range differ.

Formal Statistics

1 Mann-Whitney

- General principle for concept of difference
  - Dispersion graph to decide whether to carry out the test
  - Null hypothesis states that the 2 data sets (coniferous and rural forests) are drawn from the same population or two identical populations.
  - It tests the difference in soil moisture between 2 data sets.
- Carrying out the test (calculation is not required)
  - The 2 data sets (number of readings for A and B: n1 = 20, n2 = 20) are ranked continuously together.
  - Ranks of A added together (ΣR1) and ranks of B added together (ΣR2).
  - Formula (exact formula not necessary for full credit if principle is clear):

$U_1 = n_1n_2 + \{[n_1(n_1 + 1)]/2\} - \Sigma R_1$ *and* $U_2 = n_1n_2 + \{[n_2(n_2 + 1)]/2\} - \Sigma R_2$

  - Smallest of U_1 and U_2 is read off against critical value on critical values table.
- Meaning of the outcome and its significance
  - If smallest U number is less than critical value, reject the null hypothesis, i.e. there is a significant difference in soil moisture between the coniferous and deciduous forests at the selected level (usually 95%).

2 Chi^2

- General principle for concept of difference
  - Null hypothesis states that there is a no significant difference in soil moisture between the coniferous and rural forest.
- Carrying out the test (formulae not necessary for full credit if principles are clear; calculation is not required):
  - Place individual soil moisture values into groups, using same ranges for each forest.
  - Tabulate data under following column headings: Soil moisture range; Observed frequency (O); Expected frequency (E); $(O - E)^2 / E$
  - E: sum of row (Σr) multiplied by sum of column (Σk) in which the O lies and divide by N (sum of all observed frequencies).
  - Formula:$Chi^2 = r\Sigma k\Sigma[(O - E)^2 / E]$ where $r\Sigma k\Sigma$ = sum of the fraction for all values of r and k.
  - Degrees of freedom: df = (r – 1) (k – 1) read off against Chi^2 on the critical values table.
- Meaning of the outcome and its significance
  - If $Chi^2_{calc} < Chi^2_{tables}$, accept the null hypothesis, i.e. there is no significant difference in soil moisture between the coniferous and deciduous forests at the selected level (usually 95%).

The following skills are applied to each level:

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

When more than one statistical method is tackled, there must be appropriate material related to each method used, but with less length and less detail. Brief descriptions and explanations of several methods are unlikely to gain high marks.

Level 3 (16-20 marks)

Description and explanation of statistical method(s) are discussed **in detail**.
There is **reference** to the central question.
Descriptive statistics: likely to discuss general principle, how to calculate and how to interpret.
Formal statistics: likely to discuss general principle, how to carry out test, meaning of outcome and its significance level.
The answer is logically ordered.

Level 2 (10-15 marks)

Either **Description and explanation** of statistical method(s) are discussed **clearly**.
Or **One of description *or* explanation** of statistical method(s) is discussed **in detail** and the **other basically.**
There may be **reference** to the central question.
Descriptive statistics: likely to discuss 2 or more of general principle, how to calculate & how to interpret.
Formal statistics: likely to discuss 2 or more of general principle, how to carry out test, meaning of outcome and its significance level.
There are lapses in the logic of the answer.

Level 1 (0-9 marks)

Description of statistical method(s) is discussed **basically**. Unlikely to be explanation.
There is **little or no reference** to the central question.
Descriptive statistics: likely to discuss 1 or more of general principle, how to calculate & how to interpret.
Formal statistics: likely to discuss 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
January 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 3Authoritative 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

Option 1: Coastal Environments

1 (a) Describe both the formation and characteristics of different types of waves. [20]

(b) Explain how sediment transport influences different types of beach plan. [25]

(a) Waves are fundamental in the coastal system and so candidates should be in a strong position to offer convincing descriptions. When dealing with the characteristics of different types of waves we must be aware that the same type of wave receives different nomenclature in various texts.
For Level 3 across the AOs the response should include a balance between formation and characteristics. Responses that are secure regarding only one or the other can reach top of Level 2 in AOs 1, 2 and 3.
Points include:

- wind generated waves are likely to be the main focus with reference to friction between wind and water
- fetch – wind strength and duration can be expected here. One possible indication of a Level 3 response might be the mention of high energy wave environments that are found in relatively open coastlines at higher latitudes c.f. the lower energy waves of more sheltered coastlines.
- the orbital movement of water molecules in deeper water and their translation into elliptical movements as the depth of water decreases
- higher energy (surfing or spilling) waves – strong backwash relative to the swash, high and steep waves with short wavelengths
- lower energy (surging) waves – relatively strong swash relative to their weaker backwash, low and relatively long wavelengths
- tsunami waves – generated by underwater tectonic activity – might be an indicator of a Level 3 response

(b) The key assessment factor here is the link between sediment transport and beach plan. Level 3 in AO3 awaits those who can do this convincingly; separate accounts of the various elements in the question will not reach beyond Level 2 in AO3 but their knowledge and understanding could reach Level 3 in AOs 1 and 2. Those who concentrate on beach profiles can reach Level 2 in AO3. Marks across the AOs could come from diagrams.

- swash / drift aligned contrast needed for top of Level 2+
- longshore drift
- sediment in suspension and that rolled up and down a beach – the distinction here might be an indication of a Level 3 response
- a range of landforms possible – tombolos, bars, spits, beaches – swash and drift aligned, cusps, barrier beaches. The point here is not to look for a lengthy list of landforms but that the link between transport and deposition is made. It might be that a convincing response selects two landforms and explains these in detail whereas an equally convincing response covers more landforms but each in less detail.

2 (a) Describe the marine processes involved in the formation and development of cliffs and shore platforms. [20]

(b) Explain how human activities influence the rates of cliff erosion. [25]

(a) This topic should be well known to the candidates with cliffs probably being the best known of all coastal landforms. The discriminator perhaps will be the quality of the material on shore platforms, (lack of shore platforms restrict to top of Level 2) and / or recognition of the role that marine removal of eroded sediment plays in keeping the cliff active. AOs 1 and 2 will record top of Level 2/bottom of Level 3 when there are good descriptions of the three principal erosional processes. Marks across the AOs could come from diagrams. Points include:

- hydraulic action
- abrasion/corrasion
- solution/corrosion – make sure this is in the context of sea water
- attrition – reduction in sediment size facilitates transport away of material thus allowing further marine erosion
- descriptions of cliff retreat mentioning the wave-cut notch leading to marine under-mining are appropriate
- mention of sub-aerial processes have some relevance where the focus is on the basal removal by wave action of sediment produced by mass movement
- shore platforms – inter-tidal areas formed as a consequence of cliff retreat. Initially created by wave quarrying and abrasion. Role of bio-erosion now highlighted.

(b) Weaker responses may consist of all the candidate can remember about coastal management, in particular coastal defences, but the Level 3 response in AO3 will target cliff erosion. Such high quality responses will explicitly link, through explanation, human activity and cliff erosion. The question uses the word 'influences' so that thoughtful responses can include instances of accelerated erosion as well as cliff protection.
Points include:

- sea walls
- revetments
- groynes
- rock armour
- beach replenishment
- cliff drainage
- cliff stabilisation e.g. netting, vegetation planting, slope grading
- issue of interruption of sediment cells starving some locations of protective material
- non-intervention thereby leaving the natural processes to proceed unhindered
- activities that might accelerate erosion such as cliff-top developments
- sea level change / storm intensity and frequency related to global warming

3 (a) Describe the factors that contribute to the formation of salt marshes and mud flats. [20]

(b) Explain why coastal sand dune systems are dynamic features of the coastal system. [25]

(a) The specification makes explicit mention of both mud flats and salt marsh. An equal treatment of both landforms is not a pre-requisite to reach Level 3. Candidates, however, who only consider one of either mud flats or salt marsh will be Level 1 in AO3 and bottom of Level 2 on AOs 1 and 2. Higher level responses are likely to include a variety of factors with the acknowledgement of a variety of factors a likely indication of a Level 3 response in AO2. One possible discriminator is the inclusion of fluvial factors for Level 3 in AOs 1 and 2. Points include:

- sediment both marine and fluvial in origin for both; the more convincing responses are likely to point out the importance of small calibre sediment of fluvial origin c.f. the generally higher calibre marine sediment
- both landforms are at their most extensive where low energy environments exist – exposed coastlines generally have too great an energy input, especially waves
- larger tidal ranges aid mud flat/salt marsh formation as a greater area can be subject to lower velocities thus allowing sedimentation
- process of flocculation vital – clay particles in river water come into contact with salt nuclei when fresh and salt water meet. This process encourages clay particles to coagulate to form larger particles (flocs) which are heavier and so more likely to be deposited. Needed for Level 3 in AO2
- the mixing of marine and fluvial water with all their 'load' provides a nutrient rich 'soup' which supports a high level of NPP. The trophic levels thus supported result in much biological activity including plant which in turn furthers the development of the landforms, in particular salt marsh.
- role of succession

(b) Like most coastal sedimentary systems, sand dunes are very sensitive to changing environmental conditions. The more thoughtful responses are likely to include positive change as well as the negative impacts. The very best responses may include comments about dynamic equilibrium. Responses will reach Level 3, especially in AO3, when they offer convincing material as to the changes that dune systems can undergo.
Points include:

- made up of unconsolidated material and therefore relatively freely moved
- changes in sediment supply e.g. groyne installation
- increase in erosion due to rising sea levels leading to wave erosion of fore dunes
- vegetation succession
- dunes offering resources that man wishes to utilise e.g. recreation. Can lead to damaging change but in some areas protection leads to re-establishment of natural processes. In some areas blow-outs have been created to initiate sand movement.

Option 2: Fluvial Environments

4 (a) Describe how a river transports its sediment load. [20]

(b) Account for a variety of depositional landforms found along a river's course. [25]

(a) The emphasis here is on the transport of different types of sediments. There should be a general appreciation of the Hjulstrom curve to reach Level 2 in AOs 1, 2 and 3; responses delivering a detailed and accurate description are likely to reach Level 3. A well-labelled graph should receive credit under several AOs depending on what it includes.
Points include:

- sediment transport depends upon two key factors: flow velocity and particle size
- a river's competence is its ability to transport particles of a given size – an accurate definition of this might indicate a top Level 2/bottom level 3 response
- entrainment of particles of different size varies with mean flow velocity: large particles (cobbles and pebbles) need high flow velocities as do fine particles (clay and silt); sand sized particles tend to have relatively low flow velocities
- transport occurs as bedload (traction) for the larger particles, saltation for sand sized particles, suspended load for fine particles, solution load for dissolved minerals and flotation

(b) Deposition can occur in any reach of a river and Level 3 candidates are likely to point out the contrast between low and high energy locations. A response that simply looks at the patterns within the context of a single meander for example is unlikely to reach higher than the bottom of Level 2 in AOs 1, 2 and 3. Level 3 in AOs 2 and 3 may be achieved by candidates who focus on variety and location. A catalogue of landforms will receive top of Level 2 as maximum in AOs 1, 2 and 3.
Points include:

- any reduction in flow velocity can result in some particles being deposited, usually the larger sized particles
- riffles – larger sized particles
- point bar deposits – usually sand sized and above
- braiding including all types of bars in the channel – usually sand sized and above
- levees – can include quite a range of sizes
- floodplains – range of sediment sizes
- deltas and alluvial fans either on entry to a lake or the sea – can include quite a range of sizes
- estuaries – flocculation of fine sized particles

5 (a) Describe the downstream changes in the cross-section and plan of a river channel. [20]

(b) Explain the factors influencing downstream changes in cross-section and plan. [25]

(a) The shape of a channel is adjusted to carry the maximum discharge and sediment transported from upstream. The question is broad to allow candidates to deal both with cross-section and planform. An equal treatment of both is not a pre-requisite to reach Level 3. Candidates, however, who only consider one of either cross-section or planform will be Level 1 in AO3 and bottom of Level 2 on AOs 1 and 2.
Points include:

- generally depth increases downstream
- generally width increases downstream – a possible indication of a level 3 response might be mention that width usually increases more rapidly than depth downstream
- natural river channels are rarely straight so meandering forms are common from upper to lower reaches. Comments about the increasing sinuosity downstream are likely to take the answer into level 2 at a minimum
- asymmetric cross-section at meanders
- braiding found at a variety of locations
- changes in bed roughness

(b) There are several factors that influence channel shape. Without mention of discharge a response is unlikely to rise above Level 1. Once an answer includes factors such as bank materials and size of sediment it will move into Level 2 or 3 depending of the quality of the explanation.
Points include:

- as discharge increases width and depth increase. Comments about bankfull discharge as the likely critical determinant of width and depth might indicate a level 3 response
- nature of material channel is cut into – bed-rock channels tend to retain their overall shape for long periods of time although with decreasing relative resistance of the rock there is an increasing probability of channel change both vertically and laterally. clays and silts tend to result in deep and narrow channels. sands and gravels tend to result in wide and shallow channels
- increase in sinuosity downstream – relate to material in which the channel is cut and river energy (sufficient to erode banks)
- asymmetric channel – relate to contrasts in energy across the channel at a meander bend
- braiding – relate to variations in discharge; nature and quantity of sediment which in turn relates to nature of catchment e.g. areas with little vegetation and with large amounts of unconsolidated material

6 (a) Describe the measures that can be taken to reduce the risks of river flooding. [20]

(b) Explain how floods result from of the interaction of several factors. [25]

(a) A higher Level response will be characterised by its consideration of a variety of solutions, that is engineering and ecological; a response confined to just one of these is unlikely to reach bottom of Level 3 in AOs 1 and 2 and be limited to Level 2 in AO3. If a response is centred on just one river or drainage basin, it will need to offer a variety of methods to reach Level 3; a broader approach perhaps offers greater security. It is important that the measures are securely described as regards their reduction of the risks of river flooding to reach Level 3 in AOs 1 and 2. There is plenty of exemplar material for candidates to draw upon to support their responses; it would be good to read of the local, smaller scale methods that most schools will have experienced in their area.
Points include:

- engineering solutions – embankments/levees, channel straightening, flood relief channels, sluice gates, dams
- ecological solutions – aforestation, changes in agricultural practices e.g. arable to pastoral, contour ploughing
- other solutions include land use zoning on flood plains

(b) The key aspect of assessment here is the quality of link between the drainage basin system and flooding. Responses where this is convincing are likely to reach to top of Level 2/bottom of Level 3 in AO3; depending on the quality of knowledge and understanding a response can reach Level 3 in AOs 1 and 2. Answers that ignore either natural processes or man's activities will not rise above Level 1 in AO3 and not above bottom of Level 2 in AOs 1 and 2.
Points include:

- inputs – high-intensity / prolonged rainfall, rapid snowmelt
- stores and processes – saturated soil store receiving more rainfall, deforestation reducing interception and evapo-transpiration and accelerating the rate at which water reaches the surface, land drainage decreases lag time by accelerating throughflow, changing agricultural land use e.g. pastoral to arable decreases interception and accelerates run-off, urbanisation reduces infiltration rates and accelerates water transfer to channels; role of geology; basin shape and size; drainage density
- outputs – deforestation can increase sediment input to channels decreasing their capacity; rainage density

Option 3: Glacial and Periglacial Environments

7 (a) Describe the past and present distribution of glacial and periglacial environments in the British Isles. [20]

(b) Explain the effects of multiple periods of glaciation and deglaciation on upland landscapes. [25]

(a) The specification mentions the past and present distribution of glacial and periglacial environments and more specifically the Pleistocene in the British Isles. The emphasis is on distribution and accurate and detailed description of this will receive level 3 in the AOs. Reference by way of exemplification to elements of the sequence might be an indication of a Level 3 response. As there is a variety of nomenclature to the various elements of the Pleistocene in the available texts, we should not be prescriptive as regards this. The first three points mentioned below should take a response into Level 3 in AOs 2 and 3 at least.
Points include:

- this was not a single Ice Age consisting of an advance of ice followed by a retreat. A series of glacials separated by warmer interglacials was experienced by the British Isles
- the extent of ice advance was different during each glacial
- within each glacial relatively short-lived stadials, periods of significant ice advance, were separated by interstadials, periods of ice retreat
- the acknowledgement of the existence of periglacial environments in the build up and retreat of ice is likely to indicate a Level 3 response
- active periglacial environments today are not found in the British Isles but in some years the highest altitude areas of the Scottish uplands show evidence of processes similar to those found in locations such as northern Canada and central Siberia

(b) It is a key point in understanding the impact of glaciation that students appreciate the existence and effects of the comings and goings of ice. This question restricts the content to upland areas and looks for material on landscapes, which can include small scale features.
Points include:

- generally the most intense period of glaciation obliterates or significantly modifies anything previous to it – this is likely to be a Level 3 response in AO2
- perched corries around another corrie – evidence of a glaciation after the main corrie was initially excavated e.g. Cwm Idwal
- degree of over-deepening of some corries can not be attributed to the ice mass present during the Loch Lomond glacial and represents the work of previous and more vigorous ice advances – particularly evident on Skye
- push and recessional moraines can be found within a glacial trough and indeed a corrie, evidence of both glaciation and deglaciation
- drumlins – although predominantly a lowland feature they do exist in upland areas and are increasingly thought to represent the reworking of previously deposited material – evidence of deglaciation
- scree slopes – in some locations these are not particularly active today evident by the vegetation growing on them, and are thought to represent intense frost shattering during the peri-glacial time as a glacial ends, so evidence of deglaciation

8 (a) Describe the processes of weathering and erosion associated with a period of glaciation. [20]

(b) Explain how rock type affects the landforms resulting from a period of glaciation. [25]

(a) Such processes are common material to students studying glaciation. It might be that the key discriminator here is how well the response deals with 'weathering', something that AOs 1, 2 and 3 will reflect. Comments about the substantially enhanced erosion associated with warm-based glaciers might indicate a level 3 response.

Points include:

- nivation – localised denudation by a combination of frost action, gelifluction, frost creep and meltwater flow in association with snow patches (Michael Summerfield)
- frost action on rock exposed above the snow/ice line, nunataks for example
- abrasion – scratching, grooving and polishing of bedrock by debris carried in base of glacier
- plucking – aka quarrying or joint-block removal – a discriminating point here for Level 2 and above in AO 1 and 2 might be that this mainly operates where the rock is well jointed. Pressure melting at base of ice causes water to penetrate joints and cracks. This freezes and widens joint weakening the block, which can eventually be prised loose by the moving ice. Most candidates will associate this process with the lee side of a roche moutonnée or in association with a bergschrund towards the headwall of a corrie
- dilatation – when ice sheets disappear the outward expansion of pressure may cause the rock to develop a set of expansion-joints
- flowing water

(b) The influence of rock type is explicitly mentioned in the specification and this question will need responses to make explicit links between rock type and landforms for Level 3 in AO3. Level 2 in AO3 can be awarded once the response begins to include material about rock type in the context of glacial landforms but where the links tend to be implicit. Rock type can include any geological aspect such as structure and chemical composition. There could be material from both upland and lowland glacial landforms.

Points include:

- The influence of rock type on the pre-glacial landscape as much of the work of ice is in modifying an area rather than creating a brand new landscape. For example, river valleys are modified into glacial troughs
- The internal strength of the rock will influence how steep the post-glacial slopes can be, e.g. the particularly massive granites of Yosemite Valley, California allowing 2000+ feet valley sides
- Rock structures e.g. faults or jointing patterns can influence the direction of erosion e.g. corrie orientation and ribbon lake formation
- The presence of a more resistant rock in a valley can lead to a roche moutonée; crag + tail; rock steps; knock + lochan
- The rock type an ice sheet crosses can influence the boulder clay it deposits e.g. the chalk ridge crossed by ice sheets en route into East Anglia gives rise to chalky boulder clay
- frozen chalk resistant

9 (a) Describe the landforms associated with ground ice.

Fig. 1 shows the climate at a location in Siberia.

(b) Explain the influence of the climate represented in Fig. 1, on the weathering and slope processes operating in periglacial environments. [25]

(a) This feature is a common element in a study of peri-glaciation and is explicitly mentioned in the specification. It will be the quality of their knowledge and understanding that will inform the candidate's level in the respective AOs and we should be aware of the assessment potential that diagrams might contain. The inclusion of dimensions would indicate a Level 3 response in AOs 1 and 2.
Points include:

- ground ice – a collective term for all bodies of ice in the ice in areas of permafrost. Responses that draw attention to the variety of forms of ground ice give an indication of top level 2/bottom of level 3 depending on the quality of the description
- soil ice including needle ice and ice filling pore spaces
- ice wedges
- pingos, both open and closed system
- thermokast
- patterned ground

(b) The highly seasonal nature of the climate is the key factor candidates should pick and relate such variation to landforms. The alternating cycles of freeze and thaw need to be related explicitly to landform development for Level 3 in AOs 2 and 3 to be gained. Here again credit across all the AOs might well be contained within diagrams.

- intense cold of eight months leads to formation of permafrost
- only three months record above freezing mean monthly temperature thus helping to maintain permafrost
- screes and blockfields – relate to frost weathering
- patterned ground (circles, nets and polygons on flat surfaces; steps and stripes on slopes of between 5 and 30 degrees) – relate to frost cracking and frost heave; ice wedges
- lobes, terraces, stone garlands/steps, ploughing blocks, block streams – associated with solifluction and or gelifluction of the three summer months with temperatures high enough to allow thawing of top layer of the ground
- asymmetric valleys – effects of more pronounced solifluction/gelifluction on sun facing slopes
- sheetwash and fluvial processes associated with summer melt

Option 4: Hot arid and semi-arid Environments

10 (a) Describe the changing location and extent of hot desert environments in the past. [20]

(b) Explain the role of flowing water in the formation of hot desert landscapes and landforms. [25]

(a) The Specification makes explicit reference to 'past climatic change, Pleistocene pluvials, post glacial changes'. Longer term fluctuations and changes in climate have taken place in most desert areas. Only very few core regions of present day deserts may have not undergone changes in rainfall and temperature which took place at the same time as the Pleistocene ice sheets were advancing and retreating. A response might just look at one desert and describe its changing extent and this can reach Level 3 given sufficient detail but precise details of timings are not a pre-requisite. Candidates may also describe the most recent changes such as the Dust Bowl years of the 1930s in the USA as well as those that tend to be considered under the term 'desertification'. Level 3 awaits those who make a genuine attempt to deal with both location and extent over time.
Points include:

- most deserts show evidence of both pluvials and interpluvials – periods of greater aridity
- the cores of the current deserts are likely to have been the same for many thousands of years
- in general increased aridity in the tropics seems to be associated with glacials in the mid and high latitudes
- Sahara – probably the best studied desert – Lake Chad has been much greater in extent in the past and the northern margins have been wetter in the period of the Roman empire.

(b) Permanent surface water is rare but in short-lived, intense and localised events flowing water can carry out significant geomorphic work. The important assessment point is the link between flowing water and landscapes and landforms. Separate accounts will not reach more than Level 1 in AO3. If only erosional or depositional roles are considered then top of Level 1 in AOs 2 and 3 is the maximum.
Points include:

- role of water when it arrives on land surface depends on nature of that surface. Unconsolidated materials e.g. active dunes + sand sheets are easily erodible, susceptible to sheet-wash + gullying. Also highly permeable + infiltration rapidly reduces surface flow.
- canyons + arroyos
- washes – channels and valleys in low-relief landscapes
- alluvial fans, bajadas; playas
- pediments
- dormant/relict dunes + sheets with surface crusts initially more resistant. Once crust is broken erosion of underlying material is rapid

11 (a) Describe the role of human activity in land degradation in desert areas [20]

(b) Explain how the location of desert areas is the result of the inter-action of several factors. [25]

(a) The impact of human activity on the hot arid and semi-arid environment is a key element of this Option. Where there is a clear link made between man's activities and desert expansion Level 3 in AOs 2 and 3 will be reached. We should not be too particular over definitions, as there are many different interpretations in circulation; a couple are suggested below as a starting point. It would be encouraging if candidates recognised that man's role is complex; why should cultivators and pastoralists self-consciously over-exploit their main resource? A Level 3 point!
Points include:

- 'Desertification is the diminution or destruction of the biological potential of the land which can lead ultimately to desert-like conditions.' UNCOD 1978
- land degradation is the process by which the soil becomes less productive as a result of physical factors such as drought or human factors connected with poor management such as overgrazing
- over-cultivation – soil fertility falls including loss of humus, plant growth diminished leading to more surface area exposed to wind and water erosion
- over-grazing – loss of vegetation leading to more surface area exposed to wind and water erosion
- deforestation e.g. for fodder/firewood – disrupts hydrological cycle including local rainfall patterns and leaves surface more prone to wind and water erosion. Population growth and migration adding to pressure
- mis-management of irrigation

(b) For Level 3 in AO3 a response will have to be clear as to the inter-action of factors in particular desert locations. 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 desert locations and explain why they experience the conditions they do.
Points include:

- sub-tropical high pressure (descending limb of Hadley cell), how it arises and its influence on moisture levels
- cold ocean currents cool any crossing air so that the air's capacity to hold moisture reduces e.g. Atacama
- rain shadow – related to prevailing winds in sub-tropics, trade winds. Blow from NE in northern hemisphere, SE in southern hemisphere. Therefore Andes prevents moisture reaching western slopes, Australia Mts. in east create extensive rain shadow
- some deserts far removed from rain bearing winds e.g. Gobi, parts of Sahara
- extension of desert areas due to man's role – will need careful explanation

These are the key factors. A top quality response will point out for example, the inter-action of the first three points to bring about the aridity in Chile and Peru.

12 (a) Describe the adaptations of animals to desert environments. [20]

(b) Explain the role of water movement in the formation of desert soils. [25]

(a) Animal adaptations are explicitly mentioned in the specification. Sketch drawings can earn credit under any of the AOs.
Points include:

- coping with heat – animals often small and escape from heat under ground during day e.g. nocturnal rodents, large surface area of parts of the body to lose heat e.g. desert fox and hare have large ears, thermal 'dancing' by some reptiles i.e. standing on just two feet at a time, some insects jump into the air to avoid surface heat
- coping with absence of surface water - insects and reptiles requiring very little water e.g. rattle snakes, in coastal deserts some insects can 'catch' droplets of water from fog, the larger animals are highly mobile and so can cover large distances to find grazing and water
- camels – store large quantities of food as fat in hump, large water intake capacity, long eye lashes to protect from wind blown sand; thick rubbery lips and mouth to allow it to eat thorny vegetation, large and well padded feet to walk over sand and stones

(b) The emphasis of this sub-part is on explanation so processes are key: descriptions are likely to be offered and can be given credit under AO1. The essential contrast is the upward/downward movement of water. Responses picking up on this are likely to be Level 3 in AOs 1, 2 and 3. Level 2 will be reached by those responses who only include the upward movement of water and are able to link this with soil development.
Points include:

- aridisol – upward movement of water dominates. Low organic content, 1-2%, gives a high pH, 7.0-8.5. Salts are carried upwards in solution. Below the A horizon there is often an accumulation of calcium as leaching is insufficient to remove all the Ca. There can be a slight loss of bases through leaching during wet periods. Commonly found towards margins of desert regions where rainfall is slightly more regular
- solonetz – found in areas where rainfall is sufficient to allow some leaching but where the maximum height of the water table is below the soil. The B horizon has a concentration of sodium salts and is very clayey
- solonchak – found in areas of very high rates of evaporation, often on relatively unconsolidated materials. Most common where fluctuations of the water table bring high concentrations of salts into the profile. These are then carried upwards in solution due to the high rates of evaporation and deposited to give a surface crust of salt accumulation
- alluvial fans / playas offering opportunities for soil formation

Option 5: Applied Climatology

13 (a) Describe how the energy budget of an urban area differs from that of surrounding rural areas. [20]

(b) Explain the climatic consequences of these differences and their significance for human activities in urban areas. [25]

(a) The question indicates that candidates could use the components of the energy budget to organise their response but this is not a pre-requisite. It is important the descriptions contrast urban areas with their surroundings: urban area descriptions on their own will not rise above Level 1 in AO3.
Points include:

- the basic surface energy budget is relevant here i.e. $R_n = LE + H + G$ where R_n is net radiation, LE is latent heat transfer, H is sensible heat transfer and G is ground heat flux. Urban budget would be $R_n = LE + H + G + A$ where A is anthropogenic heat
- key point is the heat production resulting from human energy consumption by combustion. This can exceed R_n during winter in some cities
- heat storage by surfaces is greater leading to greater nocturnal values of H; LE in city centres tends to be much less. The lack of LE means that by day some 70-80% of R_n is transferred to the atmosphere as sensible heat
- within urban areas the energy balance varies with altitude and aspect so that there can be striking contrasts even within one street
- the role of heat transfer into and out of water can be significant in surrounding areas. An interesting point might be made by Level 3 responses here about lake / sea-side urban areas

(b) Two linked elements are required for a response to reach Level 3 in AOs 1, 2 and 3, the nature of urban climates and their effect on human activity. Human activity includes a wide variety of possibilities. We must be sensible here as to what is and is not acceptable. Any activity that might be reasonably influenced by the distinctiveness of urban climates can be credited. If the climatic influence is not explicitly related to urban differences then top of level 1 in AO3 and top of level 2 in AOs 1 and 2 are the maximum
The inclusion of only one restricts the answer to bottom of Level 2 in AO3 but might reach towards the top of Level 2 in AOs 1 and 2.
Points include:

- Higher temperatures especially pronounced under winter anti-cyclonic conditions, the heat island effect. Level 3 responses might make reference here to differences amongst urban areas of different sizes. Links with human activites such as use of air conditioning, reduced need for salting of roads and de-icers. Also link with human health such as heat stroke and asthma
- Nocturnal contrasts in temperature under the conditions in the point above often marked. Similar links with human activities
- Increased temperatures lead to increased instability that can effect precipitation, both type and amount e.g. thunderstorm activity. Link with need for storm drainage systems and the consequences when these have insufficient capacity
- air drawn into urban areas and funnelled

14 (a) Describe how human activity is affected by the frequency and severity of frost and fog. [20]

(b) Explain the relationship between topography and the frequency of frost and fog. [25]

(a) The key assessment here is the degree to which human activity and frequency and severity of frost and fog are linked. A response that describes frost and fog without relating them to human activity will be Level 1 in AO3. A response that drifts away from frost and fog into the affect of other variables will also be Level 1 in AO3. A range of material is possible here and we must be open to the diversity that candidates might select.
Points include:

- settlement – aspect, in particular patterns within upland valleys
- settlement – altitude, in particular patterns within upland areas
- transport – frost and fog hollows e.g. M25
- agriculture – frost hollows and orchards
- agriculture – frost and aspect e.g. viticulture, market gardening

(b) The context of the question is clear with the focus on topography; if this is lacking then Level 1 in AO3 will be the maximum. A response confined to either frost or fog is unlikely to reach above the bottom of Level 2 in AOs 1 and 2 and be limited to Level 1 in AO3.
Points include:

- general decrease in temperature with increase in altitude (c. 0.60c/100 metres) leading to cooler air and so a declining ability to hold water as vapour
- contrast in solar input depending on aspect leading to contrasts in fog and frost frequency. Make sure candidate has the distinction correct between north/south facing depending on the hemisphere being discussed.
- temperature inversions related to basin locations

15 (a) Describe how human comfort varies in different parts of the world. [20]

(b) Explain how human comfort influences the design of buildings in different parts of the world. [25]

(a) Human comfort is explicitly mentioned in the specification and refers to the range of temperatures and humidity values which humans feel comfortable within. The emphasis here is on how this range of comfort varies in different locations: without this spatial contrast then AO3 will not reach beyond Level 1. The expectation here is for broad regional comments but some responses might focus on specific locations: if these are correct then either approach is valid.
Points include:

- air temperature, relative humidity and wind speeds primarily influence human comfort
- high temperatures associated with high humidity e.g. equatorial regions
- high temperatures associated with low humidity e.g. desert regions
- high wind speeds associated with low temperatures e.g. higher latitudes
- high wind speeds associated with higher temperatures e.g. mid-latitudes

(b) The specification mentions the climatic protection provided by buildings in different climates to afford comfort to human beings. There is a wealth of material candidates could use to answer this sub-part and we must be open to whatever they chose to employ. This is an instance of where breadth or depth might be the equally valid approach to reach Level 3.
Points include:

- countering high temperatures and high humidity – verandas/porch allowing space 'outside' the house e.g. south-eastern USA; houses raised up off the ground to allow air to circulate e.g. tropics and sub-tropics
- countering high temperatures alone – thick walls with small openings, often with an internal courtyard shaded by awnings and trees e.g. North Africa, Middle East
- countering low temperatures – traditionally thick walls with small openings e.g. higher latitudes; references to modern insulation relevant allowing for example more glass to be used
- countering high intensity sun – large overhang to shade walls and windows
- countering high rainfall – steep pitch and large overhang

Section B

Option 6: Agriculture and Food

16 (a) Describe how agro-ecosystems modify natural ecosystems. [20]

(b) Explain why specialist farms have the greatest impacts on natural ecosystems. [25]

(a) Agricultural systems are a key element within this option and offer a suitable organisational structure for this question. A response that descends into negative eco-babble are unlikely to rise above Level 1. For a response to reach Level 3 it will need to be explicit about the changes to ecosystems that agriculture brings about. It is possible that a single case study offers all the opportunities needed to reach Level 3 but equally, candidates could offer a breadth of exemplar material.

Points include:

- energy and nutrient flows – a variety of ways in which these flows are disturbed e.g. the removal of biomass in harvesting lowers organic material in the soil
- productivity – an interesting aspect as well-managed agro-ecosystems maintain or even increase productivity over time; mis-managed agro-ecosystems do not
- diversity and stability – also interesting. generally agro-systems reduce these elements but there are considerable variations possible e.g. impact of set-a-side on wildlife populations
- sustainability – another interesting factor. some types of agro-ecosystems are not sustainable without significant inputs e.g. fertiliser
- altering physical basis e.g. terracing

(b) This sub-part builds on the first, as its theme is the ecosystem. The contrast between types of farms is the important aspect. Candidates who offer good material on particular farming types e.g. cereals; plantations, are likely to be Level 3 in AO1 at least.

Points include:

- monocultures tend to exhaust the soil of the same nutrients and so impact the ecosystem more severely than mixed farms
- monocultures restrict the variety of niches that natural populations can occupy e.g. removal of hedgerows in specialist arable areas
- specialist enterprises tend to rely on large inputs of agro-chemicals such as pesticides and herbicides that can impact on the natural ecosystem
- specialist arable often relies on mechanisation that can in turn lead to compaction of soil and so increase run-off
- specialist enterprises are more likely to use irrigation that can deplete ground / surface water and / or cause salinisation

17 Study Fig. 2 which shows the pattern of diffusion of an innovation.

(a) With reference to Fig. 2, describe the speed and spatial pattern of the diffusion of agricultural innovations you have studied. [20]

(b) Explain why the rate of diffusion of agricultural innovations varies from place to place. [25]

(a) Two elements of diffusion are highlighted in the question, speed and spatial pattern with Fig.2 indicating something of the temporal pattern. An equal treatment of speed and spatial pattern is not required to reach Level 3 but the omission of one will restrict the marks to the top of Level 2. The quality of examples will inform the Levels to be given in AOs 1 and 3. Credit for all four AOs could come from the effective use of diagrams, communicating the types of spatial spread, for example.
Points include:

- The speed of diffusion – the model shows a classic S shaped cumulative form with a slow rate of adoption at first, then an accelerated period followed by a slowing up in the rate of adoption. The graph also indicates spatial contrasts in the rate of adoption, a point that when described convincingly might indicate a Level 3 response
- Spatial patterns – distance from the point of origin is important. Without this a response is unlikely to be more than bottom of Level 2 in AOs 1 and 2. Descriptions should point out the ripple effect
- Higher Level responses might include references to the acceleration both temporally and spatially of innovation when farmers migrate e.g. 19th century European migrations to North and South America

(b) This sub-part asks the candidates for reasons why agricultural innovation is more likely to occur in some areas than in others. The word 'locations' allows a candidate to use a wide range of exemplar material to support their response. Where there is a clear factor led explanation then it is likely that top of Level 2/bottom Level 3 will be reached as a minimum.
Points include:

- farm size – generally the larger the size of farm the more open the farmer is to new ideas. This is related to other factors such as capital availability and education
- specialist enterprise - the more specialist the farm, the more likely to take up an innovation
- physical factors – where environmental conditions favour the use of an enterprise it is more likely that there will be innovation concerning that particular type of farming e.g. spread of hybrid maize in USA i.e. Corn Belt outwards; physical barriers e.g. mt. ranges
- government influence – where this is available then innovation more likely
- communications – availability of TV and radio and most recently ICT, enhance the spread of new ideas. A Level 3 point in AO2 might be that ICT can diminish the role of linear distance
- MEDC / LEDC contrast – innovation more rapid in former than latter

18 (a) Describe the pattern of nutrition at global and regional scales. [20]

(b) Explain the role that both economic and social factors might play in causing food shortages and famines. [25]

(a) It is the pattern of nutrition that is the focus here with the quality of the description informing the Level to be awarded in AOs 1, 2 and 3. Three aspects are identified in the specification, malnutrition, undernutrition and overnutrition. When all three are present in a response then an assessment less than Level 3 is unlikely: two of the three should give Level 2. When only one is present then Level 1 in AO3 and probably not more than top of Level 1 / bottom of Level 2 in AOs 1 and 2. The inclusion of global and regional in the question is to encourage candidates to go beyond coarse scale generalisations such as LEDC/MEDC contrasts and the continental scale. Because of the difficulties in scale definitions we should be open to whatever interpretation candidates might offer as regards regional. If only one of global/regional is offered then Level 1 in AO3 and probably not more than top of Level 1/bottom of Level 2 in AOs 1 and 2.
Points include:

- pattern of nutrition is uneven
- malnutrition – lack of adequate nutrition caused by an unbalanced diet. Widespread amongst LEDCs but also among the poorer socio-economic groups in MEDCs – a point likely to indicate a Level 3 response. Where there is an effective description that draws attention to the diversity in the pattern of nutrition among the LEDCs i.e. Latin America and Asia c.f. sub-Saharan Africa, this is a likely indication of Level 3
- undernutrition – caused by too little food that can ultimately lead to death by starvation. FAO identify this as when people who do not consume enough food to maintain their body weight. In this respect the conditions in sub-Saharan Africa stand out
- overnutrition – caused by too much food. A feature of parts of the MEDCs in particular. Level 3 responses might point out contrasts such as Eastern Europe c.f. Western Europe

(b) The question offers a structure for candidates in its mention of economic and social. There need not be an equal treatment to reach Level 3 but the complete absence of one of these would limit the response to Level 2. We need to be sensible here, as it can be difficult to separate social and economic. The concept of food security is helpful here and its appropriate use might indicate top of Level 2/bottom Level 3. There is also no scale set and so candidates could well make effective use of a variety of exemplar material.
Points include:

- economic – family income - quantity, quality and degree of choice influenced. It is important that candidates recognise that poverty is the key cause of a poor diet
- economic – limited infrastructure especially in rural areas in LEDCs can restrict food production
- economic – use of land for export production rather than for domestic food e.g. LEDCs. Even where MEDCs export agricultural products they can afford to import food
- social – land tenure patterns can lead to fragmentation and unsustainable holdings
- social – cultural attitudes towards family planning and therefore the demand side of food supply
- social – substantial inequalities in society with much land held by minority and either may not be used productively or produce cash crops
- social – redistribution of land e.g. Zimbabwe

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

19 (a) Describe how modern industrial growth in LEDCs and NICs has affected the physical environment. [20]

(b) Explain how the internal organisation of firms influences their locational patterns. [25]

(a) The important assessment concern here is the link between modern industrial growth and its affects of the physical environment. Without these being explicit then Level 2 in AO3 is the maximum and it is unlikely that AO1 will reach above Level 2. If candidates deal with MEDCs either in addition or instead then the AO3 mark will reflect this, Level 2 maximum in the first case and Level 1 in the second. The allocation of the term LEDC/NIC is not always clear and so we should be open to the candidates' classifications. A top quality response might indicate that there are both direct and indirect effects: indirect might be the rise in disposable income with increasing industrialisation leading to increasing quantity of consumer goods such as fridges and cookers – these add to the generation of electricity often resulting in a physical effect. The distinction of between local, regional and global effects is also likely to be a Level 3 indicator.
Points include:

- quality of water e.g. waste disposal
- quality of air e.g. waste disposal; global warming
- pollution of land
- waste disposal in landfill
- expansion of built environment onto green-field; deforestation

(b) The role that the organisation of firms plays on their location has gained in importance when seeking to understand manufacturing patterns and processes. It is also important that students studying this particular option have an appreciation of the diversity in scale that exists amongst manufacturing enterprises: too often they see manufacturing as composed of steel works, refineries and vehicle assembly plants. Those responses that do not extend beyond the larger enterprises will not reach above the bottom of Level 2 in AO1 and 3. Where there is a serious attempt to cover a range in scale then Level 3 in AOs 1, 2 and 3 is likely.
Points include:

- larger firms are often multi-plant, therefore occupy several locations and are frequently trans-national
- national scale operations can be confined to a single plant and location
- TNCs often evolve a pattern of organisation in which HQ and R&D are in the home country with branch plants set up to serve regional markets or to take advantage of lower costs e.g. labour
- some products are more likely to be produced by global companies (electronics; chemicals; cars) while others tend to retain a stronger national focus (steel; ship-building)
- some global operators decentralise elements of control to regional operations e.g. Ford has some R&D based in Europe as well as Detroit

20 (a) Under what circumstances is labour quality more significant than labour costs to the location of manufacturing industry? [20]

(b) Explain how social and economic consequences of unemployment vary with the type of manufacturing industry. [25]

(a) This sub-part looks at the role of labour on manufacturing locations, in particular asking candidates to think about labour quality rather than just labour costs. Where the link between labour and location are clear then top of level 2/bottom of Level 3 in AO3 might be anticipated.
Points include:

- labour skills are usually more important than labour costs. Capital in the form of machinery has been increasingly substituted for labour in many industries so the demand for large supplies of low skill, low wage labour has decreased. This is a strong theme in MEDCs. Firms demand particular skills and locate accordingly e.g. Toyota at Burnaston.
- when the skills are particularly specialist then the residential preferences of the work force can be an important factor e.g. high-tech e.g. Cambridge, Bristol, Colorado, Rhone-Alpes.
- unit labour costs – a point likely to indicate a level 3 response. Such costs relate wage levels to productivity so that higher quality labour is more productive and so higher costs can be borne, as there is higher return

(b) The economic and social consequences of manufacturing is a major heading in this Option and includes unemployment and the threat to communities and the disadvantages to particular social groups. Here the candidates are invited to consider the diverse nature of the manufacturing sector and its consequences as regards job losses. 'Type' of industry can be interpreted in a number of ways, some of which are inter-linked. Where there is a genuine attempt to consider something of the variety of industry, Level 3 in AO3 will be earned. AO2 will assess the link between industry and type of industry.
Points include:

- scale of industry – some sectors are dominated by large scale operations e.g. heavy or assembly line, so that when a plant undergoes job loss it can have a dramatic local impact
- some sectors contain both large scale and small e.g. food processing (baking, brewing) so that the impact varies
- degree of labour specialisation – some industries employ many with specialist skills so that if they are made redundant these skills are difficult to transfer. Other industries employ people with skills that can be more readily transferred
- spatial scale – some industries are highly concentrated so that if that sector undergoes recession the impact in certain localities is severe. Other industries are more widespread and so the impact of recession is less focussed

(b) This sub-part extends the labour theme of the first but looks at labour type, linking this to location. Where such links are clear then top of level 2/bottom of Level 3 in AO3 might be anticipated.

Points include:

- labour skills are usually more important than labour costs. Capital in the form of machinery has been increasingly substituted for labour in many industries so the demand for large supplies of low skill, low wage labour has decreased. This is a strong theme in MEDCs. Firms demand particular skills and locate accordingly e.g. Toyota at Burnaston
- when the skills are particularly specialist then the residential preferences of the work force can be an important factor e.g. high-tech e.g. Cambridge, Bristol, Colorado, Rhone-Alpes
- unit labour costs – a point likely to indicate a level 3 response. Such costs relate wage levels to productivity so that higher quality labour is more productive and so higher costs can be borne, as there is higher return

21 (a) Describe the impact on regional economies of Foreign Direct Investment (FDI) and disinvestment in manufacturing. [20]

(b) How and why do governments and planners influence Foreign Direct Investment (FDI)? [25]

(a) Foreign Direct Investment (FDI) and disinvestment are both explicitly mentioned in the Specification in the context of regional economies. We should allow a broad interpretation of regional although if a response offers nothing below the national scale then Level 1 in AO3 should be the maximum. It is likely that much will be made of the inflow of funds but less on the disinvestment. If there is a disregard of disinvestment then Level 1 in AO3 and Level 2 in AOs 1 and 2 is the maximum.
Points include:

- FDI – usually brought by a TNC. Can be either in the form of take-over e.g. GM of Vauxhall or as a transplant e.g. Toyota
- FDI can either reinforce the existing structure of region e.g. Japanese engineering TNCs in N.E. England or can bring new elements to a region e.g Toyota in S. California, not a 'typical' location for vehicle assembly in USA
- FDI can alleviate unemployment and help stimulate multiplier effect
- disinvestment – branch plants often closed relatively quickly when recession occurs. Unemployment and negative multiplier operates often very severely as indigenous firms already closed – regional assistance to areas of high unemployment often an important reason for the FDI in the first place

(b) We can treat government and planners as essentially synonymous for the purposes of this sub-part. The emphasis here is on the attraction of FDI. The 'how' and 'why' are closely linked but a response without one of these will not rise above Level 1 in AO3.
Points include:

- why – reduce regional economic difference. Regions with high unemployment often associated with changing industrial structures, local exhaustion of raw materials that promoted the original location of manufacturing, loss of market.
- why – attract wealth creating economic activity that will benefit national as well as regional economy e.g. balance of trade
- why – prevent out-migration
- why – political e.g. votes
- how – fiscal measures e.g. range of grants and allowances
- how – infrastructure improvements e.g. road/rail links
- how – land clearance in advance of reconstruction
- how – relaxation of planning rules

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

22 (a) Outline the theories and models of the location of retailing and offices within the CBD? [20]

(b) How and why do real world retail and office locations within the CBD differ from these theories and models? [25]

(a) Retailing and office locations within the CBD are a major sub-heading within this Option with theories and models explicitly mentioned. Candidates whose focus is on intra-CBD patterns are likely to be Level 3 in AO3. If the response only considers central place theory then Level 1 in AO3 is the maximum and probably also in AO2.
Points include:

- bid-rent – identifies contrasts between the high cost locations at the heart of the CBD with the less expensive and peripheral sites. Candidates should link these economic contrasts with difference in the types of service activity found
- core-frame model – traditional the employment of the CBHI and CBII describe where high order activities (department stores, specialist shops, the larger bank branches) locate, the inner core, compared to the outer core locations of smaller retailers, theatres and cinemas and public administration. Beyond this is the frame where space-extensive service activity exists such as car showrooms, transport termini and education. It would appropriate for zones of discard and assimilation to be mentioned here
- zones of active and passive assimilation can be relevant here. They describe the margins of the CBD and in the zone of transition where CBD functions are invading and succeeding such as solicitors, accountants, dentists taking over premises, sometimes residential and converting them to service use

(b) Retailing and office locations within the CBD are a major sub-heading within this Option with theories and models explicitly mentioned. Candidates whose focus is on intra-CBD patterns are likely to be Level 3 in AO3. If the response only considers central place theory then Level 1 in AO3 is the maximum and probably also in AO2.
Here candidates are invited to juxtapose the real world and theory. The 'how' and 'why' are closely linked but a response without one will not rise above Level 1 in AO3. It would be good to read accounts that made detailed reference to local fieldwork here.
Points include:

- historical land use patterns continue to exert an influence on plots making some more or less suitable for types of development
- role of planning – either encouraging or discouraging certain types of development
- loss of certain types of service activity, in particular retailing, to suburban/green field locations at edge of urban area
- conversion of premises to residential use
- some theories devised in contexts different to those they are applied in e.g. CBII and CBHI work most effectively in context of North American block rather than a European context.

23 (a) Describe the main changes in the location of public services, such as schools and health care, in rural areas over the past 40 years. [20]

(b) Explain how the interaction of several factors brings about changes in rural service provision. [25]

(a) Changing service provision in rural areas is a major sub-heading within this Option. The emphasis here is on the description of changes: with convincing knowledge and understanding Level 3 in AOs 1 and 2 can be awarded. If the response drifts into retailing then reward appropriately for AOs 1 and 2 but restrict AO3 to Level 2 as long as there is some reference to public services. Post offices can be counted as a service here.
Points include:

- most rural areas experienced a decline in numbers of services
- contrast between remote rural and rural areas near to urban centres – a point likely to indicate top of Level 2/bottom of Level 3 response
- public services often not present in the smaller settlements
- concentration of such services in some rural regions in key settlements
- some public services have a 'nomadic' location e.g. mobile libraries

(b) This sub-part asks candidates to explain rural service provision and explicitly invites a consideration of the causes. A response where there is simply a catalogue of factors will not reach above top of Level 1 in AOs 2 and 3, whereas when there is a genuine attempt to deal with 'interaction' then Level 3 in AOs 2 and 3 is likely.
Points include:

- changing thresholds, both increase and decrease. A Level 3 response in AO2 is likely to see threshold as more than just numbers but also incorporates factors such as demographics (age and sex) and income; second home owners
- changing personal mobility both car ownership, public transport provision and road building/improvements. One possible interaction is between this point and the demographics of a location
- government policies e.g. key settlement

24 (a) Outline how central place theory accounts for the location and numbers of service centres in a region. [20]

(b) Explain why service provision rarely follows the patterns of central place theory. [25]

(a) The focus here is the spatial distribution and inter-relatedness of settlements within a region. The quality of a description will inform the Level of AOs 1 and 2: a response confined to just one of location/numbers is unlikely to reach above the bottom of Level 2 in AOs 1 and 2 and be limited to Level 1 in AO3. Credit across the AOs might be present in diagrams.
Points include:

- location is related to spheres of influence with each successive order of settlement the square root of 3 times further apart: thus villages are relatively close while cities are much further apart. It is appropriate for responses to mention the shape of market/trade areas, i.e. hexagonal as this, in part, influences location. The idea of these areas 'nesting' is probably an indication of Level 3
- at each successive order there is a three-fold decrease in the number of settlements: thus there are many villages, fewer towns and possibly one major city in a region. Level 3 responses are likely to mention the creation of hierarchies

(b) The theory makes various assumptions about consumer behaviour which the real world deviates from. The question looks for more than just a straightforward catalogue of why Christaller does not fit the real world. Rather such points need to be related to explaining consumer behaviour in order to reach top of Level 2 in AO3 and above. A candidate might answer this in terms of some field work they have tackled but equally valid are suitable comments made in general, although we would hope for some mention of the real world.
Points include:

- consumers do not always travel to their nearest central place – a variety of reasons for this. Some emanate from the consumer such as shopping where they work; combined shopping trips with other activities such as recreation, visiting relatives/friends; personal preferences for type of shopping environment
- consumers are not economically rational decision makers
- regions are not isotropic plains – people have to travel further due to physical features such as rivers or mountain ranges
- consumers have different levels of personal mobility
- consumers have different levels of purchasing power
- governments can influence the location of services such as post offices

Option 9: Tourism and Recreation and their Environmental Impacts

25 (a) Describe how patterns of international tourism can be affected by political factors. [20]

(b) Explain how developments in transport have brought about changes in the destinations and **scale of international tourism. [25]**

(a) In the specification, the phrase used is 'political changes and political crises'. AOs 1 and 2 will assess the quality of knowledge and understanding and we must be open to a wide range of possible contexts in which answers are placed, both temporal and spatial. The emphasis is on the 'patterns' and if this is not clear then AO3 should be at Level 1 and AOs 1 and 2 are likely not to exceed Level 2. The question is also clear in its context, international tourism: if this is not picked up then similar maximum Levels apply. A catalogue of political events will not score beyond Level 2 in AOs1 and 2, Level 1 in AO3 and probably bottom of Level 2 in AO4. Without reference to both the positive and negative impacts a response will not reach level 3 in either AOs 2 and 3.

Points include:

- positive – infrastructure improvements e.g. road/rail/airport access as well as water quality/ beach quality
- positive – currency value
- positive – government sponsored Tourist Board advertising
- positive – regime change that leads to a promotion of tourism e.g. Eastern Europe
- negative – regime change that distrusts foreigners e.g. Myanmar
- negative – increased tension with neighbouring countries
- negative – currency value
- negative – terrorism

(b) The theme of international tourism continues in this sub-part. Candidates need to explicitly link international tourism with changes in transport technology and in particular highlight the changes in destinations and scale for level 3 in AO3. A simple catalogue of transport changes will not go beyond Level 1 in AO3 nor bottom of Level 2 in AO2. We will need to be aware of points such as roads and cars being clearly linked to international transport. A sophisticated point could be made about changes in transport technology within a country might attract overseas visitors as these changes allow more ready intra-national mobility. Such intra-national changes must be clearly linked with inter-national tourism to succeed, something that a Level 3 response is likely to achieve.

Points include:

- increased scale of international tourism due to increased capacity of transport modes e.g. planes/ferries
- increased scale of international tourism due to time-distance shrinkage of higher speed transport modes e.g. all types
- increased scale of international tourism due to economies of scale achieved in transport modes e.g. planes/ferries/trains
- destinations – more long haul due to points above
- destinations – greater variety within traditional area due to points above e.g. France with advent of autoroutes; TGV; budget airlines able to operate due to economies of scale in planes – technological change!

26 (a) With reference to examples, describe what is meant by natural, cultural and heritage tourist resources. [20]

(b) Explain how tourism's use of cultural and heritage resources can have both positive and negative effects. [25]

(a) Like all industries tourism needs resources on which to base its activities. This question specifies the three groups of resources identified in the Specification, natural, cultural and heritage: there need not be equal treatment to reach Level 3 but mention of only one will restrict the response to Level 1 in all AOs. Cultural and heritage are often closely associated so we must be sensible in our assessment here. The absence of examples will restrict the response to Level 1 in AO1.
Points include:

- natural resources – climate, coastlines, mountains and hills, rivers and lakes, ecosystems
- cultural – ways of life, music and theatre, art
- heritage – historical buildings and sites, museums

(b) The theme of resources is continued in this sub-part but with a sharper focus, only looking at cultural and heritage resources. As in sub-part (a), we must be sensible in our expectations of cultural / heritage differences. The question specifies positive and negative effects, i.e. issues of sustainability in its various forms, physical, economic and social, and the omission of one will restrict the response to Level 1 in AO3. As with sub-part (a) there need not be an equal treatment to reach Level 3.
Points include:

- positive effects – preservation of physical structures e.g. Ironbridge, Conwy Castle, Louvre, Macchu Pichu, education e.g. reconstruction and re-enactment can improve people's knowledge and understanding e.g. Black Country Museum or Sealed Knot, indigenous cultures are not static but dynamic and adaptive so that with the interaction with tourists they re-create and reconstruct their cultural basis, without income from tourism some traditions might be lost or cultural centres decline, employment, local and regional wealth creation via tax revenues, physical improvement of previously 'blighted' areas e.g. Big Pit, South Wales
- negative effects – artificial branding and stereotyping, promotion of unrealistic images, original purpose of some places may be difficult to reconcile with their role as tourist feature e.g. cathedrals/temples, weight of numbers can threaten a site's physical sustainability, economic benefits not always received by indigenous peoples e.g. 'craft' products produced by outside manufacturers and shipped in to be sold as 'local'; seasonality of employment

27 (a) With reference to examples, describe the physical, economic and cultural characteristics of mass tourism. [20]

(b) Explain how issues of sustainability are playing an increasingly important role in the development of tourism in LEDCs.

(a) The topic here, mass tourism is to be described in terms of its physical, economic and cultural characteristics. There need not be equal treatment of the various elements in this question to reach Level 3, but the omission of two of the characteristics will restrict the response to Level 1 in all AOs.
Points include:

- tends to describe the concentration of large numbers of tourists in relatively small areas such as resorts
- the locations tend to relatively accessible especially by air and road. It has, therefore, a significant physical impact in these locations
- economically it is dominated by TNCs and large companies with considerable 'leakage' to the country of origin of the company
- often focussed on a highly seasonal resource, sun or snow for example and so economic impacts of locations are seasonal
- tends to disregard local culture and imports culture of the main tourist source locations

(b) This sub-part picks up on the sustainable theme begun in (a) but asks the candidate to focus on sustainable tourism in LEDCs. Definitions are notoriously variable on this topic, alternative, eco-tourism, green and so we must be sensible in our assessments. There is a wealth of material available to candidates on this theme and we might expect to read substantive accounts of exemplars. For Level 3 we can expect more than just physical sustainability, this alone will reach bottom of level 2 in AOs 2 and 3. It would be good to read of examples of current mass tourism, which are beginning to turn to more sustainable approaches.
Points include:

- physical sustainability – small scale in terms of numbers of tourists; using local resources for example for accommodation; energy consumption tries to utilise renewable sources
- economic sustainability – run by small-scale companies with significant local input and therefore minimal leakage, tends towards the high cost end of the market i.e. small numbers but generating high returns
- cultural sustainability - contacts between tourists and local culture aims to foster knowledge and understanding

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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 'Core regions have environmental as well as economic advantages over peripheral regions.' Discuss with reference to examples from the EU. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of a range of environmental (climatic, relief, geological, soil fertility, water supply) and economic (accessibility, labour, capital, infrastructure, raw materials, markets) advantages of the core region of the EU (or core regions if they take a more local view e.g. Oslo area of Norway) over peripheral regions (geographic or social or accessibility). Most candidates will demonstrate clear knowledge of the core/periphery model's concepts.

Level 3 5-6 marks
Candidates will have clear knowledge of a range of environmental and economic advantages of the core region of the EU over peripheral regions. Most candidates will demonstrate knowledge of the core/periphery model's concepts

Level 2 3-4 marks
Candidates will have sound knowledge of a range of environmental and economic advantages of the core region of the EU over peripheral regions.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the environmental and economic advantages of core regions.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the inter-relationship of environmental and economic relative advantages with a clear cause-effect between them and the development of core and peripheral regions. 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 inter-relationship of environmental and economic relative advantages and the development of core and peripheral regions. This may be underpinned by use of concepts or theories to explain causes of differences in regional development in the EU.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the inter-relationship of environmental and economic advantages and the development of core and peripheral regions.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of the inter-relationship of environmental and economic advantages and the development of core and peripheral regions.

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 the relative environmental and economic advantages and the development (and continued growth) of core areas to clearly evaluate the statement. At this level candidates should identify exceptions to this pattern reflecting environmental advantage in the periphery e.g. tourism in Greece, or disadvantages in the core e.g. pollution. Likewise a discussion of concepts such as backwash may highlight the variability in economic advantages.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the inter-relationship of the relative environmental and economic advantages and the development of core areas to evaluate the statement. Candidates should identify some exceptions to this pattern to demonstrate an appreciation that it is not a simple evaluation.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the inter-relationship of the relative environmental and economic advantages and the development of core areas to offer a limited evaluation of the statement that broadly supports it.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of the inter-relationships to offer a limited discussion. Candidates at this level will 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

2 'International environmental resources are the most difficult to manage.' Discuss with reference to examples from the EU. [60]

Answers are likely to focus on climate, seas, rivers and fish. An answer that took only one such resource is self limiting as the focus is clearly on a contrast.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of international environmental resources in the EU and detailed knowledge of attempts at managing them such as the Common Fisheries Policy, drainage basin management (e.g. the Rhine), anti-pollution efforts (such as curbs on acid rain and carbon emissions.

Level 3 5-6 marks
Candidates will have clear knowledge of international environmental resources in the EU and knowledge of attempts at managing them.

Level 2 3-4 marks
Candidates will have sound knowledge of international environmental resources or a single resource in the EU and knowledge of at least two attempts at managing them (it).

Level 1 0-2 marks
Candidates will have limited or vague knowledge of international environmental resources and their management.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of why international environmental resources are so difficult to manage. Ideas may focus on physical reasons e.g. mobility of fish, unpredictability of weather, economic reasons e.g. not all can afford management costs, accessibility social reasons e.g. impacts on a way of life and political e.g. who owns what as in the case of N. Sea oil. A detailed understanding of the effectiveness of the types of management response can be expected.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of why international environmental resources are so difficult to manage. Ideas may focus on physical and human reasons. An understanding of the effectiveness of the types of management response can be expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of why international environmental resources are so difficult to manage. Ideas may focus on a variety of reasons. A superficial understanding of the effectiveness of the types of management response can be expected.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of why international environmental resources are so difficult to manage.

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 international environmental resources are difficult to manage to evaluate in detail if they are the most difficult. At this level discussion of other physical or economic or human resources that are not international or not environmental but are equally difficult to manage can be expected e.g. the skill of the labour force. Candidates may recognise that the accuracy of the statement will vary with the nature of the resource, its scale, location e.g. Ocean v land, and with the level of technology.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of why international environmental resources are difficult to manage to evaluate if they are the most difficult. At this level a discussion of another physical or economic or human resource that is not international or not environmental but is equally difficult to manage can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of why international environmental resources are difficult to manage to briefly evaluate if they are the most difficult.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of why international environmental resources are difficult to manage 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 'Agriculture policies often serve only to increase existing differences in wealth between rural communities.' Discuss with reference to examples from the EU.

[60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of examples of rural communities with differences of wealth (a single region case study could be appropriate) and a range of agricultural policies such as elements of the CAP including subsidies, import controls, quotas, set-aside, environmental aid. Candidates may also demonstrate knowledge of models or concepts such as the core periphery model.

Level 3 5-6 marks
Candidates will have clear knowledge of examples of rural communities with differences of wealth and a range of agricultural policies. Candidates may also demonstrate knowledge of models or concepts such as the core periphery model.

Level 2 3-4 marks
Candidates will have a sound knowledge of an example of rural community with a difference of wealth and at least two appropriate agricultural policies.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of differences in wealth of rural communities and agricultural policies.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how and why these policies might increase differences in wealth between rural communities such as the CAP favouring larger more productive farms, richer farmers being able to reduce costs by mechanising, better educated farmers being able to access more policies. A basic understanding that inequalities in physical, economic and social factors will be exaggerated by such policies is expected.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of how and why these policies might increase differences in wealth between rural communities. An understanding that inequalities in physical and economic factors will be exaggerated by such policies is expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of how and why these policies might increase differences in wealth between rural communities. Little cause-effect will be demonstrated between policy and its impact on wealth.

Level 1 0-5 marks
Candidates will demonstrate a limited or vague understanding of how and why agriculture policies act to increase differences in wealth between rural communities.

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 the policies to evaluate in detail, if they 'only serve' to increase existing differences in wealth between rural communities. A recognition that they are often aimed to reduce it e.g. hill farming subsidies, farm diversification programmes or they have other motives e.g. reducing rural-urban migration is expected. An appreciation that this may vary with scale e.g. size of farms/communities, location (within core v peripheral areas), and may vary with individual communities or elements of the communities (e.g. farmers v non-farmers) can be expected at this level.

Level 3 12-17 marks
Candidates apply their knowledge and understanding of the policies to evaluate if, they 'only serve' to increase existing differences in wealth between rural communities. A recognition that they are often aimed to reduce it or they have other motives is expected. An appreciation that this may vary with location and may vary with individual communities can be expected at this level.

Level 2 6-11 marks
Candidates apply some of their knowledge and understanding of the policies to evaluate if they 'only serve' to increase existing differences in wealth between rural communities. A brief recognition that they are often aimed to reduce it or they have other motives is expected.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and understanding of the policies' impacts on rural communities to produce a limited evaluation of the impact on wealth.

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 To what extent does the increasing suburbanisation of the countryside in MEDCs matter? [60]

This may refer to either the process of suburbanisation or the end product – suburbs.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of examples of the suburbanisation process and the resulting impacts - (physical, economic, social and political) both negative (such as loss of farmland, increased commuting and air pollution, costs of infrastructure) and positive (such as less city congestion, better quality of life) - based on one or more large urban areas and countryside in the MEDC. Knowledge of appropriate models and concepts such as core-periphery model, multiplier can be expected.

Level 3 5-6 marks
Candidates will have clear knowledge of examples of the suburbanisation process and the resulting impacts - both negative and positive - based on one or more large urban areas and countryside in the MEDC. Knowledge of appropriate models and concepts such as core-periphery model, multiplier may be expected.

Level 2 3-4 marks
Candidates will have sound knowledge of the suburbanisation process and the main resulting impacts based on probably one large urban area and countryside in the MEDC.

Level 1 0-2 marks
Candidates will have only limited or vague knowledge of the suburbanisation process and the main resulting impacts. Knowledge of appropriate examples may be vague or missing.

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 suburbanisation and the resulting impacts – positive and negative - on the physical (sprawl, water supplies, pollution, micro-climate) and human (employment, housing, transport, services, health etc) environments for both the cities and the countryside areas.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the causal links between the process of suburbanisation and the resulting impacts on the physical and human environments for both the cities and the countryside areas.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the causal links between the process of suburbanisation and at least two of the resulting impacts for the cities and the countryside areas.

Level 1 0-5 marks
Candidates will demonstrate limited or little understanding of the causal links between suburbanisation and its impacts.

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 suburbanisation to evaluate whether the process and / or end result does 'matter'. At this level a cost-benefit analysis would be appropriate but also an appreciation that the impact will vary with scale, location e.g. rural v urban, over time (there is a cycle effect) and it will vary between groups in both areas e.g. rich v poor. Whom does it matter to, and why, needs exploring.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the impact of suburbanisation to evaluate whether the process and / or end result does 'matter'. At this level there may be an appreciation that this may vary over time and 'matter' differently between groups in society.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the impact of suburbanisation to offer a limited evaluation of the statement. Most will assume that it matters!

Level 1 0-5 marks
Candidates apply limited or vague knowledge and understanding of why suburbanisation impacts on cities to offer a vague, 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 'The advantages of urbanisation in LEDCs outweigh the disadvantages.' How far do you agree with this statement? [60]

This may refer to either the process of urbanisation or the end product – large urban areas.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of the process of, and examples of, the urbanisation process and the resulting advantages – e.g. better medical care, fewer hazards, greater security, better water supply and disadvantages – e.g. increased pollution, unemployment, development of slums, increased crime based on one or more large cities in the LEDC. Knowledge of appropriate models and concepts such as core-periphery model, multiplier can be expected.

Level 3 5-6 marks
Candidates will have clear knowledge of examples of the urbanisation process and the resulting advantages and disadvantages - (environmental and human) based on one or more large cities in the LEDC.

Level 2 3-4 marks
Candidates will have sound knowledge of examples of the urbanisation process and at least two of the resulting advantages and / or disadvantages based on one or more large cities in the LEDC.

Level 1 0-2 marks
Candidates will have only limited or vague knowledge of the urbanisation process and resulting impacts. Knowledge of appropriate examples may be vague or missing.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the causal links between the rapidity of urban growth (and its size) and the resulting impacts – positive and negative - on the physical (sprawl, water supplies, pollution, micro-climate) and human (employment, housing, transport, services, health) environments for both the cities and the originating rural areas.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the causal links between the rapidity of urban growth (and its size) and the resulting impacts on the physical and human environments for both the cities and the originating rural areas.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the causal links between the rapidity of urban growth (and its size) and at least two of the resulting impacts on the physical and / or human environments for the cities or city.

Level 1 0-5 marks
Candidates will demonstrate limited or little understanding of the causal links between urban growth and its impacts.

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 urbanisation and in turn why/how this impacts on a variety of physical and human aspects of both the city and the surrounding rural area, to evaluate the statement. At this level a cost-benefit analysis would be appropriate but also an appreciation that the impact will vary with scale, location e.g. rural v urban, over time (there is a cycle effect) and will vary between groups e.g. rich v poor. A detailed evaluation is expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of urbanisation and in turn why/how this impacts on a variety of physical and human aspects, of both the city and the surrounding rural area, to evaluate the statement. At this level there may be an appreciation that this may vary over time and between groups. Most will probably disagree with the statement.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of urbanisation impacts on physical and human aspects, of the city to offer a limited evaluation of the statement.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and understanding of urbanisation impacts on cities to offer a vague, 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

6 How, and with what success, have planners tackled the problems of urban traffic congestion and urban traffic pollution? [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will demonstrate a detailed and well exemplified knowledge of the problems posed by traffic congestion and pollution (e.g. air pollution, accidents, land use, parking) in urban areas together with an appreciation of the various strategies that planners have used to tackle these problems such as relief roads, park-and-ride, road pricing and, improving public transport. At this level wider planning strategies can be expected such as land use zoning.

Level 3 5-6 marks
Candidates will demonstrate a clear and soundly exemplified knowledge of the problems posed by traffic congestion and pollution in urban areas together with an appreciation of the various strategies that planners have used to tackle these problems possibly including wider planning strategies such as land use zoning.

Level 2 3-4 marks
Candidates will demonstrate a sound and exemplified knowledge of the problems posed by traffic congestion and pollution in urban areas together with a limited appreciation of the various strategies that planners have used to tackle these problems.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the process of problems posed by traffic congestion and pollution in urban areas.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how and why traffic congestion and pollution threaten the urban system/environment and why these need to be tackled by planners. A clear grasp of cause-effect relationship between the problems and management is expected (e.g. why would road pricing reduce traffic and pollution).

Level 3 12-17 marks
Candidates will demonstrate clear understanding of how and why traffic congestion and pollution threaten the urban system/environment and why these need to be tackled by planners. A grasp of the cause-effect relationship between the problems and management is expected.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of how and why traffic congestion and pollution need to be tackled by planners. A limited grasp of cause-effect relationships is expected.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of how and why traffic congestion and pollution need to be tackled by planners.

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 threats posed by traffic congestion and pollution and the planning responses to evaluate whether they are being successful or not. At this level some appreciation of scale e.g. large cities v market towns, location e.g. LEDC v MEDC and variations over time (has it always been a problem?) can be expected. A clear evaluation is expected.

Level 3 12-17 marks
Candidates apply detailed knowledge and critical understanding of the threats posed by traffic congestion and pollution and the planning responses to evaluate whether they are being successful or not. At this level some appreciation of scale and location can be expected as is a brief overall evaluation.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the threats posed by traffic congestion and pollution and at least two of the planning responses to evaluate whether they are being successful or not. Some evaluation of the viewpoint is expected but most will be negative.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and critical understanding of threats posed by traffic congestion and pollution and the planning responses to offer little, if any, evaluation of their success.

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 Discuss the view that the current exploitation of rural environmental resources in MEDCs is no longer sustainable. [60]

Rural environmental resources include farmland, soils, forests, ecosystems and water. At least two would need to be discussed to get above level 2.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of a range of types of the current exploitation (by agriculture, tourism, recreation, water supply and forestry) of rural environmental resources. Detailed knowledge of sustainability and of one or more case studies from the MEDC are expected.

Level 3 5-6 marks
Candidates will have clear knowledge of a range of types of the current exploitation of rural environmental resources. Clear knowledge of sustainability and of one or more case studies from the MEDC are expected.

Level 2 3-4 marks
Candidates will have a sound knowledge of at least two types of the current exploitation of rural environmental resources. A superficial knowledge of sustainability and brief case studies from the MEDC are expected.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of a range of types of the current exploitation of rural environmental resources and a superficial knowledge of sustainability. Exemplification will be limited or missing.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability. Cause and effect should be well understood e.g. popular national parks and beauty spots suffer from overcrowding due to ease of access and this causes environmental damage which in turn makes it unsustainable. Other aspects could include growth in demand for water, modern farming practices, increased demand for timber and more recreation time.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability. Cause and effect should be understood.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability. Cause and effect will not be well understood.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability.

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 how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability to evaluate whether this is inevitable or even accurate (forestry is increasingly practised sustainably). An evaluation of why co-existence may be important for rural environments is expected together with an appreciation of the way sustainability may vary with the particular resource, scale e.g. local v regional, location e.g. lowland v upland) and over time or how the concept may vary with the different viewpoints of groups in the rural environment (e.g. farmers v water engineers).

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability to evaluate whether this is sustainable. An appreciation of the way sustainability may vary with the particular resource and / or with location and over time.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability to give a brief evaluation of whether this is sustainable.

Level 1 0-5 marks
Candidates have limited or vague application of knowledge and critical understanding of how and why the current exploitation of rural environmental resources conflicts with the concept of sustainability 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 have planning policies influenced the economic, social and demographic revival of many rural areas in MEDCs in the last 30 years? [60]

Candidates may use the synoptic element of this paper to develop an approach based a wide range of central and local planning policies. This is potentially a wide ranging question.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of a wide range of planning policies (such as national parks, motorway building, industrial decentralisation, farm subsidies, expanded towns) as well as detailed knowledge of rural areas that have undergone economic (e.g. jobs created in hi tech) social (e.g. expansion of shops and schools) and demographic (e.g. influx of young population) revival in the past 30 years. At this level a contrasting pair of detailed examples or case studies might be appropriate.

Level 3 5-6 marks
Candidates will have clear knowledge of a range of planning policies as well as knowledge of rural areas that have undergone economic, social and demographic revival in the past 30 years. At this level examples or case studies are expected.

Level 2 3-4 marks
Candidates will have sound knowledge of a limited range of examples of planning policies as well as knowledge of rural areas that have undergone economic, social and demographic revival in the past 30 years.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of a few examples of planning policies as well as limited knowledge of rural areas that have undergone revival in the past 30 years.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the cause-effect of rural economic, social and demographic revival and how these are linked to planning policies (and other factors e.g. rising urban house prices, increased mobility, food imports) in the last 30 years and why such policies were targeted to achieve this end. Some candidates may explore why some urban planning policies have had a knock on impact on rural areas.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of the cause-effect of rural economic, social and demographic revival and how these are linked to planning policies and other factors in the last 30 years and why such policies were targeted to achieve this end.

Level 2 6-11 marks
Candidates will demonstrate sound understanding of the cause-effect of rural economic, social and demographic revival and how these are linked to planning policies.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the cause-effect of rural economic, social and demographic revival and how these are linked to planning policies.

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 causes of revival of many rural areas to evaluate the extent to which this has come about due to focused policies or whether this is inevitable (e.g. a backwash concept) as urban areas increase in problems. At this level some appreciation of how the role of planning policies may differ with scale e.g. local v regional, location e.g. upland v lowland and variations over time (as in the cycle effect in the core-periphery model) can be expected together with the idea that not all aspects my be reviving at the same rate e.g. economic doing well but still losing young population as some rural areas in Greece.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the causes of revival of many rural areas to evaluate the extent to which this has come about due to focused policies or whether this is inevitable. At this level some appreciation of how the role of planning policies may differ with scale and location can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the causes of revival of many rural areas to offer a limited evaluation of the extent to which this has come about due to policies.

Level 1 0-5 marks
Candidates are limited and vague in the application of their knowledge and understanding to discuss the causes of rural revival. There will be no attempt to evaluate the relative importance of the underlying causes.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

9 To what extent can rural management policies compensate for limitations imposed by harsh physical environments in rural areas in MEDCs? [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed knowledge of examples of harsh rural physical environments (such as steep slopes, drought prone, thin poor soils, cold wet climates) and the limitations they impose (on economic and social activities e.g. farming). Also candidates will have detailed knowledge of rural management policies. At this level a contrasting pair of detailed examples might be appropriate.

Level 3 5-6 marks
Candidates will have clear knowledge of examples of harsh rural physical environments and the limitations they impose. Also candidates will have knowledge of examples of rural management policies.

Level 2 3-4 marks
Candidates will have sound knowledge of at least two examples of harsh rural physical environments and the limitations they impose. Also candidates will have limited knowledge of rural management policies.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of harsh rural physical environments, the limitations they impose and rural management policies.

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 the harsh physical environments and the resulting limitations on rural communities/activities. Candidates should show an understanding of why/how these limitations prompt rural management policies. An understanding of the environmental, economic and / or 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 the harsh physical environments and the resulting limitations on rural communities/activities. Candidates should show an understanding of why these limitations prompt rural management policies.

Level 2 6-11 marks
Candidates will demonstrate sound understanding of the cause-effect relationship between the nature of the harsh physical environments and the resulting limitations on rural communities/activities. The role of policies will be superficially understood.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the nature of the harsh physical environments and the resulting limitations. The role of policies will not be understood.

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 limitations imposed by harsh physical environments in rural areas to evaluate whether policies can compensate for them or not (some may be just too extreme e.g. Norrland in Sweden). A cost/benefit approach would be appropriate as some policies would be too expensive for the returns e.g. Massif Central. Some may argue that harshness can provide opportunities e.g. tourism in Lappland. At this level some appreciation of location e.g. The Alps v highlands of Scotland and variations over time can be expected together with it varying with the extent of the harshness and the wealth/technology of the country/region (e.g. UK v Poland).

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding of the limitations imposed by harsh physical environments in rural areas to evaluate whether policies can compensate for them or not. Some may argue that harshness can provide opportunities. At this level some appreciation can be expected of the role of location and it varying with the extent of the harshness and the wealth/technology of the area.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding of the limitations imposed by harsh physical environments in rural areas to offer a limited evaluation of whether policies can compensate for them or not.

Level 1 0-5 marks
Candidates apply only limited or vague knowledge and critical understanding of the impact of the limitations imposed by harsh physical environments in rural areas to offer very limited, if any, evaluation of the role of policies.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Option 4: Hazardous Environments

10 To what extent are human factors to blame for disasters caused by landslides and other mass movement events? [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of the types of disasters caused by landslides and a range of human (e.g. deforestation, undercutting, steepening slopes) and other factors (e.g. drainage, rock type, earthquakes) that can cause them. Also some knowledge of short term v long term causes can be expected at this level.

Level 3 5-6 marks
Candidates will have clear and exemplified knowledge of the types of disasters caused by landslides and a range of human and other factors that can cause them.

Level 2 3-4 marks
Candidates will have a sound knowledge of the types of disasters caused by landslides and a range of human and other factors that can cause them.
Exemplification may be limited in detail.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of disasters caused by landslides and their causes.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate a detailed understanding of the cause-effect of a range of human and physical factors that lead to mass movements and the resulting disasters. There will be a detailed understanding of what is meant by 'disasters', whether physical, economic or in terms of deaths. Clearly there should be an understanding that they only become disasters when they impact on humans.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the cause-effect of a range of human and physical factors that lead to mass movements and the resulting disasters. There will be an understanding of what is meant by 'disasters', whether economic or in terms of deaths. Clearly there should be an understanding that they only become disasters when they impact on humans.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the cause-effect of at least two of the human and physical factors that lead to mass movements and the resulting disasters. There will be a limited understanding of what is meant by 'disasters'.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the causes of mass movement and resulting disasters.

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 human factors are more or less to blame than other factors. Some appreciation that this statement's accuracy may vary with scale, density of population, location e.g. LEDC v MEDC and, over time (more mitigation now so disasters may be less than in the past) and with the nature of the particular mass movements (e.g. avalanches are more likely to be triggered by humans than soil creep) can be expected. The extent will vary with the level of warning, precautions, communications, planning and technology.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding to evaluate the extent to which human factors are more or less to blame than other factors. An appreciation that this statement's accuracy may vary with population density and with the nature of the particular mass movements can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding to produce a limited evaluation of the extent to which human factors are more or less to blame than other factors.

Level 1 0-5 marks
Candidates apply only limited or vague knowledge and understanding of the topic and offer little or vague evaluations of the extent to which human factors are more or less to blame than other factors.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

11 How far do you agree with the assertion that people living in urban areas are at greater risk from natural hazards than people living in rural areas? [60]

Candidates may draw on the synoptic links to look at hazards outside this specification such as river and coastal flooding and drought.

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of the main types of natural hazards (tectonic, volcanic, hurricanes and mass movement) together with a detailed knowledge of the types of risk from hazards (e.g. death, injury, loss of home, loss of infrastructure) common in urban and rural areas.

Level 3 5-6 marks
Candidates will have clear and exemplified knowledge of the main types of natural hazards together with a clear knowledge of the types of risk from hazards common in urban and rural areas.

Level 2 3-4 marks
Candidates will have a sound knowledge of the main types of natural hazards together with a superficial knowledge of the types of risk from hazards common in urban and rural areas. Exemplification may be limited or vague.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of the main types of natural hazards and the levels of risk from hazards in urban and rural areas.

A02 Critical understanding of content (0-22 marks)

Level 4 18-22 marks
Candidates will demonstrate detailed understanding of the inter-relationship of where you live and the nature of the hazards posed by the environment. A detailed understanding is expected of terms such as 'risk' and 'hazard'.

Level 3 12-17 marks
Candidates will demonstrate a clear understanding of the inter-relationship of where you live and the nature of the hazards posed by the environment. An understanding is expected of terms such as 'risk' and 'hazard'.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the inter-relationship of where you live and the nature of the hazards posed by the environment. Limited understanding is expected of terms such as 'risk' and 'hazard'.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the inter-relationship of where you live and the nature of the hazards posed by the environment.

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 living in urban areas puts people at greater risk from natural hazards. Urban areas are more populated and housing is a higher density but urban areas have better planning, more access and better awareness. Some appreciation that this evaluation will vary with scale, the nature (or particular characteristics) of the hazard e.g. earthquake v eruption, 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 the extent to which living in urban areas puts people at greater risk from natural hazards. Some appreciation that this evaluation will vary with the nature (or particular characteristics) of the hazard, location e.g. LEDC v MEDC can be expected

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding to offer a limited evaluation of the extent to which living in urban areas puts people at greater risk from natural hazards.

Level 1 0-5 marks
Candidates offer only limited or vague discussions of the extent to which living in urban areas puts people at greater risk from natural hazards. 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 the impact of natural hazards depends on their predictability. [60]

A01 Knowledge of content (0-8 marks)

Level 4 7-8 marks
Candidates will have detailed and well exemplified knowledge of the main types of hazard (tectonic, volcanic, hurricanes and mass movement) and their primary and secondary impacts such as wind speeds, heavy rainfall, storm surges, landslides, flooding, disease, dam failures. They will also demonstrate a knowledge of the way such hazards vary in their predictability e.g. hurricane hazards alter in severity with distance from their origin in the tropics.

Level 3 5-6 marks
Candidates will have clear and exemplified knowledge of the main types of hazard and their primary and secondary impacts. They will also demonstrate a knowledge of the way such hazards vary in their predictability.

Level 2 3-4 marks
Candidates will have a sound knowledge of the main types of hazard and their impacts. They will also demonstrate a superficial knowledge of the way such hazards vary in their predictability. Exemplification may be limited.

Level 1 0-2 marks
Candidates will have limited or vague knowledge of hazard impacts and show 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 the inter-relationship of the primary and secondary impacts of hazards and a variety of factors that influence the level of impact such as predictability, technology, population density and the scale and characteristics of the hazard. Cause and effect will be well understood.

Level 3 12-17 marks
Candidates will demonstrate clear understanding of the inter-relationship of the primary and secondary impacts of hazards and a variety of factors that influence the level of impact. Cause and effect will be understood.

Level 2 6-11 marks
Candidates will demonstrate a sound understanding of the inter-relationship of the primary and secondary impacts of hazards and a limited range of factors that influence the level of impact.

Level 1 0-5 marks
Candidates will demonstrate limited or vague understanding of the link between the impact of the hazard and its predictability.

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 whether the extent to which primary and secondary impacts, or combinations of them, vary with the level of predictability or with other factors. Some appreciation that this is not a simple either/or but it may vary with the level (reliability) of predictions, scale, location e.g. upland area v lowland coast or MEDC v LEDC, time, level of preparation etc can be expected.

Level 3 12-17 marks
Candidates apply their knowledge and critical understanding to evaluate whether the extent to which primary and secondary impacts, or combinations of them, vary with the level of predictability or with other factors. Some appreciation that this may vary with the level (reliability) of predictions, location e.g. upland area v lowland coast or MEDC v LEDC, level of preparation etc can be expected.

Level 2 6-11 marks
Candidates apply some of their knowledge and critical understanding to offer a limited evaluation of the extent to which primary and secondary impacts, or combinations of them, vary with the level of predictability or with other factors.

Level 1 0-5 marks
Candidates apply limited or vague knowledge and limited critical understanding to assess in a limited, if at all, the extent to which primary and secondary impacts, or combinations of them, vary with the level of predictability.

Maximum 11 marks for application and 11 marks for evaluation

A04 Communication (0-8 marks)

Use generic assessment criteria

Report on the Units
January 2006

Chief Examiner's Report

General Comments

The performance of candidates has again been approximately equivalent to previous sessions. There was however, considerable variation between Centres and indeed, within Centres. The top quartile of candidates produced work of an impressive quality showing a very encouraging level of knowledge, understanding and application with some excellent and detailed examples and / or case studies.

AS
Assessment is largely by short, structured questions. Performance did vary across the components. Responses to 2680 (physical environment) were relatively weaker than 2681 (human environment) but the weakest element was the written section of 2682 (geographical investigation) although this was stronger than in the summer. As usual, 2682 was lifted by the report component in which 60% achieved at the highest grade.

A2
Assessment is largely by extended writing which allows for effective differentiation. Few candidates were entered for 2684, the synoptic paper, but a large number took 2683. Performance was similar to past examinations.

As A2 is assessed via options it is possible for candidates to experience a limited range of geography. The summer pattern was repeated with few Centres studying applied climatology and service activities in 2683 and the geography of the EU and managing rural environments remaining unpopular in 2684. This selectivity does re-emphasise the importance of the synoptic paper which draws together the strands of the whole two year A level geographical experience.

Overall

There remain some common themes applicable to all of the components:

- Candidates must carefully read and answer the question set rather than produce prepared answers that lack relevancy such as the responses to Q.25b in 2683.
- Candidates need to understand and use geographical definitions and technical terms effectively especially in 2680.
- In short section answers candidates would be best advised to develop a few points in depth rather than many superficial ones.
- Often the level of a candidate's response is held back by the poor quality of English. The use of paragraphs is not well understood at A2.
- Centres should ensure that candidates are familiar with OS maps and understand how to interpret them. This remains an area of underperformance in 2681.
- More candidates should emphasise the spatial context of their work and stress location. Some need to refer to far more examples or case studies. A greater use of sketch maps at A2 would be welcomed.

Coursework at all levels also suffered some common limitations:

- Too many candidates produce over-length work often with excessive appendices or annotations. This reduces candidates' performance to level 2 at best
- Excessive, repetitive diagrams representing the same data
- Including **all** the questionnaires used within the appendices
- Candidates didn't always understand why they were using the statistical tests they were nor the implications of the results they achieved
- Centres should ensure candidates do not use plastic folders and greater care needs to be taken in filling in the cover sheets

Particular Points to note

The performance of candidates showed evidence of Centres responding to recent INSET with far fewer producing over-length reports or incomplete reports in 2682/02 and more effective use of data and map evidence in 2681.

The use of fewer part questions in 2682 does seem to have made the paper more accessible to candidates in the limited time available for this examination.

2680 The Physical Environment

General Comments

Overall there was evidence of some good physical geography being taught and learned at this level. As seems to be the norm, Hydrological Systems produced the strongest responses with candidates demonstrating sound knowledge and being able to apply this knowledge to the questions asked. Ecosystems was handled much better by candidates in this session. Atmospheric Systems and Lithosphere produced the most varied answers.

There are a number of areas of common concern that Centres can address in an attempt to improve the performance of their candidates:

- The precise use of geographical terminology - All too often there are inaccuracies in the use of terms such as infiltration and percolation, pervious and permeable, and erosion and weathering.
- 10 mark questions - Where questions are worth 10 marks candidates frequently write with great breadth often introducing several different examples and / or case studies. The mark scheme however, will preclude these candidates from reaching level 3. Candidates are more likely to access the highest marks by referring to fewer case studies and / or examples but in greater detail.
- Command words – Candidates would benefit from a better understanding of the meaning of the different command words. For example, there remains uncertainty within a large number of candidates about the difference between describe and explain.
- Using stimulus material - Wherever stimulus materials are used and questions direct candidates towards using these, candidates must make it very clear that they have done so.

Hydrological Systems

As with previous sessions, this question was the most effectively answered question with the vast majority of candidates scoring well.

1 (a)

(i) The majority of candidates were able to define the term 'drainage basin' well with both elements of the definition given, these being reference to an area and then this feeding the river system.

(ii) Many candidates were able to identify two outputs to the drainage basin hydrological system. However, there was a significant minority that referred to sediment outputs or flows within the system such as throughflow or surface run off.

(iii) Many candidates understood that there was permeable and impermeable rock/soil that would affect the flow of water. However, what was required here was reference to both rock and soil types. The question asks candidates to explain how these will affect the flow of water and so an explanation of porosity or perviousness was required for the top level. The lack of detailed explanation by some candidates and insufficient reference to rock and soil types were the main weaknesses apparent within candidate responses. Indeed, reference to the depth of the soil rather than type of soil proved to be a common shortcoming. Indeed the best way of accessing marks for soil type was by reference to the texture (sandy or clayey soil). For example:

'Permeable rocks such as chalk and limestone will allow much downward movement of water from the soil store into deeper groundwater stores by percolation…. Impermeable rocks (e.g. clay) weather to produce soils with small pore sizes. Therefore the soil is less permeable and infiltration is limited. This subsequently limits the amount of underground flows and a higher proportion of water will be transported by overland flows'.

(b) (i) Descriptions of the different flows and stores in the woodland and the building site were generally good. Most candidates identified both relevant flows and stores. The explanations were more variable and whilst there was evidence of many candidates focusing upon the photograph there were some fairly generic answers that could have been about anywhere. The best answers were able to explain the differences in the flows and stores and considered the different rates at which the water would flow. Some candidates did misinterpret the question and answered as if the housing development had been completed. Inevitably, this led to repetition with the question that followed. There were also some inaccuracies in the geographical terminology that was used. Percolation and infiltration were confused as were groundwater store and surface store.

(ii) The suggestions as to the likely flows and stores once the development was complete were generally good although some candidates missed out on full marks because there was not a reference made to both flows and stores.

Ecosystems

2 (a) (i) Most candidates gained some marks for this question with the best answers making clear use of the diagram and reference to the relative size of the flows. Some candidates, however, disregarded the stimulus material completely, did not refer to the relative importance of the transfers, and, in a minority of cases, described the stores instead. Another error that occurred was candidates referring only to the hydrological components of the cycle and making no reference to the transfer of nutrients. For example:

'Greatest flow is leaching from soil store and smallest surface runoff from leaf litter store. Flows from the litter to soil and soil to biomass are of equal rate.'

(ii) Candidate responses contained some clear explanations of the relationships but there was a general tendency to focus on the description of the cycle and, therefore, repeat answers given in 2 a (i). Indeed, this highlights the need for candidates to fully grasp the requirements of the different command words. In many cases there was a tendency to assert relationships without explaining how they operated. An example of a good answer is:

'The biomass store is the biggest as nutrients are locked up for many years in trunks and stems of plants. The litter layer is a small store due to the rapid fermentation rates that take place and rapid decomposition from bacteria. Leaf fall is a small flow as there is not much of this happening as compared to the decomposition taking place and also the mineral uptake from plants. Leaching is a big output as it's a wet area so many nutrients are carried down in solution…'

(iii) The effect on the nutrient cycle of cutting down mature trees was generally well described with many answers offering some explanation. The best answers recognised that there might be differences if the trees were left or removed. Some very good answers discussed the effects on leaching due to reduced interception.

An example of a good answer is:

'There would be a massive decrease in biomass in the area. All the nutrients locked up in the trees will be removed from the system and not returned. This will lead to the soil becoming less fertile as leaf fall is no longer occurring which means there is a decrease in litter layer so less decomposition will take place so eventually no nutrients will be returned back to the soil, so humus will be less rich and thick and less nutrients. There would also be greater leaching at first as no interception to slow water down so nutrients are eluviated down the B horizon.'

(b) Responses suggested that most candidates knew something about psammoseres. Knowledge often took the form of reference to the type of vegetation the existed. Marram grass was the most commonly used example. Similarly, most candidates did refer to a named example of a sand dune ecosystem. Candidates were less convincing in their responses when referring to the nature of plant succession and the reasons why there are changes over time. Many candidates referred to the decomposition of plants, the formation of an immature soil and increases in the nutrients available to support plant growth.

There was very little reference, however, to the role of organic matter increasing the soil's potential for storing water. There was some confusion about the number of nutrients available in the embryo dunes; there are many nutrients available but the conditions are harsh due to the permeability of the sand and the alkalinity. Some responses focused entirely on human factors and therefore the plagioclimax that followed which, while of relevance, did not answer the question. The following example is a response that gained full marks:

'Harlech Sand dunes. Firstly the pioneer species the sea rocket colonise an area of sand close to the sea with very harsh conditions. Here there is a massive exposure high wind and alkaline conditions from the decomposing shell fragments ….. these plants … slightly stabilise the sand with their roots and also adding nutrients to the sand when they die. This has the effect of making conditions less harsh so marram grass can now colonise and it has long roots which stabilize the sand and also bacteria on these roots fix nitrogen into the sand. These also give shelter and reduce exposure. When these pants die it adds more nutrients and humus complexes begin to develop. Eventually there is enough nutrients from decomposing plants to have a thick humus and bramble colonises..... the soil gets thicker and richer and the climatic climax vegetation becomes established which in this country is the oak woodland. This is autogenic succession. There is a golf course at Harlech which nearly prevented woodland forming as some areas were deforested. This is a plagioclimax.'

Atmospheric Systems

3 (a) (i) Many candidates demonstrated a good understanding of the term i.e. an increase of temperature with increased altitude.

(ii) Candidates produced accurate diagrams showing a temperature inversion with variations ranging from an urban or industrialized area to showing the temperature change and altitude on a simple line graph. The scale on many graphs was either partial or missing and so sometimes it was difficult to know whether the candidate had drawn this correctly.

(iii) Candidates wrote confidently about valleys and temperature inversions, the role of factories and weather fronts and the undercutting of warm air by cold air. However, a minority of candidates were able to state and explain two ways. An example of a good explanation is:

'Valley bottom: cooler air transferred by advection currents; it sinks to the valley bottom whilst air above stays the same temperature.'

(b) (i) Responses to this question were generally sound. Most candidates demonstrated the idea of output from the earth through reflection. Identification of the input was weaker, with only the best identifying the shortwave nature of the radiation or the fact that it is light reflected, rather than heat.

(ii) The best answers identified the surplus during the day, in contrast to the deficit at night. They also discussed other aspects such as latent heat transfer or reflection. A significant number introduced cloud cover as a factor but made their comparisons invalid by suggesting that there was cloud cover at night but not during the day. An example of a good response is:

'At night there is no incoming solar radiation therefore the energy used to heat the ground and air above it must come from the subsurface supply that has been absorbed during the day or from sensible heat transfer. At night there is no energy lost by latent heat of evaporation because temperatures are generally not high enough for this to occur. Therefore there is more energy available to heat the ground and air above it.'

(c) Explanations of the influence of human activity on local energy budgets produced amongst the best answers on this section. Good reference was made to the urban heat island, the role of layers of pollution and measures to avoid frost. Some of these answers failed to make the final link between the human activity and the energy budget. A significant minority of answers focused on global rather than local impacts, discussing global warming and ozone depletion.

Lithosphere

4 (a) (i) The process of exfoliation was well described by many candidates and better answers did as the question instructed and used evidence from the stimulus material. Full marks could not be achieved where there was no clear evidence of candidates having used the source or no acknowledgement of the cyclical nature of this weathering process. Some candidates still insist on writing about freeze thaw weathering which is not likely in this particular instance. There was very little confusion with chemical weathering processes.

(ii) Many candidates demonstrated good knowledge of hydrolysis. There were many detailed descriptions which referred to hydrogen ions and the fact that these attack the feldspar. Others identified hydration with an incorrect explanation. Acid rain continues to be an answer offered by some candidates and this is not accepted as it is not a weathering process. Some candidates confused chemical weathering with physical weathering processes.

(b) This was a well answered question. The majority of answers focused on the rate of weathering, as per the question, and valid answers for increasing and decreasing the rates were put forward. A significant minority of candidates confused weathering with mass movement or erosion.

(c) Candidates demonstrated sound knowledge of human activity and mass movement. The weathering aspect was less well answered. The explanation as to how human activity affects the amount of mass movement and / or weathering was where the general weakness lay. Phrases such as 'deforestation destabilizes slopes' abound; while relevant in identifying human factors, such statements did nothing to explain how the human factor influences the process.

2681 The Human Environment

General Comments

There was very wide variation in the quality of scripts submitted in this session. The stronger candidates were able to demonstrate their ability and achieve high marks in all four of the assessment objectives i.e. **knowledge** AO1**, critical understanding** AO2**, application of knowledge and critical understanding** AO3**,** and **skills including communication** AO4. A feature of these better scripts was that candidates scored highly on a consistent basis in nearly all parts of the three questions. The less able candidates tended to achieve most marks where description of data was required or where there was the opportunity to state factual knowledge. Development of their explanations beyond the basic one phrase or one line could enhance achievement significantly in AO2 and AO3.

The format of this paper is now well established with three main sections assessing **rural settlement, urban settlement** and **population**. The style of data response questions has been consistent with a clear progressive structure. By and large, candidates are asked to **define, describe, explain and apply** case study knowledge and understanding in an extended section – often in that order. It is encouraging to report therefore, that with this expectation most candidates were able to complete this examination paper; there was no evidence of undue shortage of time. In fact, it has been salutary at times to see both the quality, and the depth, in the output of some candidates. For some, however, consideration of time management in this examination might bring further rewards; a few moments planning an answer could be time well spent. Answers which are concise and pertinent enough to achieve full marks within the lines / space provided are to be commended.

Overall there has been an undoubted improvement in a number of areas:

- use of **OS map evidence** in support of explanations
- addition of **brief examples**, even in the shorter sections, to demonstrate clear understanding
- use of **terminology**, which helps to achieve conciseness and accuracy. In this paper it was encouraging to see a wider range of the candidature using correctly terms and concepts such as population momentum, overpopulation, dependency ratio, total fertility rate, expansive / regressive population structure, bid-rent, threshold population, personal mobility.
- statement of **summative comments** in the description of spatial patterns on maps or in description of data in statistical / graphical format
- quoting of relevant **data** from the maps and diagrams / source material provided in order to emphasise a summative comment or to identify an anomaly
- drawing relevant **sketch maps and diagrams**, especially in the space provided for the two extended sections. In this paper there were many annotated population pyramids for 2c and many site diagrams and maps of urban growth for 3b. These can be used sensibly to add to an answer rather than just repeat information already written.

For some candidates there is still the need to develop the following good practice:

- careful **application of knowledge and understanding to the exact requirements of the question set** rather than simple regurgitation of rehearsed responses.
- the learning of **definitions**
- **developing explanations** in the 6 mark sections beyond brief, basic statements
- producing a **brief plan** before writing especially in the two 10 mark extended sections

The following section comments on performance in each part question of this January paper. The responses provided are not perfect but they do meet many of the requirements of the mark scheme and they might be useful as the basis for discussion when preparing candidates.

Comments on Individual Questions

1 Rural Settlement

This question examined issues relating to population decline in rural areas in MEDCs. The resources included a choropleth map and photograph of north west Cumbria in the English Lake District.

In part (a) whilst many candidates demonstrated full understanding others were not precise enough in defining the term rural depopulation. Often just one of the processes causing loss of population was stated.

For example, *'…the movement of people from a rural to an urban area.'* (I mark)

Occasionally the term was also confused with the concept of urbanisation (decrease in percentage of rural population).

Two examples of responses awarded two marks were:

'This is when there is a reduction in the number of people living in the countryside.'

'Rural depopulation is the net decrease in the overall population in rural areas in a period of time.'

(b) required a description of the pattern of population change between 1991 and 2001 in the area of north west Cumbria shown on Fig.1, the choropleth map at parish level. Most candidates were able to achieve a Level 2 response by recognising the overall pattern. The south east (loss) / north west (gain) contrast was the most commonly cited response. The following answer is concise and meets all the requirements including the appropriate map detail needed for full marks:

'Figure 1 shows that in the south east of the area there has been a decrease in population of between –0.1 and –20%. This includes Borrowdale, Buttermere and Lorton, with Wythop having the greatest change of –28.6%. In the north west there has been a population increase of up to 20% with the exceptions of Papcastle (-2.3%) and Setmurthy (-9.1%).'

The answer below is a typical Level 1 response which merely lists data without recognition of the overall geographical pattern / spatial distribution.

'Wythop's population has decreased by more than –20% representing high rural depopulation. Above Derwent and Lorton have also experienced a decline of population from between 0.1% and 20% whereas Dean has witnessed an increase of 14.9%, however Loweswater has not experienced any population change (0%).'

In (c) candidates were required to explain the loss of population in Buttermere and Above Derwent using specific photographic evidence. Despite clear and correct identification of relevant features shown, some responses remained in Level 1 since they failed to make the connection between photographic evidence and depopulation.

An example of a Level 2 response to (c) was:

'*Two reasons for the population loss are firstly that the area is not very accessible. As you can see, mountains surround the settlement making it hard for people to get in and out to work / commute or shop. No major road is pictured either which will add to the inaccessibility. Secondly the village is very small and therefore would not be able to support any services, certainly not major ones, so inhabitants may choose to migrate away in search of better services e.g. schools causing population loss.'*

Explanation of the effects of rural depopulation was on the whole well covered in the responses to (d) (i) and (d) (ii).

For (d) (i) some candidates confined their response to total loss of services only. Even though this was well explained by correct use of the term threshold population, further marks could have been achieved by reference to a second effect such as amalgamation, replacement, or rationalisation.

In the better answers it was encouraging to see the use of brief examples to illustrate a point as in the Level 2 response below:

'In rural areas if there is depopulation this can lead to depletion of service provision. With a lower number of people in villages the services won't be able to meet their threshold, the amount of regular customers needed to help the service survive. So with the closing down of many services this leads them to amalgamate, they merge together so that only one building has to be funded to keep the services. For example in Harbury, Warwickshire the village shop and post office have merged together to save costs.'

(d) (ii) required an understanding of the effects of changes in service provision as a result of rural depopulation, on different groups of rural dwellers. The question prompted comparison as illustrated in the following Level 2 response:

'The decline in service provision affects old people more than it does the younger population. This is because many of the younger people have cars e.g. in Harbury where 79% of the population has one or more cars. This means that it is easy for them to travel to more urban areas to utilise services there. However, for the older population who are less mobile it leaves them stranded. The decline of services also affects buses and if there are no buses and no services it is difficult for the 21% without a car to not only commute to work but to buy food or other goods also.'

2 Population

This question examined aspects of population structure at the national scale using the 2004 pyramids of Italy and Ethiopia as stimulus material.

Part (a) (i) required a comparison of the 0-19 age groups of the two countries. Most candidates were able to make a summative comment, which placed their answer in Level 2, referring to the contrast in either overall size or shape of the relevant section of the pyramid. Appropriate figures obtained from the graphs were required for full marks as shown in the example below:

'Italy's 0-19 age group is a much smaller percentage of the total population, only 17%, whereas Ethiopia's 0-19 age groups are a much higher percentage with 60% of the population. The four age groups decrease in percentage as age increases in Ethiopia but in Italy they increase.'

Level 1 answers tended to list percentage figures for each bar in the pyramid or they digressed with descriptions of the economically active and elderly sections of the pyramids (despite the stippling which identified the 0-19 groups).

Reasons for the differences in the 0-19 age groups of Italy and Ethiopia required in (a) (ii) were well understood. This was familiar ground for many candidates who were able to explain the influence of at least two factors on the birth rate often beyond the basic idea of contraception. In particular, there was good understanding of the differing role and empowerment of women plus the significance of infant mortality rates.

An example of a level 2 response was:

'Italy is an MEDC. Education and equality for women as well as good healthcare which results in low infant mortality and high life expectancy combined with other socio-economic factors such as the expense of raising a child result in a low birth rate. Low infant mortality means population from 0-19 remains roughly stable. Hence the straight sides of the pyramid in this age range. Ethiopia is an LEDC. The need to have children to farm land and other factors such as socio-religious imperatives to have as many children as possible result in high birth rates. High infant mortality and healthcare results in the tapering sides of the pyramid.'

(b) required an understanding of the consequences arising from Ethiopia's population structure (2004). The better answers explained the problems of food and housing supply, unemployment, medical and educational provision by referring to the expansive nature of this pyramid and the issue of overpopulation. Responses in which explanation was not developed with just brief and basic statement of consequences were placed in Level 1.

A response which was well enough developed for Level 2 was:

'It is possible that high birth rates could cause overpopulation especially if the death rate starts to decrease. This will mean there are too few resources (food, water, land to farm) to accommodate the population, leaving it more susceptible to droughts and famines. As the labour force grows there will be insufficient jobs, high unemployment could be a problem and this is likely to encourage international migration.'

In the final part of this question, (c), an extended response was required. This examined knowledge of national population policies and an understanding of their impact on the age-sex structure of the country concerned. There was great variety in the quality of response. The better answers demonstrated detailed knowledge of policies (often one anti-natal and one pro-natal) with a clear link to changes in age and / or sex-structure in each case. Use of accurate statistics including dates, birth rates, total fertility rates, age range percentages, male / female ratios were often creditworthy features of Level 3 answers. Many sound answers included some background, explaining the need for the policy, and demonstrated precise knowledge of its implementation.

Not surprisingly, China featured strongly; the better answers showed knowledge of the differing policies through time and / or between different geographical areas. Other policies for which candidates demonstrated a good level of knowledge included those of Sweden, France, Singapore and India especially with respect to Kerala. Many candidates produced useful sketches of population pyramids to identify the effects of change.

The ceiling for some responses was the top of Level 2 since only one policy / link to age –sex structure was offered. Answers which were descriptive only tended to be placed in Level 1, even if detailed, since they did not fully answer the question, making no reference to impact on age-sex structure.

One example of a Level 3 response to (c) is given below. Analysis of this, with the mark scheme might be helpful in preparing future candidates.

'*In an effort to lower the birth rates China introduced the one child policy in 1979. This has successfully reduced the birth rate by increasing the marriage age (22 for men, 20 for women) and by restricting each family to one child only with the threat of fines if broken. Benefits such as free education also helped in reducing the total fertility rate which has dropped from 5.5 to 2.1 since the 1970s and birth rates have fallen from 25/1000 in 1975 to 18/1000 in 1995. The result of this is that there is now a decrease in the number of under 11s and there is an ageing population. Since boys are favoured in China this policy has also affected the sex structure. For example in 2000 in the 0-4 age group there were 95m males compared with 85m females.*

A different approach has been taken in Kerala, India where birth rates have been lowered by decreasing the infant mortality rate so that people no longer need many children to increase chances of survival and by educating the population. For example 50% of women are literate and 90% of the population has access to primary education. People are educated in family planning, contraception, hygiene and nutrition to help increase health. The result is that TFR has dropped from 4.8 to 2.3 since 1975 and the pyramid shows there has been a reduction in the number of younger people and the sex structure has not been adversely affected.'

3 Urban Settlement

This question examined a range of issues relating to urban settlements in MEDCs some of which required use of a 1:50,000 OS map extract of York; these included the topics of suburbanisation, urban population densities, environmental problems and urban sprawl.

(a) (i) needed the application of simple map reading skills plus identification of suburban land use specifically located in Westfield ward. Whilst many candidates achieved the three marks, some failed to locate the land uses producing only very generalised answers. For some candidates the stating of an accurate six figure (or four figure) reference was a difficulty; a surprising number reversed the eastings and northings.

A typical full mark correct response was simply:

1. *Residential 569504*
2. *Education, school at 576511*
3. *Recreational, open space at 574504*

Definition of the term suburbanisation in (a) (ii) was frequently not clearly stated. Vague reference to urban growth, or to population migration, was insufficient for the two marks viz:

'The movement of population from the centre of a city to the outer suburbs.' (1 mark)

Two answers which demonstrated full understanding were:

'Suburbanisation is the urban area encroaching on the rural / urban fringe and the increase in the number of people living in these suburbs.'

'The movement of people to the periphery of towns and cities thus generating a growth in low density residential building on the urban fringe.'

(a) (iii) required an explanation of suburbanisation with evidence of the occurrence of the process as shown on the OS map of York. Some answers placed in Level 1 were simplistic offering little more than brief and basic push / pull factors but in the main there were many sound answers. Use of the OS evidence to support the two explanations was often clear and explicitly linked to a well-developed reason.

A Level 2 response to 3 (a) (iii) is given below:

'Suburbanisation may occur since the noisy busy more central areas of high bid-rent discourage people from living there with limited space for expansion or gardens. Families often prefer to live in more spacious and cheaper accommodation with cleaner air in the suburbs e.g. Westfield ward. With increased numbers of people owning a car the outer ring roads (e.g. A1237) allow commuting to be easy as well as train networks and buses, so workers do not have to live near to their work place if it is in the CBD.'

Other reasons offered included stage in life cycle, family requirements, development of urban transport, accessibility and bid rent. Possible reasons for the physical expansion of the built up area into the rural-urban fringe, with specific York OS map evidence, can be found in the mark scheme.

(a) (iv) examined candidates' understanding of differences in urban population densities in York (2001); in this instance the lower values of a central area (35 persons per hectare) were contrasted with the higher values of an outer suburb (50 / ha). Most candidates were able to identify relevant features of Guildhall and Westfield wards; not all were able to explain the differences.

Below is an example of a Level 2 response in which both evidence and explanation were given:

'The Guildhall ward is at the CBD so using the bid-rent theory, only retail and high earning businesses can afford to locate here, therefore there is less housing and more retail / banks. The CBD shows lots of churches like at 605517 and museums. The Westfield ward is mostly housing as seen by the cul-de-sacs and the schools show young families / higher density.'

Finally, the second extended question (b), required candidates to show an understanding of environmental problems caused by the outward growth of an urban area in an MEDC.

The vast majority of responses were based on Los Angeles but there were also many good answers relating to Birmingham, Manchester, Edinburgh and other British urban areas. The essential features of Level 2 and Level 3 responses were not only knowledge of urban sprawl (with intra-urban detail) and environmental problems but also an understanding of the link between the two.

Some candidates did not demonstrate this link and simply produced facts / environmental problems from what appeared to be rehearsed answers. The ability to adapt to the precise requirements of the question and to apply knowledge and critical understanding are elements of Assessment Objectives 2 and 3 as set out in the Specification.

It is encouraging to report, however, that many candidates were able to demonstrate detailed knowledge of environmental problems and provide an explicit link to urban sprawl; in these instances particular reference was made to the increasing length of journey to work, high levels of personal mobility and atmospheric pollution. Other environmental issues that were discussed appropriately included flooding, water supply and its impact on land subsidence and aquatic ecosystems, waste disposal, and the effect of construction on other natural ecosystems such as woodland and semi-desert.

It should be noted that some candidates produced answers based on two or three urban areas; it is the greater detail for one named example which is required. Furthermore some candidates produced answers based on an LEDC urban area.

As suggested for 2 (c), analysis of the following Level 3 response, with reference to the mark scheme, might be helpful in the preparation of future candidates:

'Urban sprawl is the low density residential and non-residential spread of built up areas facilitated by the motor car. Los Angeles, California has suffered immensely as a result. In 1900 the population was 100,000 and by 2000 just under 16 million in an area of 86,000 sq kms. The built up area extends now over 4 counties including Orange county and Riverside. With increasing car ownership and only 4% using public transport air pollution is increasing as there is an increase in journeys to work. In San Bernardino the national safety limit for ozone is exceeded on 100 days / year. The problem is enhanced because the sea breeze pushes pollution into the LA basin where it is difficult to disperse. Photochemical smog also builds up, this is a cause of cancer. Respiratory diseases cost hospitals around $10m per year and in 1996 there were 5873 deaths caused by respiratory problems.

The growth of the city through urban sprawl combined with American life style has created problems with water. Flooding has been a problem with the expansion of roads, buildings and other impermeable surfaces in the suburbs. Also there is a lot of water wasted as the suburbs grow with consumption for swimming pools, lawns and gardens. LA lies in a semi arid area therefore water has to be pumped from other river systems lowering lake levels. Water ecosystems have been affected by increasing concentration of salts e.g. in Mono Lake where animals in the food chain have been affected. Also LA wastes some water through leakage and this adds to the environmental problem of land subsidence.'

In summary, of the three sections in this paper, candidates tended to perform better in the first two (rural settlement and population) than they did in the third (urban settlement).

2682-01 Geographical Investigation

General Comments

The questions appeared to be more accessible to candidates than in the two previous sessions, leading to a more even performance across the paper. Well considered, detailed answers for all questions were given by a pleasing number of candidates.

The objective of Question 1 (a) was for the candidate to show understanding of the function of the Presentation of the Summary, the final stage of the Report whilst (b), was examining understanding of the limitations of the candidate's own report. Differentiation was determined by the depth and range of understanding of this stage in theoretical and applied contexts, in parts (a) and (b) respectively.

The objective of Question 2 was to elicit the candidate's understanding of appropriate sampling schemes in a specified context of the distribution of socio-economic groups within an urban area. The discrimination lay in the ability of candidates to suggest an appropriate sampling scheme and application to a previously unseen topic for investigation.

The purpose behind Question 3 was to ascertain the understanding of statistical methods to address a specified central question regarding the extent to which soil moisture contents differ between two forests. Differentiation was determined by knowledge of one or more appropriate statistical methods and application to a previously unseen data scenario.

Throughout the paper the use of good geographical terminology was a key discriminator. Candidates are also reminded that the text should be easy to read and that the correct spelling should be used for key geographical terms e.g. stratified, choropleth, Mann-Whitney.

Nearly all candidates attempted all parts of the paper. Very few appeared to mismanage the time available.

Candidates found the level of difficulty for this paper easier than for June 2005. To a certain extent differences in the content and quality of responses reflected differences in teaching and coverage of material for Geographical Investigations.

For all questions the accepted types of response were flexible, with credit gained either by considering a few issues in detail or by looking at a range of ideas in less depth.

Summary of the Outcomes for Questions 1, 2 and 3

The following observations are similar to those made following the last session. This demonstrates the particular problems posed by this paper. The great majority of candidates clearly understood the requirements of Questions 1 and 2, with Question 1 being the most easily understood. Question 3 was also understood by most candidates. Questions 2 and 3 proved more challenging.

The responses to Question 1 (a) were, overall, very good. Many entered Level 3 and few remained in Level 1. However, the responses to (b) were somewhat more varied, as a number of candidates misunderstood the question and discussed improvements to the whole study rather than the Summary itself. Fewer entered Level 3 and more remained in Level 1.

The overall level of attainment was lower for Questions 2 and 3, however, the responses to these two questions were better than those produced in the last session. For both questions most candidates reached Level 2. Question 3 produced the greatest range of marks of the three questions and there was a marked improvement in the overall standard of the response to this question. More candidates entered Level 3 and more stayed in Level 1 than for Question 2.

However, as is typical of this type of examination, candidates performed well at particular questions, thereby leading to fewer very good and very poor marks.

Thus candidates, well versed in their Geographical Investigation, performed well in Question 1 but were not necessarily able to deal with the less predictable nature of Question 2, which is not based on their Geographical Investigation directly, but requires application of their knowledge. The outcome for Question 3 relates to candidates' knowledge and confidence in their understanding of statistical tests, which is excellent at a number of Centres.

Detailed Comments on Individual Questions

Question 1 (a)

Many candidates gained 4 or 5 marks at the top of Level 2.

Indicative content:

Qualities of A grade candidates: The description and justification of the content of the final stage of an AS Geographical Investigation Report, the Presentation of the Summary, are discussed in detail. The answer is logically ordered. Such candidates gave theoretical examples of content or made appropriate reference to their own Report.

Other comments:

Nearly all candidates suggested at least two relevant components of the Summary.

To some extent the understanding of the content of the Summary is interpreted differently by different Centres. Whilst nearly all included an overall conclusion, a return to the initial hypothesis(es), limitations and improvements as part of the Summary, not all included an evaluative element, which some only consider under Analysis, Interpretation and Evaluation. Unfortunately, very few considered reliability and accuracy of data.

Weaker candidates offered a basic description of the content of the Summary with little or no justification. Such candidates tended to erroneously include a resumé of data collection (as opposed to its limitations/improvements), data analysis and the inclusion of numerous graphs and photographs and the Appendices. The term 'presentation' in the question may have caused a number of candidates to discuss their methods of data presentation; however, candidates are expected to be aware of the names of the five stages in an investigation.

The weakest candidates referred to what they did in their Summary, rather than what is expected in a Summary, whilst others discussed the content of the investigation rather than the Summary.

Question 1 (b)

Most Candidates entered the bottom of Level 2.

Indicative content:

Qualities of A grade candidates: The description and explanation of improvements to the Candidate's own Presentation of the Summary are discussed in detail. The answer is logically ordered. Such candidates expanded their responses with an appropriate level of detail that appertained to their own Summary.

Other comments:

Most Candidates suggested two or more appropriate ways that their Summary could be improved. However, the main weakness of responses to this question was suggesting improvements to the whole study – including the data collection and analysis stages – rather than the Summary itself. A number of candidates cited the 1,000 word count as a limitation, which was just within the spirit of the question. There was a tendency to vagueness, e.g. 'explain in more detail' and 'said more about it' and repetition of ideas within this answer. A few indicated no improvements to their study could be made!

As with (a) the understanding of the scope of content of the Summary varied between Centres.

Weaker candidates – including some who performed well in the rest of the paper – described improvements to their own Presentation of the Summary basically, with little or no explanation: Candidates must read the question very carefully.

Question 2

Most candidates entered Level 2, but few gained high marks.

Indicative content:

Qualities of A grade candidates: The description and justification of the sampling scheme for a geographical investigation of the distribution of socio-economic groups within an urban area are discussed in detail. The answer is appropriate to an investigation of socio-economic grouping across an urban area. The answer is logically ordered. Such candidates gave well balanced answers that considered more than one aspect of the sampling scheme. There were some good diagrams to illustrate sampling in the urban area, particularly when explaining transects, systematic sampling and urban models.

Other Comments:

The responses for Question 2 were variable – and this had been allowed for in the mark scheme. The most common approach was to justify the choice of sampling scheme following a discussion of the benefits and problems associated with two or more options, e.g. random or systematic; on street or door step; using Census data or face-to-face contact. Although a number of candidates still confuse stratified and systematic sampling, responses that focused on the sampling type usually reached mid Level 2. Others rightly looked at appropriate data collection forms or devoted more of the answer to considering the meaning of socio-economic characteristics. Overall, disappointingly few candidates clearly defined socio-economic characteristics, although it was often implied in the chosen scheme. Socio-economic characteristics were measured in various ways: type of housing, environmental assessment, income/type of job. Good responses applied urban models (with a high relevance to socio-economic characteristics) and / or appreciated the scale of the sampling problem and / or considered the issues around method of contact.

One of the main problems was the inability of many to visualise the size of an urban area, even at the smaller end of the classification, and to think about the practicalities of sampling to cover the area. As a result many answers lacked reality (e.g. sampling every 3rd house). Another problem was inappropriate sampling methods that would not establish socio-economic characteristics across the urban area (e.g. interviewing people randomly in the city centre). Other candidates deviated into discussing data presentation – choropleths and located pie charts being cited or statistical tests to analyse the data. There was a tendency to repetition in mid quality responses. Many were fairly liberal with the term ‘bias’: the context must be clearly given, e.g. random can be biased or non-biased depending upon how it is carried out. There was a lack of logic in the content of many answers, making it difficult to follow.

Weaker candidates described the sampling scheme basically with little or no justification. Many lower ability candidates did not come to a decision about a sampling scheme, having suggested various options – adopting an ‘all I know about sampling techniques’ approach without actually devising a sampling scheme. This lack of decision marked a failure to address the question. Their understanding of socio-economic characteristics was limited, e.g. shopping surveys and pedestrian counts in the CBD.

Candidates that had undertaken urban studies did not perform noticeably better than those who had not: this demonstrates an awareness of how to apply knowledge from other AS modules to this one in combination with an understanding of the general principle of sampling schemes. Indeed, in some cases candidates referred to their own investigation rather than the one described in the question.

Question 3

Many Candidates reached the top of Level 2; but many stayed in Level 1 (see comments below).

Indicative content:

Qualities of A grade candidates: The description and explanation of statistical method(s) to answer the central question of an investigation, 'To what extent do soil moisture contents differ between the two forests?' are discussed in detail. For descriptive statistics they were likely to discuss general principle, how to calculate and how to interpret, whilst for formal statistics they were likely to discuss general principle, how to carry out test, meaning of outcome and its significance level. There is reference to the central question. The answer is logically ordered.

Other comments:

Unlike previous sessions Question 3 offered a lot more scope for acceptable responses, since it allowed for 'statistical methods'; whilst most candidates chose to discuss Mann-Whitney, a good number combined this with descriptive statistics and a few only considered descriptive statistics. All routes were permissible for full marks with a trade off between detail and breadth of response. The majority of candidates referred to the central question. However, a substantial number of candidates do not understand that difference between datasets is not a test of association (Spearman). The outcome was that most responses for Question 3 fell well into Level 2 – but those only discussing Spearman failed to achieve credit. Only a small number used Chi Square and this was not understood or explained as well as the Mann-Whitney test. Those candidates who only used descriptive statistics often described central tendency and variation in very general terms. There was often a discussion on the limitations of such methods but very little on how they could be used.

Candidates that had undertaken physical studies did not perform any better than those who had not. As with Question 2 this demonstrates an awareness of how to apply knowledge from other AS modules to this one in combination with an understanding of the general principle of sampling schemes.

Weaker Candidates suggested appropriate statistical method(s), which they described in a basic and / or erroneous way, e.g. confusing elements of Mann-Whitney with Spearman's, omitting the hypothesis, no discussion of the general principle of the statistic, no reference to the central question, interpreting the levels of confidence incorrectly (if at all), no detail other than to say that the statistic is calculated by a computer package. For descriptive statistics they were likely to discuss one or more of general principle, how to calculate and how to interpret. For formal statistics they were likely to discuss one or more of general principle, how to carry out test, meaning of outcome and its significance level. Some Candidates discussed how statistical techniques were used in their own investigation instead of answering the question. Some also attempted to calculate the figures shown in the question.

2682-02 Geographical Investigation

General Comments

Overall Standard: The majority of Candidates entered Level 3, with very few remaining in Level 1 or 2. Few Candidates did not represent all five stages of a Report – although in some cases the headings varied from the normal format or there were none at all. Candidates are demonstrating substantial development compared to GCSE, particularly in the analysis and evaluation of outcomes. The quality of written English was generally high. As is expected for AS Level, nearly all Reports were guided by the Centre or a field studies centre with group collection of data. Whilst there is evidence of good practice at many Centres in terms of organising data collection and teaching methods, the heavily teacher directed approach offers less scope for independent initiative from students. However, an important role of this AS Report is to provide the basis for independent research at A2.

Content: The essence of a good report is relevance and quality not quantity. The data collected and analysis should relate to the question that has been identified at the beginning of the Report. This includes reference to any models and theories that have been presented. The aim itself should set the target of examining 2 or 3 hypotheses, so that they can be discussed in depth rather than a superficial description of numerous variables. When students were involved in a large group data collection exercise on a large number of variables, there was a temptation to write too much. Those who collected data for only a limited number of variables seemed to fare much better. Generally, they were also organised and presented well.

There was a balance between physical and human investigation topics, encompassing a variety of subjects. Nearly all Reports were field studies centre or Centre led: differentiation was achieved by assessing the candidate's skill in manipulating the data that is collected. Candidates at some Centres produce far too many figures/graphs/photographs. Others included lengthy Annexes (up to 20 pages), often with material downloaded from the internet.

Supporting figures: As with the textual content, a few well chosen, appropriate figures can gain as much credit as many pages of repetitive poorly conceived and irrelevant figures. Thus, it is important for the reader to be able to compare like for like variables on the same page – with the same scales on axes for graphs. There is seldom any justification for presenting the same data in several different ways.

Length of Report: Many Candidates do not achieve their potential: this is often because they struggle to come to terms with the need to be concise. There were numerous rubric infringements. Those candidates that substantially exceed the word limit are penalised so that they will not enter Level 4. A substantial number of Candidates – particularly at certain Centres – vastly underestimated the word count. This was in many cases due to the exclusion of continuous text in tables and / or annotations as part of the word count.

Comments on Administration and Presentation

1) Rubric Error: Length of Report

The stated length of Reports was often substantially above 1,000 words, and there were many more cases where the stated word count bore no resemblance to the actual word count. This was either due to miscounting or the use of tables and / or annotations with continuous text content that had not been included in the word count. Over length Reports cannot enter Level 4 (13-15 marks). A related issue is that some Centres did not encourage their candidates to conduct a word count and thus wrote 1,000 words in the appropriate space or did not fill it out at all. **In the interest of fairness for all candidates the word count should be adhered to and an accurate word count supplied.** It should also be noted that concise writing is an important skill.

2) Format

Most candidates used the 5 stages format suggested in the Specification: Identifying a Question; Development of a Strategy; Collection of Data; Analysis, Interpretation and Evaluation; and Presentation of a Summary. Some candidates used alternative headings which were recognisable as the 5 stages, as were those using a full essay style approach without headings. For the latter, the structure of the Report was often more difficult to understand.

3) Presentation

(a) The preferred method of presenting the Report is for it to be ***held together with a treasury tag***. There is no need for folders, wallets, clip files, clips, staples or plastic envelopes which all cause administrative problems and are often less easy to read. The inclusion of numerous field data collection sheets is detrimental to the Report – a summary of the outcomes should be neatly reproduced in the Report itself together with a template for data collection. Similarly, lengthy Annexes, often containing data downloaded from the internet are not required: if they contain material that should be read by the examiner, it should be given in the five stages and be counted within the word limit; the examiner is not to be required to read through many pages of Annexes to find the reference.

(b) There is generally a good ***standard*** of presentation within the Reports such as:

- Easy to read text which has been proof read, e.g. it is not difficult to give the correct name for the Mann-Whitney test (not *Whiney-Mann* or *Mann Witney*); '*as the river goes downstream more tributes join the river*.' Handwritten reports can score just as highly as typed ones that have been badly proof read!
- The sheets are in the ***order*** in which they should be read.
- ***Page numbering*** is used.
- Figures, photographs, graphs and tables are ***cross-referenced*** at the appropriate place in the text.

(c) The purpose of ***figures, tables, photographs and graphs*** is to:

- Provide evidence of the data collected.
- Specifically relate to the question and hypotheses chosen for investigation.
- They should be neatly presented (appropriate shading graded to match 'high' to 'low', using rulers) and given appropriate titles and labels.
- Show an awareness of appropriate methods of representing data. For example:

– A large scale map extract – with the scale and key given – to show the location of the investigation. This map or a larger scale one will show the location of sampling sites. A map of the UK is usually meaningless in the context of these investigations.
– Appropriately annotated photographs.
– There is not more than one method of presenting a piece of information, e.g. bar chart and pie chart with the same data.
– The same type of graph is used to present the same variables at two different sites.
– Graphs of variables that need like for like comparison are placed on the same page with the same scales, e.g. all the cross sections of a river study on one page.
– Axes are labelled correctly.

- Line graphs should not purport to show a relationship where it cannot exist, e.g. if there are 8 randomly selected soil samples in each of two woodlands, sample 1 in wood A cannot be compared with sample 1 in wood B. However, if a systematic line transect is taken every 25 metres into each of these woods, there is a case for comparing positions along the transects.

Overall Qualities of Candidates

A grade: A complete geographical investigation, with appropriate use of both primary and secondary data. The work is clearly expressed with correct use of geographical terminology and will be almost entirely free of errors in all sections. It should not exceed 1,000 words and may be less than 1,000 words. 'A' grade candidates typically select two or three well defined hypotheses, enabling depth of discussion to take place, rather than superficial analysis of many hypotheses. They do not include irrelevant material and the sections are balanced, not being tempted to make Identifying a Question and Data Collection too long at the expense of Analysis, Interpretation and Evaluation and a scant Presentation of a Summary. There is a clear understanding of the functions of figures etc. to provide evidence of data collected, to relate to the hypotheses chosen for the investigation and to be neatly presented and appropriately labelled. There is an awareness of the appropriate methods of representing data.

E grade: A submission that is not a complete geographical investigation, with poor or no use of primary and / or secondary data. The work is very poorly expressed, contains errors and there is very little correct use of geographical terminology. Much of the work may not be correct. 'E' grade candidates typically select numerous poorly defined hypotheses, with little scope for depth of discussion. Irrelevant material is included and the sections are imbalanced, typically Identifying a Question and Data Collection are too long at the expense of Analysis, Interpretation and Evaluation (the explanation lacking depth and not necessarily relating specifically to the original question) and there is a scant Presentation of a Summary. There is a little understanding that the functions of figures etc. is to provide evidence of data collected, to relate to the hypotheses chosen for the investigation and to be neatly presented and appropriately labelled. There is some awareness of the appropriate methods of representing data. The weakest Reports tend to be far too general and lack attention to detail. They often have insufficient quality data, are untidily presented and / or use techniques which are poorly understood.

Comments on the Five Stages of the Report

The subject matter of the Reports was nearly always appropriate, since the Candidates were able to take advice from their Centre. Physical topics such as psammomeres and river studies tend be both popular and executed successfully. Candidates are reminded that in a 1,000 word Report there is no room for irrelevance. A reasonable balance between the sections is necessary – too much space devoted to how to calculate Mann-Whitney leaves little room for evaluation. Reports must clearly relate to, and refer to, a specific location.

Identifying a Question

Indicative content: Succinct contextual information (including a relevant labelled map), a clear question and correct supporting hypotheses or aims – there is no need for more than 2 or 3 hypotheses. The null hypothesis states that no relationship is expected between two variables, whilst the alternative hypothesis states that a relationship is expected, and indicates the direction/nature of this expected relationship.

Qualities of A grade candidates: Succinct contextual information (including a relevant labelled map), a clear question and correct supporting hypotheses or aims. The null hypothesis states that no relationship is expected between two variables, whilst the alternative hypothesis states that a relationship is expected, and indicates the direction/nature of this expected relationship. No more than three hypotheses are investigated – and two are perfectly adequate.

Other comments: This section is generally well presented, although it varied considerably in length. Almost everyone provided a hypothesis or clear question that they intended to test. Some better candidates led into their question from theory, whilst others spent far too long on the theoretical aspects at the expense of later sections. Some theory, for instance, on urban models or settlement hierarchies appeared but was only vaguely referred in the analysis section.

A substantial number of Level 3 candidates suffered from using too many variables leading to substantially over length Reports or rather meaningless generalised Reports within the word limit. Weaker Candidates: Reports are highly imbalanced – they may have little (or no) contextual information or a lengthy description of the context. The map, if any, is inappropriate and poorly labelled. Hypotheses, if any, are not clearly related to the question or their purpose is not understood well; stated hypotheses do not correspond with the relationships considered in analysis – or even with the data collected. Alternatively numerous hypotheses are proposed which cannot be analysed in depth and often leads to an imbalanced Report with a lengthy Collection of Data section and limited Analysis, Interpretation and Evaluation. There is no need for historical detail or to explain why the topic was chosen or to state that the candidate is interested in a topic and hopes to do well.

Development of a Strategy

Indicative content: The reason for selecting the investigation location is given. Background theory, such as a model, is presented and there may be justification for the expected outcomes in this section (alternatively it may be given in the Analysis, Interpretation and Evaluation stage). Risk assessment relevant to the site is desirable. Practical and theoretical factors inform the organisation of data collection materials. Not all these points are needed to gain full marks.

Qualities of A grade candidates: The expected outcomes are justified in terms of theory e.g. the discharge increases downstream due to increased inputs to rivers towards the estuary. The risk assessment specifically relates to the study site and is realistic. Preparation for data collection is discussed in the light of practical and theoretical considerations e.g. content of data collection forms; selecting appropriate equipment; identifying constraints on where data collection can take place.

Other comments: Many candidates referred to risk assessment. However, overall this stage is often weak compared to the rest of the Report. Many candidates commented only vaguely, or not at all, on their sampling strategies, or how their strategy for data collection was tailored to the available resources (e.g. manpower, time). Weaker candidates make this section overlap with the next stage or even place the contents in the wrong order. There is an excessive description of safety procedures for the risk assessment. There is no reference to geographical theories or how the data collection is to be organised. A flow line diagram briefly encompassing each step in the study as a whole is not sufficient.

Collection of Data

Indicative content: The sites/transects for measurement are selected and the type of sampling used (pragmatic, random, systematic, stratified) is defined. The sample size for each transect (if used) and each site thereon is given and is appropriate e.g. a few variables collected at 10 sites gives more meaningful results than many variables at 4 sites. The data to be collected is relevant to the aims/hypotheses: when groups collect many variables, individual candidates should only refer to those relevant to their chosen hypotheses both in data collection and

analysis. The method for collecting the data in the field is described. There is a summary of questionnaires and assessment forms used or examples can be attached.

Qualities of A grade candidates: Not too long is spent on methods of data collection apart from the discussion of sampling issues. This is a well balanced section: the sampling location is identified; the type of sampling is clearly understood and described. The data to be collected is relevant to the aims/hypotheses. There is a concise description of how data is collected in the field. The accuracy of data collected is considered. Data is represented in an appropriate form by the use of, e.g. tables, graphs, charts, maps, sketch maps.

Other comments: It was noticeable that questionnaires were often undertaken with very few people being interviewed. This section tends to be long at the expense of the Analysis, Interpretation and Evaluation. Where Centres had sampled numerous variables irrelevant data was often presented but then not used. Conversely, most candidates had no problem collecting numerical data but not all submitted it. Nevertheless, quick reference to graphs and or statistical analysis soon confirmed that the data did indeed exist. Field sketches where included, were generally poor. There seems to have been a vast improvement this year on the annotation of graphs and photographs. In addition, photos included were mostly relevant.

Weaker candidates do not know the correct names for the sampling methods used, omit the number of samples and discuss more variables than is appropriate for the stated aim/hypotheses. The purpose of this stage may be misunderstood, only consisting of graphs, photographs etc. A statement such as '*I wanted to collect as much different data as possible*' is not considering how this can be managed in a 1,000 word Report.

Analysis, Interpretation and Evaluation

Indicative content: For each part of this stage it is clear which hypothesis or aim is being discussed. The outcomes are summarised and relationships, if any, are explored using secondary data and field evidence. All the data that has been collected is referred to. Statistical tests may be applied and the application of models to the data collected is referred to. Appropriate formulae are used and the units of measurement are given. The reasons for geographical theory not applying to the investigation are considered.

Qualities of A grade candidates: The text is clear, relevant and relates to all the data collected. There is a serious attempt to explain relationships and anomalies – possibly with the use of field notes and clearly referenced secondary evidence. The relationship between the outcomes of the hypotheses may be referred to. There is numerical evidence that data has been analysed using descriptive statistics and / or a statistical test: appropriate formulae are used; the calculations are correct; and confidence levels are tested (where appropriate) and interpreted. There is a clear discussion of the extent to which geographical theory is found in reality at the site. Analysis may be supported by the use of annotations on the data collected and photographs. These candidates are also able to successfully compare secondary data, e.g. derived from the 2001 Census, with their own primary data.

Other comments: The quality of this section is highly variable. Thus, this section often sets the better candidates apart from the weaker ones – although because many of the latter had gone over length, this is not always reflected in the final mark. The highlighting of anomalies was better this year, although weaker candidates tend to blame 'anomalous data' for low Spearman's rank correlation coefficients. The tendency for analysis sections to appear with very little text is also apparent in which a cursory comment is made for each graph or the outcome of statistical testing and then all the points are drawn together in the summary section at the end, making it difficult for the examiner to follow.

Most candidates use some method of statistical testing. Too many candidates still use Spearman's with a very low number of cases and Mann-Whitney is not always completed. Too often Candidates use a computer to do the calculations and do not understand the full

significance of the result. Not only is significance testing not always used but the use of significance tables is also not necessarily clearly understood and this results in some clumsy statements.

Weaker candidates give a lengthy description of the outcomes, whilst relationships and anomalies are not noted or explained. Interpretation consists of poorly expressed, generalised statements and there is no reference to geographical theory – particularly models noted earlier in the Report. The meaning of some variables is not understood, e.g. confusing altitude and gradient. Statistical tests are incomplete. Mann-Whitney (difference between data sets) is confused with Spearman (association between data sets). Computational errors are common, e.g. the formula for Spearman omits '1-..' Candidates simply state that the study went well and outcomes were as predicted – even when they were not. Land use models are dealt with in a summary manner if at all. It should be noted that the Mann-Whitney test is used to determine whether two sets of data come from the same population – it does not decide whether the samples are 'fair.'

Presentation of a Summary

Indicative content: The Summary highlights the main outcomes of the investigation in relation to the aims, together with a short explanation of these outcomes and their limitations, leading to suggestions for improving a project.

Qualities of A grade candidates: The Summary does not repeat information verbatim from earlier stages. There is reference to hypothesis(es) and / or theory or theoretical models which had been explained in the earlier sections. It gives a clear summary of the outcomes and highlights limitations of the investigation. Viable suggestions are made for improving the project if it were to be repeated.

Other comments: This is often the weakest part of the Report. Candidates bring in analysis and evaluation that has not been discussed in earlier stages. Alternatively, the Summary consists of two or three lines with little substance – often due to the constraints of the word count, having made the preceding sections too long. In general, any evaluation was poor, being rather vague, e.g. '*More samples could have been taken and at different times of the year or on different days*' and was often focused on how the study could be extended.

Unit 2683: Options in Physical and Human Geography

General Comments

The examining team were pleased to read many scripts showing clear evidence of substantial and authoritative geographical knowledge and understanding. It was the application of knowledge and understanding to a particular question that discriminated amongst the candidates. The better answers comprised material selected to relate directly and explicitly to the question. Less effective responses tended to contain material relevant to the topic but which, nevertheless, did not address the particular question set. For example, in Question 25 (b) where transport developments were to be linked to changes in international tourism, many candidates wrote convincingly about transport but did not link this factor clearly to international tourism.

As with previous sessions, examiners saw some excellent diagrams and sketch maps that enhanced answers by offering knowledge and understanding not contained in the accompanying extended prose. Centres are encouraged to use such methods when completing routine exercises in preparation for external assessment.

While the majority of scripts consisted of appropriate levels of spelling, punctuation and grammar, examiners were disappointed to come across too many scripts within which paragraphs were a rarity. Even scripts whose content suggested they were written by candidates of high quality, tended to be minimalist in their structure and punctuation.

Comments on Individual Questions

Option 1: Coastal Environments

1 Descriptions of the formation and characteristics of waves were generally sound with the better responses containing accurate references to wave length and height. Too many candidates did not, however, describe fully terms such as fetch. It was disappointing when lengths of fetch were described but paid no attention to general atmospheric circulation patterns. At the higher end of the range of responses, candidates offered thoughtful comments about the process-form debate regarding waves and beaches. The second sub-part drew some excellent responses but these were not as numerous as had been anticipated. A significant concern registered by examiners was the large number of candidates who muddled plan with profile. Such basic vocabulary should be secure by A2 level whether one is studying geography or not. The key distinction between swash and drift aligned beaches set an answer up well to continue through to a Level 3 response.

2 The focus of this question was cliffs. In the first sub-part descriptions of the marine processes tended to be sound but too many candidates included sub-aerial processes and so did not gain much credit as regards application. Shore platforms were not well described, if mentioned at all, and in particular the role of bio-erosion hardly featured. Comments about attrition were only credited if they related this process to cliff formation and development. Thus the role of attrition in supplying sediment capable of entrainment by waves for use in abrasion or its role in reducing sediment size and so the removal of a protecting scree at the cliff foot were acceptable.

When explaining how human activities can influence rates of cliff erosion the better responses offered both instances of accelerated erosion as well as cliff protection. Here also an appreciation of the respective roles that marine and sub-aerial processes play in cliff erosion was often effective in lifting an answer to the higher Levels. Many scripts included sketch maps and diagrams of relevant examples, with the coastline at Holderness and Barton-on-Sea prominent.

3 A minority of candidates chose to consider mud flats, salt marshes and sand dunes. Few moved beyond considering vegetation succession and while this is an important element in understanding these areas, other aspects are also significant: the process of flocculation for example in the formation of mud flats and salt marsh. When writing about the dynamic nature of sand dunes too few candidates chose to include material dealing with both the negative and positive impacts human activity can have.

Option 2: Fluvial Environments

4 Descriptions of how a river transports its sediment load were generally secure with the main processes well known by most candidates, although flotation was mentioned in only the more substantial answers. When describing saltation too few candidates seemed aware of the importance that displacement of resting particles by bouncing ones plays in this type of sediment transport. Accurate definitions of a river's competence were not as frequently found by examiners as they had anticipated.

In the second sub-part there was effective use made of diagrams to convey both knowledge and understanding by some candidates. Landforms such as riffles, point bar deposits, levees and deltas were commonplace. The key point about a reduction in flow velocity was made but less securely understood was the role of flocculation in promoting the deposition of fine sized particles in the tidal reaches of rivers.

5 Few candidates opted to tackle this question and those that did tended to be unclear as to what is meant by 'plan'. Few offered general comments about downstream variations in depth and width with many answers focussing on the asymmetry found at meanders.

The quality of answers to part (b) rarely moved into Level 3. Responses usually consisted of a detailed examination of water movements around a meander, which while relevant are only part of the story. There were some good accounts of what causes braiding set in appropriate spatial contexts such as the Alps and Rockies.

6 This question was the most popular in the Option and drew quite a range of answers. Descriptions of measures taken to reduce flood risk tended to consider both engineering and ecological solutions with the more thoughtful responses including comments about land-use zoning thereby removing certain activities from risk. There were some substantial descriptions of real world examples, the Mississippi, the Nile and the Yorkshire Ouse for example.

Explanations of floods were at their best when the candidate had picked up the idea of the inter-action of factors as highlighted in the question. Perhaps the most secure route was to adopt a systems approach and deal with inputs, stores and processes and outputs and so through this structure cover a variety of factors. As with part (a) some helpful exemplification was offered that supported the general points being made, such as the Lynmouth and Boscastle floods.

Option 3: Glacial and Periglacial Environments

7 The first question in this Option focussed on variations in the extent of glacial and periglacial environments and the impact this had on upland landscapes. Examiners were pleased to read an encouraging number of responses whose authors clearly understood that the Ice Age was not one simple ice advance followed by a retreat. There were some very authoritative answers using sketch maps to locate the extent of ice cover at various stadials. The distinguishing feature tended to be how the answer dealt with the issue of periglacial environments. The best responses understood that with each stadial the zone

just beyond the ice would have been periglacial and that today no active periglacial environments exist in the British Isles.

Although there was usually an indication in the first sub-part that the candidate understood the variable extent of ice cover, when it came to linking this with upland landscapes, many were less sure. It is a fundamental element in the study of glacial environments that the landscape has not been shaped by one advance and then a retreat of ice. Even within one particular stadial, locations show evidence of the effect of different degrees of ice influence, for example the Devensian in North Wales. Thus answers here tended to lack authority and tended to feature generalised accounts of moraines without really identifying how and when they might have been laid down within an upland context. The better responses seemed to have been based upon time spent in the field where such landscapes and the processes responsible for them were made clear.

8 This was a popular question within the Option with part (a) generating more effective answers than part (b). Descriptions of the processes of erosion were generally well made as was that of frost action. It was disappointing that more candidates did not make the basic point that freeze-thaw weathering needs the oscillation of temperature around 00C, something that is more prevalent in the periglacial conditions either side of a period of ice advance. The weaker scripts either ignored the process of nivation or were not confident in their description.

It was in part (b) that many candidates simply did not focus on to the idea of the influence of rock type. For so many their responses did not rise above using the terms 'soft' 'hard' 'weak' 'strong' rock, a form of language that at A2 level conveys only very basic knowledge and understanding. The most that the vast majority of answers offered was the influence of a band of more resistant rock being carved into a roche moutonée. Aspects of rock structure such as faults and jointing patterns were ignored by nearly all candidates attempting this question.

9 The minority of answers in this Option to the question on ground ice tended towards the competent. This was a sub-part that lent itself to the conveying of knowledge and understanding via diagrams and there many scripts containing very effective examples: the best of which referred to the likely dimensions of the landforms both large and small scale.

The highly seasonal nature of the periglacial climate and its role in the weathering and slope processes was well understood by the majority of those attempting this question. Candidates rightly focussed on frost action and solifluction but perhaps more generally could have been made of the fluvial processes operating during the brief summer experienced in periglacial environments.

Option 4: Hot arid and Semi-arid environments

10 Descriptions of the changing locations and extent of hot desert environments in the past were not numerous and were not particularly secure. Candidates knew that there have been pluvials and inter-pluvials but details such as the material available on the Sahara desert were rarely given. Candidates were much more at home with their answers explaining the role that flowing water plays in the formation of desert landscapes and landforms. Here material on canyons and arroyos, alluvial fans, bajadas and playas was well described and explained.

11 This question was the second most popular in the Option. In their descriptions of the role of human activities in land degradation, many candidates offered sound material concerning over-cultivation and over-grazing. They were less forthcoming about the role that deforestation for fodder and fuel can play and only a minority described the mis-

management of irrigation. Exemplar material, in the main, came from LEDCs, in particular those located in the Sahel.

The second sub-part asking for explanations of the location of desert areas in terms of the inter-action of several factors was generally well answered. Candidates should, however, be prepared to manipulate their learned material so that it directly answers the question. Thus simple listings of factors such as pressure systems, ocean currents, rain shadow effects and continentality are valid but in the context of this question more is needed regarding how they combine to give desert areas at particular locations. Thus the most successful questions took these generic factors and looked at their relevance for named deserts.

12 This question was the most popular of the three in the Option although judging by the disparity in quality of the responses between sub-parts (a) and (b) candidates had chosen it on the basis of the first sub-part. Candidates offered many and varied descriptions of animal adaptations, frequently supported by effective drawings.

Explanations of the role of water movement in the formation of desert soils only rarely could be described as secure. Answers tended to be superficial with generalised comments about the upward movement of water bringing salts to the surface. Very few scripts contained sketches of soil profiles and few candidates considered in any detail solonetz soils, found where rainfall is sufficient to allow some leaching.

Option 5: Applied Climatology

Very few candidates answered questions from this option and so it is not possible to make meaningful comments about patterns and trends in responses.

Option 6: Agriculture and Food

16 This question, the least popular in the Option, had, as its focus, how agro-ecosystems modify natural ones. Given that is a major heading within the Specification for this Option the quality of responses was something of a disappointment to examiners. The sub-headings in the Specification that might assist candidates cover this topic comprehensively were rarely evident in answers and so answers rarely focussed on elements of eco-systems. The second sub-part was also not well handled as candidates did not offer a sharp focus on the question. This resulted in some fairly vague assertions about the negative effects of modern farming on the environment that lacked conviction through the absence of facts and figures.

17 This was a popular question for candidates in this Option and generated a wide range of answers. Most handled the basics of the diffusion in a competent manner with the spatial pattern being dealt with more confidently than the speed of diffusion. The explanations of why the rate of diffusion varies from place to place received some encouraging responses that effectively employed appropriate exemplification such as the spread of tractors in Ireland and HYVs in India. Generally answers included comments about the roles of farm size which was often linked with economic resources and communications. Physical factors were the least well handled.

18 This was an equally popular question to the previous one and drew a similar range of responses. On average sub-part (b) was better handled than (a). In this latter sub-part, candidates tended to offer good outline of the global scale but were less secure when it came to describing patterns of nutrition at the regional scale. Thus Africa tended to be treated as a homogenous whole so that contrasts, for example, between North Africa and the Sahel region, were missed.

Explanations of the role that economic and social factors might play in causing food shortages and famines tended to be good if a little limited in the range of factors considered. Thus much was made of political influences with Zimbabwe featuring strongly as did the factor of land tenure. More should have been made of the role that income, or more appropriately, local purchasing power has on either constraining or freeing people's choice of food in terms of its quantity and quality. There is also much potential for historical examples to exemplify relevant points, both economic and social.

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

19 There were some effective descriptions of the impact of modern industrial growth in LEDCs and NICs on the physical environment. They tended to focus on the direct impacts such as air and water pollution with fewer responses mentioning the contamination of land, for example with heavy metals. There was a tendency for the weaker scripts simply to allocate the term 'pollution' to the effect without offering a more specific account such as the type of gases emitted into the atmosphere. It was, however, encouraging to read many answers that indicated their appreciation of recent events with references to the chemical spill in China and its effect on water courses.

The second sub-part proved more difficult for many candidates as they seemed unclear as to the meaning of 'internal organisation'. Those that were successful focussed on the components of internal organisation often adopted by TNCs and identified the spatial aspects of these. One area of potential not exploited by many candidates was the contrasts amongst different types of industries. For example electronics, vehicles and chemicals are often produced by TNCs whereas steel and ship-building tend to retain a stringer national focus.

20 Candidates were not particularly secure in their knowledge and understanding of the circumstances under which labour quality is more significant than labour costs to the location of manufacturing industry. Too often relatively vague assertions were made concerning labour costs and a contrast drawn between LEDCs and MEDCs but without exemplification. There were some helpful comments about the role that residential preferences can have in influencing some industries such as electronics and bio-technology.

The second sub-part was a very effective discriminator as the quality of the material on 'type' of industry varied considerable. Here was a case when too many candidates simply wrote all they could remember about the closure of manufacturing in an area paying little regard to the question. It was also the case that many scripts were distracted into the effects of the closure of coal mines, a primary industry, and so ineligible for this Option.

21 In the third question in this Option candidates were secure in their descriptions of the impact of Foreign Direct Investment on regional economies but less sure about disinvestment. Thus much good material was presented concerning the positive multipliers achieved when a factory was located in an area such as Toyota at Burnaston or Nissan at Washington. Points about the closure of foreign owned branch plants were scarce.

Explanations of how and why governments and planners influence FDI generally offered some good points concerning both elements although points about 'how' tended to be stronger than 'why'.

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

Very few candidates answered questions from this option and so it is not possible to make meaningful comments about patterns and trends in responses.

Option 9: Tourism and Recreation and their Environmental Impacts

25 This popular question drew responses that were, in the main, sound, with only a small minority offering really convincing discussions. In the first sub-part most candidates recalled suitable political factors but the focus for most was on the negative impacts of factors such as conflict and a hostility towards visitors. The better answers picked up on positive influences such as infrastructural developments, air port construction for example, advertising campaigns and a change in attitude such as has been the experience of countries in central and eastern Europe over the past few years. The persistent weakness was a lack of focus on the word 'patterns' in the question, so that flows of international tourists were only rarely explicitly considered.

The second sub-part was clearly immediately attractive to many candidates but they seemed to have rushed into their answer, writing all they could remember about transport developments and linking these to tourism. The lack of planning frequently resulted in the absence of an explicit explanation of changes in the destinations and scale of international tourism. In their haste to recall transport developments many candidates spent time offering material that did not relate to international tourism, the growth of seaside resorts in the nineteenth century in the U.K. following railway construction for example. There was, however, much material for examiners to read that correctly and clearly explained the role of developments in air travel, cruise ships and high speed rail routes across Europe.

26 This was the least popular of the three questions in this Option and yet seemed to generate the more effective responses. In the first sub-part most candidates were secure in both their knowledge and understanding of the three categories of resources. Sensible exemplification was a feature of the answers with the very best making the comment that there are tourist locations that combine elements of all three categories, for example national parks such as the Lake District. In the accompanying sub-part explanations of tourism's use of cultural and heritage resources tended to focus on the negative with many scripts highlighting the impact on indigenous cultures, in particular in LEDCs. The better answers made reference to the physical impact sheer weight of numbers can have on some cultural / heritage sites. On the positive side the economic advantages were commonplace and only occasionally was the physical improvement of previously 'blighted' areas mentioned.

27 The third question in this Option was more or less equal in popularity with 25 and tended to generate a similar range of quality of response. The main concern examiners expressed regarding sub-part (a) was with the understanding of mass tourism. Descriptions focussing on locations such as parts of the Mediterranean coast were appropriate but many scripts moved into considerations of national parks in the UK or safaris in Kenya. The question included a structure which was rarely picked up by candidates and so ensure that all three characteristics, physical, economic and cultural were covered.

Explanations of how issues of sustainability are playing increasingly important roles in LEDC tourism often used appropriate exemplification as the basis of the answer: Costa Rica, the Galapagos Islands and the Amazon were all cited. The better answers organised their discussion in terms of physical, economic and cultural sustainability.

2684 People and Environment

General Comments

Candidates produced a wide range of performance. The small group that achieved the top grade did so by directly answering the question, using detailed examples and case studies and making obvious synoptic links. Those more marginal candidates had two or more of these essential elements missing. There were too many in this group reflecting poor preparation by the individual candidates or a failure to keep tightly relevant to the question being answered.

The questions on this unit are open-ended and evaluative so requiring careful thought and planning. Plans also help examiners trace the logic of the candidates thinking. It was encouraging to see that many candidates do present brief plans and it was those answers that tended to have a tighter, better focused structure.

The responses are marked by component and candidates' responses varied greatly between these components:

1) Knowledge of content – more successful candidates demonstrated detailed knowledge of case studies, relevant concepts and geographical terms. Some weaker candidates made no reference to any location apart from 'e.g. Africa' type exemplification. Candidates should appreciate that this is a geography examination so some concept of location or/and place is essential. Without this clear grounding in the real world candidates can not expect to do well.

2) Critical understanding of content – this was the more effective component for the majority of candidates who demonstrated a clear appreciation of cause-effect and an understanding of the connections between different aspects of the subject (including synoptic connections). Clearly the basic concepts are well taught and understood by candidates.

3) Application and evaluation – this is the crucial component as it requires the higher level analytical and discursive skills to apply the understanding and knowledge to answer the question set. It is the evaluation aspect that usually distinguishes the better candidate and this examination was no exception. The higher achieving candidates evaluated arguments, concepts and statements in detail with some encouraging insights. Weaker candidates tended to agree with any quote regardless of the scale, location or time period. Many candidates could still improve their responses by using a less descriptive approach in their answers.

4) Communication – this varied tremendously as in most years. This is an essay paper and so requires extended discursive writing. Weaker candidates found even the most basic forms of communication difficult. Spelling was of particular concern as many could not spell place names or geographical terms so rendering answers ineffective. The misspelling of basic words like there (confused with their) and where (were) continues to be common. Weaker candidates also struggled with the concept of the paragraph. Maps and diagrams were often included, which had little relevance to the discussion, as an attempt to meet the criteria of 'in different formats'. At the other end of the scale stronger candidates wrote with a fluency and organisation that they, and their schools, should be proud to have produced in examination conditions. Candidates should be reminded that a total of 16 marks is available on this unit specifically to reward effective communication so it is important to present their work in a readable form with a clear introduction and conclusion and in a structured format.

Candidates must appreciate that their answers should:

- Relate directly to the question set. Some offered pre-learnt answers e.g. on the development of shanty towns for Q5 which had only passing relevance to the actual question.
- Give examples. Stronger candidates quoted detailed knowledge of locations and some drew relevant maps. Weaker ones gave vague references e.g. for Q4 examples of suburbanization were exemplified by 'e.g. London'
- Be clearly synoptic. Most of the questions had clear possibilities for synoptic links e.g. Q6 could have linked into material from 2681 and wider urban climate aspects when considering pollution in urban areas. The link should be seamless so the discussion flows.

Selection of questions

This is of concern as so few candidates and Centres elect to do the EU and rural management options. Nearly all candidates do the hazards option and this examination produced nearly 95% of candidates doing questions from this option, chiefly Q12. The urban management section was equally popular.

Option 1: Geographical Aspects of the European Union

1 'Core regions have environmental as well as economic advantages over peripheral regions.' Discuss with reference to examples from the EU.

This was not a popular question and the few candidates that did attempt it found the definition of 'environmental' difficult so often saw it in a very wide sense:

'*Core regions have the environmental advantage of being central. This means they are very accessible unlike remote peripheral regions such as northern Norway*.'

This was an interesting approach but unfortunately this candidate ignored more traditional definitions including natural resources, scenery, natural vegetation. Candidates should be reminded to give examples supporting and examples disagreeing with the statement. Most candidates saw the core as possessing economic advantages whilst peripheral areas have environmental advantages although some went further and saw the core as having environmental disadvantages:

'*Core areas have a lot of heavy industry and traffic congestion. These in turn produce lots of pollution – air pollution, solid waste and water pollution – which result in environmental disadvantages compared to the non-polluted peripheral areas.'*

Candidates seemed to find it difficult to see how the core could have environmental advantages. Some did suggest they were there at the start of core development such as mineral supplies or coastal/river location whilst some suggested it was the higher incomes and better planning laws that enabled authorities to improve the environment in the core e.g. urban parks, laws on pollution etc. Few candidates made use of models such as the core-periphery model which might have provided a framework around which to arrange an answer.

2 'International environmental resources are the most difficult to manage.' Discuss with reference to examples from the EU.

Again few candidates attempted this question. Most were well aware of the problems generated by trying to manage international resources including marine ones such as fish or minerals. Most agreed with the statement and listed a range of resulting management problems – but often these were few in number. Some candidates did challenge the assertion:

‘ *International resources are less of a problem than the management of national resources such as farmland where there is often a clash of interests between demands on the land e.g. for urban expansion.’*

Such challenges needed more justification to be fully effective. If in doubt candidates should always consider the validity of such statements over time and over space. Individual local scale resources can also be very difficult to manage such as the expansion of a quarry or water extraction but usually only in the short term.

3 No candidates attempted this question

Option 2: Managing Urban Environments

4 To what extent does the increasing suburbanization of the countryside in MEDCs matter ?

The use of the term ‘matter’ in the question should have triggered ‘to whom or what’ so that answers could develop a more effective and detailed discussion of the impact of increasing suburbanisation. Instead most took it as read that it did matter i.e. was a ‘bad thing’ and then looked at ways of controlling it such as the use of green belts.

Many decided that this was a historical account and spent excessive space explaining the various mechanism behind suburbanisation:

‘The growth in personal mobility and de-industrialisation has led to the growth of suburban sprawl around most cities. This growth is the result of push forces from the city and pull forces to the surrounding countryside. These include ….’

This example above then spent two sides listing the push and pull forces. This question is a classic example of where too many candidates saw the term suburbanisation and so wrote about it rather than look at the resulting impacts on the countryside and the exporting cities to assess whether it did matter and to whom.

Some candidates did recognise that it mattered to individuals:

‘By moving to the suburbs many families moved to less polluted, less congested areas with gardens and parks for children to play in. Their quality of life went up.’

And to local governments:

‘The loss of the wealthy to the suburbs has left the poor in the inner cities. They produce little rate revenue but need a lot of help which the city authorities can’t afford anymore.’

Often exemplification was poor being either very detailed, yet not located within the UK or even linked to a city, or so vague as to be ‘useless’ e.g. ‘around London’.

5 ‘The advantages of urbanization in LEDCs outweigh the disadvantages.’ How far do you agree with this statement ?

This question was seen by most candidates that selected it as: ‘The Shanty Town question’ so producing an answer focused on the pros and cons of living in such areas. Whilst this is a valid approach it does miss the bigger picture of overall urban growth in LEDCs. This is another question where candidates should be asking ‘to whom are there advantages and disadvantages’ remembering that an advantage for one person may be a disadvantage to another. Most candidates disagreed with the statement seeing the resulting slums as so negative that they

outweighed any advantages. Some, more able candidates, focused on how economic, environmental and social advantages/disadvantages might vary for different groups:

'The rich gain from increasing urbanisation as they have a pool of cheap labour for their factories but the poor merely exchange low paid farming jobs for low paid sweated workshop jobs e.g. clothing workshops in Manila.'

Some candidates were brave enough to dismiss the statement as almost meaningless:

'Urbanisation in the LEDC is currently inevitable and is a stage in the development of a country. So the balance of advantages and disadvantages is constantly changing as a country develops economically.'

6 How, and with what success, have planners tackled the problems of urban traffic congestion and urban traffic pollution ?

This was a question requiring some balance between congestion and pollution and most candidates did link the two:

'*As the level of congestion rises so does traffic generated pollution. Slow traffic produces more fumes especially if large lorries are forced to crawl*.'

Having established a link most candidates went on to give a wide range of planning strategies ranging from ring roads to congestion charges. Some candidates went beyond the normal repertoire of MEDC strategies to include examples from LEDCs, especially those in Brazil. Some used this as an excuse to catalogue the traffic problems of Mexico city rather than focus on the solutions being attempted. The weakness tended to be where candidates failed to respond to the need to assess the relative success of these strategies. Many ignored this aspect whilst others needed to explain their assertions of success or offered too optimistic an evaluation:

'*The M25 has helped solve the congestion and thus the pollution problems of London*.'

Those that took an approach that looked at solutions to congestion and pollution separately offered some wide ranging discussion of alternative energy sources such as ethanol and laws that control emissions. Overall exemplification was often detailed and well focused to illustrate the discussion.

Option 3: Managing Rural Environments

7 Discuss the view that the current exploitation of rural environmental resources in MEDCs is no longer sustainable.

This was not a popular question and those that attempted it tended to ignore the time limitation set by the inclusion of the term 'current'. Most candidates saw this as the 'agricultural problems' question so looked at aspects of eutrophication, soil erosion, hedgerow removal etc. In turn these problems were used to suggest that modern large scale farming is not sustainable. Candidates then went on to suggest ways that farming could be altered to make it more sustainable including organic farming. Whilst offering some effective discussion a wider ranging consideration of environmental resources such as scenery (for tourism), forests and water bodies would probably have supplied a greater variety of examples to aid the evaluation.

8 To what extent have planning policies influenced the economic, social and demographic revival of many rural areas in MEDCs in the last 30 years ?

This was a question that was best answered by focusing on evaluating the role of planning policies rather than examples of economic, social and demographic revivals. Many saw this 'revival' as the result of counterurbanisation rather than any conscious planning policies:

'Rural areas have developed that are near urban centres as the wealthy move out to buy larger houses and enjoy the higher quality of life.'

Some did refer to positive planning policies such as the expansion of rural service centres, housing subsidies and the improvement of rural infrastructures. Few candidates did focus on the 'extent' so answers either supported the view or dismissed it. Candidates should be reminded that such questions imply that it is not a simple yes or no type evaluation.

9 No candidates attempted this question

Option 4: Hazardous Environments

10 To what extent are human factors to blame for disasters caused by landslides and other mass movement events ?

This was the least popular question in this option although it was probably the most straight forward. This was the excuse for the Aberfan disaster to be trotted out again as an example to prove that humans can be blamed and the Mount St Helen's events as an example where they were innocent of blame. This is a little simplistic and candidates should be encouraged to evaluate carefully in their answers. The stress in the question was on 'disasters' and that tends to be measured in loss of human lives so linking it directly to human factors. Some candidates clearly perceived this link:

'Natural events only become hazards if there are humans around at risk. If a landslide naturally occurs on the coast and effects no one then it isn't a hazard and there is no disaster.'

Too many candidates spent time examining the mechanisms of mass movement or discussing how human activities cause mass movement e.g. undercutting slopes, mining, deforestation, or even reduce it such as 'using rock nets along the M5 near Bristol'. Whilst valid material it misses the thrust at impacts rather than causes in the question. Those that focused tightly on the resulting scale of disaster, or even if there was one, tended to score more highly.

11 How far do you agree with the assertion that people living in urban areas are at greater risk from natural hazards than people living in rural areas ?

This was a popular question and one where answers were broadly effective but rarely developing beyond the basic idea that urban areas have higher population densities and more large buildings that in turn cause more casualties when they collapse. Some candidates did identify that living in a rural area did bring its own added risks:

'*Rural areas are often remote, lack communications and have widely scattered populations making it more difficult for rescue services and aid to reach these areas. Rural populations are more at risk once the hazard has happened.'*

The recent earthquake in the Kashmir illustrates this view but such answers tended to go on to suggest that urban areas are at lower risk due to good planning and rescue services – a little optimistic. More thoughtful answers pointed out that the level of risk reflected the nature of the hazard and so both rural and urban areas were at equal risk but the impacts varied between the two areas. Some suggested that urban areas are unlikely to be built in areas of high risk whilst others suggested people increased the risk in urban areas:

'In Rio de Janeiro people have moved onto hillsides. They have cut down trees and built shanty towns with lots of impervious surfaces. This increases the risk of landslides and flash floods.'

12 Discuss the view that the impact of natural hazards depends on their predictability.

This was a popular question and one that was generally done well. Most candidates recognised that predictability varied with the type of hazard but also with the ability of the community to have and use technology to predict such events. Many candidates confused the hazard with the short and long term impacts tending to ignore the latter. Others recognised the difference:

'Even when the likelihood of a hazard event can be predicted the scale and variety of the primary and secondary impacts can not e.g. Hurricane Katrina.'

Indeed Hurricane Katrina was a good example of the difference between predicting the arrival of a hazard but not predicting the impacts accurately and then also not acting effectively on what predictions were made. The Indian Ocean Tsunamis of boxing day 2005 was quoted as showing that predictability was more a reflection of the level of development of the area such that technology that could, by predicting the event, have reduced the impact could not have been afforded. Most candidates did highlight that predictability was only one of many factors that influenced the scale and variety of hazard impacts:

' Even if predicted the level of planning, mitigation and effective evacuation varies so that similar scales of hazards can produce very different levels of impact in terms of the loss in human lives.'

One particularly perceptive candidate made the point:

'*Even where prediction is accurate it is only lives that can be saved by evacuating as buildings and infrastructure can't be moved so suffer the full impact regardless of the successful prediction.'*

Advanced GCE Geography A (7832/3832)
January 2006 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2680	Raw	100	68	60	53	46	39	0
	UMS	120	96	84	72	60	48	0
2681	Raw	75	53	48	43	38	34	0
	UMS	90	72	63	54	45	36	0
2682	Raw	75	58	52	46	40	35	0
	UMS	90	72	63	54	45	36	0
2683	Raw	90	67	60	53	46	39	0
	UMS	90	72	63	54	45	36	0
2684	Raw	120	89	79	69	60	51	0
	UMS	120	96	84	72	60	48	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	11.0	31.7	57.3	78.7	96.3	100.0	172
7832	17.9	53.8	79.5	92.3	100.00	100.0	43

43 candidates aggregated this session

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

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