



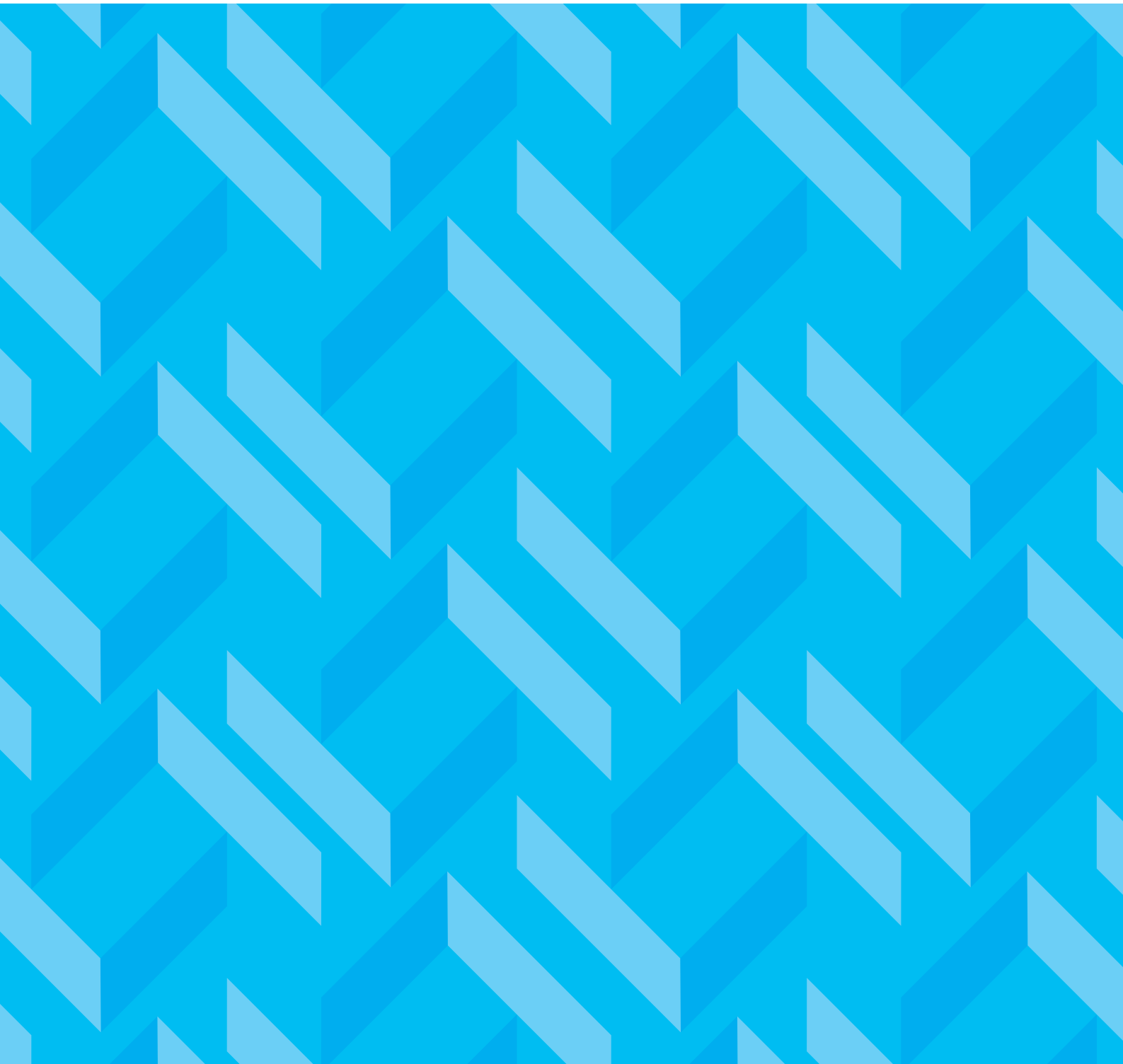
**GCE**

**Examinations from 2009**

First AS Award: Summer 2009

First A Level Award: Summer 2010

Geography



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**WJEC AS GCE in Geography  
WJEC A Level GCE in Geography**

**2009 & 2010**

**First AS Award - Summer 2009  
First A level Award - Summer 2010**



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## GCE Geography

<b>Subject/Option Entry Codes</b>	
<i>Advanced Subsidiary (AS) "Cash in" entry</i> <i>A Level (A)"Cash in" entry</i>	2201 3201
G1 : Changing Physical Environments	1201
G2 : Changing Human Environments	1202
G3 : Contemporary Themes and Research in Geography	1203
G4 : Sustainability	1204

***When making entries, the following option codes should be entered after the four digit unit or cash-in code to indicate English medium or Welsh medium entries:***

***English medium 01***  
***Welsh medium W1***

<b>Availability of Assessment Units</b>				
Unit	January 2009	June 2009	January 2010 & each subsequent year	June 2010 & each subsequent year
G1	✓	✓	✓	✓
G2	✓	✓	✓	✓
G3			✓	✓
G4			✓	✓

### Qualification Accreditation Numbers

**Advanced Subsidiary: 500/2789/X**  
**Advanced: 500/2483/8**

## SUMMARY OF ASSESSMENT

This specification is divided into a total of 4 units, 2 AS units and 2 A2 units. Weightings noted below are expressed in terms of the full A level qualification.

### GEOGRAPHY

#### SUMMARY OF ASSESSMENT

#### AS (2 units)

<b>G1</b>	1 hour 30 minutes	Written Paper	75 marks (100 UMS)
<b>Unit title: Changing Physical Environments</b> <b>Two Themes</b> <ul style="list-style-type: none"> <li>Investigating climate change</li> <li>Investigating tectonic and hydrological change</li> </ul> <b>Three structured questions with stimulus material, one of which tests research/fieldwork</b>			
<b>G2</b>	1 hour 30 minutes	Written Paper	75 marks (100 UMS)
<b>Unit Title: Changing Human Environments</b> <b>Two Themes</b> <ul style="list-style-type: none"> <li>Investigating population change</li> <li>Investigating settlement change</li> </ul> <b>Three structured questions with stimulus material, one of which tests research/fieldwork</b>			

#### A LEVEL (the above plus a further 2 units)

<b>G3</b>	2 hours 15 minutes	Written Paper	75 marks (120 UMS)
<b>Unit title: Contemporary Themes and Research in Geography</b>  <b>Section A – 1 hour 30 minutes</b> <b>Two essays - one</b> from <b>each</b> of the <b>two</b> contemporary themes. One theme selected from three physical options and one theme selected from three human options. A choice from <b>two</b> questions for each theme.  <b>Section B – 45 minutes</b> For each of 10 themes, there will be a topic area set by the Board in December (January series) and May (June series) of the <b>preceding</b> year. Candidates design and carry out a research enquiry based on their chosen theme and prescribed topic area. This will be assessed by a two-part question based on research enquiry and the findings of their research. This question will be given out after 1 hour 30 minutes when Section A is handed in.			
<b>G4</b>	1 hour 45 minutes	Written Paper	80 marks (80 UMS)
<b>Unit title: Sustainability</b> Sustainable Food Supply Sustainable Water Supply Sustainable Energy Sustainable Cities <b>Pre-release material in December and May prior to the examination for a Decision Making Exercise</b>			



# GEOGRAPHY

## **1** INTRODUCTION

### **1.1** Criteria for AS and A Level GCE

This specification has been designed to meet the general criteria for GCE Advanced Subsidiary (AS) and A level (A) and the subject criteria for AS/A Geography as issued by the regulators [September 2006]. The qualifications will comply with the grading, awarding and certification requirements of the Code of Practice for 'general' qualifications (including GCE).

The AS qualification will be reported on a five-grade scale of A, B, C, D, E. The A level qualification will be reported on a six-grade scale of A\*, A, B, C, D, E. The award of A\* at A level will provide recognition of the additional demands presented by the A2 units in term of 'stretch and challenge' and 'synoptic' requirements. Candidates who fail to reach the minimum standard for grade E are recorded as U (unclassified), and do not receive a certificate. The level of demand of the AS examination is that expected of candidates half way through a full A level course.

The AS assessment units will have equal weighting with the second half of the qualification (A2) when these are aggregated to produce the A level award. AS consists of two assessment units, referred to in this specification as G1 and G2. A2 also consists of two units and these are referred to as G3 and G4.

Assessment units may be retaken prior to certification for the AS or A level qualifications, in which case the better result will be used for the qualification award. Individual assessment unit results, prior to certification for a qualification, have a shelf life limited only by the shelf life of the specification.

The specification and assessment materials are available in English and Welsh.

### **1.2** Prior learning

The specification is equally accessible to all, irrespective of age, gender and ethnic, religious or cultural background.

No prior learning in geography is required. However, the knowledge, understanding and skills acquired through GCSE Geography or equivalent would help in the introductory stages of this course.

Grade C in GCSE Mathematics, or equivalent, is beneficial. Candidates will be expected to: understand units used for geographical quantities and measurements and interpret geographical numerical data presented in a variety of forms.

### 1.3 Progression

The four-part structure of this specification (2 units for AS, and an additional 2 for the full A level) allows for both staged and end-of-course assessment and thus allows candidates to defer decisions about progression from AS to the full A level qualification.

This specification provides a suitable foundation for the study of Geography or a related area through a range of higher education courses; progression to the next level of vocational qualifications; or direct entry into employment. In addition, the specification provides a coherent, satisfying and worthwhile course of study for candidates who do not progress to further study in this subject.

### 1.4 Rationale

- The specification recognises the vital role geography has in the 21<sup>st</sup> century curriculum. It encourages students to understand their own lives in a global world and to understand the vital, complex and inter-related issues they will face in their lives such as climate change, poverty and deprivation, global shifts in economic power and the challenge of sustainable resource use.
- The specification focuses upon the earth as a dynamic place where physical, environmental and human processes and changes interact to produce a constantly changing world that the students will shortly enter as adults. Important concepts and processes are studied in the context of real places that exist in a local, regional, national and global context.
- It enables students to become responsible, knowledgeable and skilful citizens; an understanding of some of the complex spatial interactions in the modern world will be a starting point for the students' further understanding and quest for knowledge of the world in which they live.
- It emphasises a student-centred enquiry approach to learning that encourages an active attitude to ideas and information.
- In order to comprehend the changing world, students will develop their own attitudes and values based on their study of some complex issues facing society. As they develop attitudes and values they will acquire an armoury of skills: literacy, numeracy, graphicacy, cartography and GIS.
- By working on their own with appropriate guidance students will develop as reflective learners who realise that spatial processes are not all absolute and are subject to varying interpretation.
- The specification gives centres (and students) the opportunity to develop field studies and individual research skills by working both independently and in group activities outside the classroom in the real world.
- The specification will build on KS4/GCSE by selecting a range of topics that are new in content or approach.

At **AS level** the emphasis in **G1, Changing Physical Environments**, is upon the dynamic systems of climate and landform change and how people react to and manage those changes. Students will develop their understanding of the complex and debated theme of climate change, an issue that will affect their lives and enables them to appreciate contrasting attitudes and values. **G2, Changing Human Environments**, similarly focuses upon the dynamic system of changing settlements and introduces the complex theme surrounding population change.

Students are provided with the opportunity to undertake field studies and research in groups or as individuals. Throughout their A level studies students will be exposed to themes at a variety of scales and in a range of places so that they develop an appreciation that places are not unique but interdependent. Wherever possible, centres in Wales are encouraged to provide a Welsh dimension to the themes while at the same time encouraging students to draw on examples from the wider world. The assessment will have a standard format for both papers merging an assessment of knowledge and understanding with field exemplification and appreciation of the variety of techniques available to the geographer.

In progressing to **A2** students are introduced to a selection of more complex topics that are at the heart of **Contemporary Themes and Research in Geography (G3)**. **G3** will be assessed in three parts: Themes in Contemporary Physical Geography, Themes in Contemporary Human Geography in Section A and a Research Enquiry in Section B. In Section A, in the broad field of physical geography **Extreme Environments** will enable the student to focus on the processes, environmental changes, threats and management of deserts and the tundra lands while **Climatic Hazards** will provide the opportunity to examine in depth the processes leading to, the impact and management of hurricanes, storms, tornados and drought. The final option will provide centres with the opportunity to focus on **Landform Processes in either glacial or coastal environments**.

Similarly students will have the opportunity to specialise in one of three specialisms in human geography; **Development** is a continuing concern of geographers while the economic, political, social and environmental aspects of **Globalisation** increasingly impact on people and places. The impact of geographical processes on place is nowhere more rapid and radical than in China and India, which form the alternative studies in the theme of **Emerging Asia**. Students will have the option of specialising in one of these three human geographical themes.

For Section B, students have the opportunity to research a pre-issued topic area from one of ten research themes. The topic areas for each examination series will be issued by WJEC in December and May of the **preceding** year and assessed under examination conditions though a two part essay based on research methodology and findings.

In **G4** the four themes relating to **Sustainability (Sustainable Water, Sustainable Energy, Sustainable Population and Sustainable Cities)** draw attention to the complexities and the management of a sustainable planet. The **G4** examination will be based on pre-issued resources that will enable students to enter the examination prepared for a more rigorous assessment of their knowledge as applied to the resources. The questions will require students to draw on their classroom knowledge and understanding to respond to the unseen questions, issues, problems and solutions posed by the resources.

**A2** provides centres with the opportunity to emphasise the uniqueness and interdependence of places and themes, the synoptic nature of the assessment providing opportunities for differentiation and also for 'stretch and challenge'. All papers at **A2** will assess candidates primarily through continuous prose answers supported by appropriate techniques. The majority of themes contain elements that enable centres to continue to provide a Welsh dimension. However, those beyond the Principality have an equal opportunity to development exemplar material that draws upon their own region and nation.

## 1.5 The Wider Curriculum

Geography is a subject that by its nature requires candidates to consider spiritual, moral and cultural issues. The specification provides a framework for exploration of such issues and includes specific content that develops awareness of different groups and of different values and attitudes in society. For example, in **G2**, candidates are required to study issues relating to gender and migration.

The specification engages students directly in a range of wider curriculum areas:

Environmental education e.g. G1, G3 and G4  
Education for sustainable development e.g. G4  
Citizenship education e.g. G1, G2, G3 and G4

The essence of this is the recognition and value of the opinions of people and the importance of the environment. Knowledge and understanding of these curriculum areas and of the values and attitudes of individuals and societies enable students to develop and justify personal judgements about issues such as sustainability.

WJEC has taken into account the 1998 Resolution of the Council of the European Community Report, '*Environmental Responsibility; An agenda for further and higher education*' (HMSO 1993) - in preparing this specification. The issues of '*sustainable and inter-dependent development*', which are at the heart of the specification, are major foundations on which education for environmental responsibility is built.

The specification also addresses the European dimension where such examples are chosen. Students are encouraged to make use of examples from other societies throughout the content of the specification. For example, glacial and coastal environments (G3 Theme 2); patterns of migration (G2 Theme 1); industrial decline (G2 Theme 2, G3 Themes 4 and 5)

## 1.6 Prohibited combinations and overlap

Every specification is assigned a national classification code indicating the subject area to which it belongs. Centres should be aware that candidates who enter for more than one GCE qualification with the same classification code will only have one grade (the highest) counted for the purpose of the School and College Performance Tables. The classification code for this specification is 3910.

## 1.7 Equality and Fair Assessment

AS/A levels often require assessment of a broad range of competences. This is because they are general qualifications and, as such, prepare candidates for a wide range of occupations and higher level courses.

The revised AS/A level qualification and subject criteria were reviewed to identify whether any of the competences required by the subject presented a potential barrier to any disabled candidates. If this was the case, the situation was reviewed again to ensure that such competences were included only where essential to the subject. The findings of this process were discussed with disability groups and with disabled people.

In *GCE Geography*, requirements for fieldwork are sufficiently flexible for all candidates to participate. Candidates with visual impairments have difficulty in demonstrating skills related to analysis, interpretation and evaluation of geographical information including maps, 3-D and colour images.

Reasonable adjustments are made for disabled candidates in order to enable them to access the assessments. For this reason, very few candidates will have a complete barrier to any part of the assessment. Information on reasonable adjustments is found in the Joint Council for Qualifications document *Regulations and Guidance Relating to Candidates who are eligible for Adjustments in Examinations*. This document is available on the JCQ website ([www.jcq.org.uk](http://www.jcq.org.uk)).

Candidates who are still unable to access a significant part of the assessment, even after exploring all possibilities through reasonable adjustments, may still be able to receive an award. They would be given a grade on the parts of the assessment they have taken and there would be an indication on their certificate that not all of the competences have been addressed. This will be kept under review and may be amended in future.

## 2

### AIMS

This AS and A level specification in geography is designed to encourage students to:

- develop and apply their understanding of geographical concepts and processes to understand and interpret our changing world;
- develop their awareness of the complexity of interactions within and between societies, economies, cultures and environments at scales from local to global;
- develop as global citizens who recognise the challenges of sustainability and the implications for their own and others' lives;
- improve as critical and reflective learners aware of the importance of attitudes and values, including their own;
- become adept in the use and application of skills and new technologies through their geographical studies both in and outside the classroom;
- be inspired by the world around them, and gain enjoyment and satisfaction from their geographical studies and understand their relevance.

Specifically, the **AS** specification aims to encourage students to:

- understand the role of physical processes operating within the dynamic earth system;
- understand the impact of selected physical processes on environments and people;
- develop an awareness of some of the current environmental and human issues that face the world;
- know that issues can be studied at different scales and at different levels of complexity;
- be able to use and interpret geographical information from a range of sources;
- be able to reinforce classroom work by out-of-class activities in the field and to develop an understanding of changing environments through out-of-classroom learning.

In addition, the **A level** specification aims to encourage students to:

- understand the links between the activities of people in a range of environments and the environmental, social and economic consequences of those activities;
- appreciate that an understanding of causes and processes can lead to relevant management strategies;
- synthesise information from a variety of sources in order to draw conclusions;
- be able to research an aspect of geography with guidance and to report that experience under examination conditions;
- be able to evaluate contrasting theories and explanations of geographical processes and phenomena as reflective learners;
- understand why different individuals and groups hold differing opinions and may be biased;
- understand and interpret information from a variety of sources and be aware of the limitations of those sources;
- be able to tackle geographical issues based upon their A2 studies thus realising the holistic nature of geographical studies;
- develop their awareness of their own role and responsibilities as future citizens.

# 3

## ASSESSMENT OBJECTIVES

Candidates must meet the following assessment objectives in the context of the content detailed in Section 4 of the specification:

### AO1 Knowledge and Understanding

On completion of the **AS and A level course** candidates should have developed knowledge and understanding of:

- selected physical, human and environmental processes that underpin key geographical concepts;
- the key concepts of place, space, diversity, interdependence, people–environment interactions, the processes associated with these, and change over time;
- the importance of scale as a geographical idea;
- contextualized examples at a range of scales.

### AO2 Application

On completion of the **AS and A level course** candidates should have developed an ability to demonstrate:

- understanding of the application and relevance of geography by analysing, interpreting and evaluating geographical information, issues and viewpoints;
- apply their understanding in unfamiliar contexts.

### AO3 Skills

On completion of the **AS and A level course** candidates should have developed the ability to:

- use a range of skills and techniques, including the use of maps and images at different scales necessary for geographical study;
- carry out research, and out-of-classroom work including fieldwork, as appropriate to the topics selected;
- use a variety of methods, skills and techniques, modern information technologies, including geographical information systems, as appropriate to the content; to investigate questions and issues, reach conclusions and communicate findings.

In addition, **A level candidates** should

- undertake **individual** research/investigative work, including fieldwork;
- extend their understanding of geographical ideas, concepts and processes;
- identify and analyse the connections between the different aspects of geography;
- analyse and synthesise geographical information in a variety of forms and from a range of sources;
- consider new ideas and developments about the changing nature of geography in the 21st century;
- critically reflect on and evaluate the potential and limitations of approaches and methods used both in and outside the classroom.

## Weightings

Assessment objective weightings are shown below as % of the full A level, with AS weightings in brackets.

Unit Weighting	%	AO1%	AO2%	AO3%
G1	25 (50)	12 (24)	6 (12)	7 (14)
G2	25 (50)	12 (24)	6 (12)	7 (14)
G3	30	14	8	8
G4	20	6	8	6
<b>Total</b>	<b>100</b>	<b>44</b>	<b>28</b>	<b>28</b>

# 4 SPECIFICATION CONTENT

## 4.1 Introduction

The specification for AS is presented in the form of a matrix, as follows:

Key Question for investigation	Content	Opportunities to deliver the requirement for research and out-of-classroom work including fieldwork	Suggested examples	Links to other units
These are questions identifying the key aspects of <b>knowledge and understanding</b> .	This outlines the knowledge and understanding required from each key question. The content is written in a way that allows teachers maximum flexibility in their choice of exemplar material and breadth/depth of approach. It provides them with the opportunity to develop and structure their own teaching and learning, including their own attitudes and values and those of others. This reflects the generic nature of the assessment. It enables content to be updated in response to changing geographies and encourages debate over contestations of knowledge and understanding.	<b>The specific examples are for guidance and illustration and are neither comprehensive nor mandatory.</b> Teachers and candidates are encouraged to choose their own tasks for research or fieldwork enquiries.	<b>The specific examples are for guidance and illustration and are neither comprehensive nor mandatory.</b> Teachers and candidates are encouraged to apply their own case studies and examples to any part of the specification and to update these in the light of current issues and events. Teachers may choose to focus on case studies in depth or adopt a broader approach using a range of briefer examples.	

**Assessment will be based on the Key Questions and Content** and not on the examples given in Column 3 and 4. Individually selected and taught examples, case studies and illustration will gain credit.

The specification lends itself to the study of Key Questions and their associated content that should be delivered through **relevant and appropriate enquiry approaches and case studies and examples**. The case studies and examples provide depth and relevance to the Key Questions and associated content and develop an understanding of the geographical concepts. The opportunities for research and fieldwork enable the development of geographical and Key Skills. An emphasis on the study of places encourages and enables teachers to exemplify and contextualise geographical processes and helps young people to appreciate their relevance and importance. It also enables the application of understanding in unfamiliar contexts and the evaluation of geographical information, issues and viewpoints.

### Skills and Techniques Incorporated into the Specification

*In investigating the Key Questions, outlined in the specification, the candidate will be engaged in research and fieldwork activities that involve the application of skills. There are intellectual skills such as the interpretation of data, the analysis of statements, and the ability to develop judgements. There is the skill of communication, whether it is by written text, diagram or oral discussion. There are also skills of a social nature that can be encouraged by group activities. In the table below a framework is provided which may be useful for reference to ensure that students are engaged in a range of skills-based activities in their work.*

<b>Intellectual skills</b>	<b>Related techniques</b>
<i>Reference skills - ability to make use of a variety of sources for obtaining information.</i>	<ul style="list-style-type: none"> <li>- <i>collection of evidence through fieldwork</i></li> <li>- <i>collection of evidence from various sources: world wide web, census data, government data, books, journals and periodicals</i></li> </ul>
<i>Communication skills - ability to present information in a clear and appropriate way.</i>	<ul style="list-style-type: none"> <li>- <i>appropriate use of graphs and diagram; photographs*</i></li> </ul>
<i>Interpretative skills - ability to give meaning to evidence.</i>	<ul style="list-style-type: none"> <li>- <i>interpretation of evidence: graphs, maps, photographs, text, diagrams, numerical data.</i></li> <li>- <i>analysis of documentary evidence e.g. old maps, photographs, advertisements, questionnaires, remotely sensed images and GIS information</i></li> </ul>
<i>Evaluation skills - ability to consider evidence and form a conclusion.</i>	<ul style="list-style-type: none"> <li>- <i>role play exercises</i></li> <li>- <i>decision-making exercise</i></li> <li>- <i>discussion*</i></li> </ul>
<i>Enquiry skills - ability to identify relevant geographical questions, establish an appropriate sequence of enquiry and follow through the enquiry.</i>	<ul style="list-style-type: none"> <li>- <i>investigation</i></li> <li>- <i>IT*</i></li> <li>- <i>application of knowledge and skills.</i></li> </ul>

*The candidate's ability to analyse, interpret and evaluate the techniques listed in the table (with the exception of \*) above may be assessed in any of the externally assessed written papers G1 – G4.*

## AS GEOGRAPHY

The course consists of:

### **Unit G1 - Changing Physical Environments**

### **Unit G2 - Changing Human Environments**

The content of G1 and G2 gives opportunities for both research and out of classroom work, including fieldwork to be incorporated into the teaching and learning programme and to be assessed through Question 3 in each of the two units. **Fieldwork is an essential requirement of the AS course as specified in the Assessment Objectives on page 10 and opportunities are suggested in Column 3 of the G1 and G2 specification.**

### **Question 3 Changing Physical Environments**

In approaching this section of the specification candidates should be able to

- demonstrate that they understand how to gather information from both primary and secondary sources to investigate aspects of **Changing Physical Environments**;
- know the potential sources of information and data required to investigate the topic;
- introduce candidates to the skills of field mapping and field observation;
- understand the importance of sampling and avoiding bias when collecting data;
- know of the advantages and disadvantages of the methods of depicting and analysing data;
- understand what the collected information and data shows and be able to interpret and draw valid conclusions from the results;
- realise that the conclusions may require further research and be able to suggest further avenues of investigation and/or questions to be answered.

At AS level, candidates should understand that field and investigative studies must be constructed to answer a geographical question or hypothesis, or to investigate a geographical issue.

Field and investigative work should enhance the candidates' geographical skills of primary data recording, presentation and analysis. It should provide candidates with the skills of interpreting secondary sources; maps at scales of 1:10,000, 1:25,000 and 1:50,000, photographs including oblique and vertical air, and remotely sensed (satellite) images, statistical data, geographical information systems (GIS) and information obtained from the World Wide Web. Candidates should be able to search geographical literature to find similar studies.

Candidates will be required to demonstrate that they are able to use and interpret choropleth, dot, isoline, flow and located statistical maps, histograms, scatter graphs, line graphs, frequency curves, long and cross sections and pie graphs.

Candidates should be able to interpret tabular data and matrices including checklist, cross tabulation and conflict matrices. Scaling, ranking and weighting of data should be introduced.

Candidates will not be required to make statistical calculations under examination conditions. However, they should be able to demonstrate that they can interpret and understand measures of central tendency (mean, median, mode) and Spearman's Rank Correlation Coefficient including statistical significance.

### Question 3 Changing Human Environments

In approaching this section of the specification candidates should be able to

- demonstrate that they understand how to gather information from both primary and secondary sources to investigate aspects of **Changing Human Environments**;
- know the potential sources of information and data required to investigate the topic;
- appreciate that information about issues especially on the world wide web, may be biased;
- introduce candidates to the skills of field mapping and field observation;
- understand the importance of sampling and avoiding bias when collecting data;
- know of the advantages and disadvantages of the methods of depicting and analysing data;
- understand what the collected information and data shows and be able to interpret and draw valid conclusions from the results;
- realise that the conclusions may require further research and be able to suggest further avenues of investigation and/or questions to be answered.

At AS level candidates should be introduced to the notion that field and investigative studies must be constructed to answer a geographical question or hypothesis, or to investigate a geographical issue.

Field and investigative work should enhance the candidates' geographical skills of primary data recording, presentation and analysis. It should provide candidates with the skills of interpreting secondary sources; maps at scales of 1:10,000, 1:25,000, 1:50,000 and Goad Plans of city centres, photographs including oblique and vertical air, and remotely sensed (satellite) images, statistical data, geographical information systems (GIS) and information obtained from the World Wide Web. Candidates should be able to search geographical literature to find similar studies.

Candidates should have been introduced to questionnaires including the necessity to compose valid and meaningful questions that answer the question or research the issue. The importance of piloting questions and sampling frameworks should be studied.

Candidates will be required to demonstrate that they are able to use and interpret choropleth, dot, isoline, flow and located statistical maps, histograms, scatter graphs, line graphs, frequency curves, long and cross sections and pie graphs.

Candidates should be able to interpret tabular data and matrices including checklist, cross tabulation and conflict matrices. Scaling, ranking and weighting of data should be introduced. Candidates should be able to compile and interpret Bipolar analyses from questionnaires and to compile simple cost/benefit analysis.

Candidates will not be required to make statistical calculations under examination conditions. However, they should be able to demonstrate that they can interpret and understand measures of central tendency (mean, median, mode) and Spearman's Rank Correlation Coefficient including statistical significance.



## UNIT G1

### Changing Physical Environments

#### Theme 1 – Investigating Climate Change

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What are the world's major climates and how do they relate to biomes?	<ul style="list-style-type: none"> <li>• The relationship between weather and climate.</li> <li>• An overview of the global patterns of climate</li> <li>• An overview of biomes and their relationship with climate.</li> </ul>	Interpretation of global maps of climates and biomes and an analysis of their relationship.	Introduction to biomes and their relationship with climate.	G3A.1,3 G4.1
1.2 What are the temporal patterns of climate change?	<ul style="list-style-type: none"> <li>• Short-term climate change.</li> <li>• Long-term climate change.</li> </ul>	Analysis and interpretation of graphs showing cycles of temperature variation over short and long-term time scales.	El Nino/La Nina. Effects on Peru and NE Australia and Indonesia. Little Ice Age.	G3A.3
1.3 What are the causes of climate change.	<ul style="list-style-type: none"> <li>• The evidence for climate change.</li> <li>• The atmospheric processes that result in climate change.</li> <li>• The relative role of environmental and human factors in recent climate change.</li> </ul>	Analysis of evidence for global warming – changes in greenhouse gases. Examination of sea level change and retreat of glaciers. Analysis of human causes of change in greenhouse gases.	Case study of a retreating glacier and/or ice cap. Different views and attitudes on the causes of climate change – natural cycles versus human impacts	G4.3 G3A.3

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 What are the issues resulting from climate change?	<ul style="list-style-type: none"> <li>• Changing climates and shifting climatic belts and the effect on biomes.</li> <li>• Increasing levels of extreme weather and the impacts on human activities.</li> <li>• Rising sea levels and their impact on people.</li> <li>• The variation of these impacts in different regions.</li> <li>• The impacts of climate change on society.</li> </ul>	<p>Research into the impacts of global warming on different countries and regions.</p> <p>Analysis of extreme events, and how these impact on people.</p> <p>Examination of the impact of global warming on the operation of societies.</p>	<p>Hurricanes, drought.</p> <p>Growth of vines in S. England</p> <p>Northward movement of butterfly distributions in Europe.</p> <p>The Inuit.</p>	<p>G3A.2a</p> <p>G4.1, 2</p>
1.5 What strategies can be used to address climate change?	<ul style="list-style-type: none"> <li>• Strategies to address climate change               <ol style="list-style-type: none"> <li>i. at international level;</li> <li>ii. by government action;</li> <li>iii. by pressure groups and by individuals.</li> </ol> </li> </ul>	<p>Collection and analysis of literature produced by a variety of organisations.</p> <p>Study of the methods used to combat global warming at a variety of scales from global to local.</p>	<p>The work of IPCC.</p> <p>Contrasting government policies.</p> <p>Local policies – Keep Leicester Cool; Carbon Neutral Newcastle.</p>	<p>G4.3</p>
1.6 How successful have strategies been in tackling climate change?	<ul style="list-style-type: none"> <li>• Evaluation of attempts to reduce climate change.</li> </ul>	<p>Critical evaluation of evidence that examines the relative success of strategies.</p>	<p>Critical examination of the Kyoto Protocol.</p>	<p>G3A.3</p>

# UNIT G1

## Changing Physical Environments

### Theme 2 – Investigating Tectonic and Hydrological change

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
2.1 What are the processes associated with plate tectonics?	<ul style="list-style-type: none"> <li>• Patterns of plates and plate boundaries.</li> <li>• Processes associated with constructive, destructive and conservative plate margins.</li> </ul>		Examples of boundaries could illustrate the processes operating e.g. Mid –Atlantic Ridge; Pacific Ring of Fire; San Andreas Fault.	
2.2 What are the hazards associated with tectonic events?	<ul style="list-style-type: none"> <li>• Hazards associated with tectonic activity.</li> <li>• Demographic, economic and social impacts of tectonic hazards.</li> <li>• Local and regional impacts of tectonic hazards.</li> </ul>	Virtual fieldwork.	Contrasting examples to highlight the variety of impacts associated with tectonic activity e.g Nevada del Ruiz (1985); Kobe (1995); Gujurat (2001); Asian tsunami (2004).	
2.3 How are tectonic hazards perceived and managed?	<ul style="list-style-type: none"> <li>• Different perceptions and awareness of tectonic hazards by groups with conflicting interests.</li> <li>• Strategies to manage tectonic hazards.</li> <li>• The effectiveness of management strategies.</li> </ul>	Evaluation of the spectrum of management strategies in the light of identified variables.	Tourism in Iceland, Mt. Etna. Nevada del Ruiz (1985). Kobe (1995). Gujurat (2001) Asian tsunami (2004).	

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
2.4 What are the hydrological processes associated with drainage basins?	<ul style="list-style-type: none"> <li>• The drainage basin system to include inputs, flows, stores and outputs.</li> <li>• The characteristics of river regimes and the physical and human factors influencing them.</li> <li>• The characteristics of flood hydrographs and the human and physical factors influencing them.</li> </ul>	<p>Investigation of infiltration rates with a drainage basin. Investigation of the regime of a small –scale river basin.</p>		G4.2
2.5 What are the causes and consequences of flooding?	<ul style="list-style-type: none"> <li>• The physical and human characteristics of a drainage basin that cause flooding.</li> <li>• The relative importance of these factors in different flood events.</li> <li>• The physical impacts of flooding within a drainage basin.</li> <li>• The demographic, economic and social impacts of flooding.</li> </ul>	<p>Research the causes of two flood events to evaluate the relative importance of a number of factors. Investigation of the impacts of flooding at a local scale.</p>	<p>Contrasting examples to compare the causes and impacts of flooding e.g. River Severn. Boscastle.</p>	
2.6 How is the flood hazard perceived and managed within a drainage basin?	<ul style="list-style-type: none"> <li>• Different perceptions and awareness of the flood hazard by groups within a drainage basin.</li> <li>• Strategies to manage flood hazards.</li> <li>• The effectiveness of flood management schemes.</li> </ul>	<p>Investigation of perceptions of the flood hazard within a drainage basin. Mapping of flood management strategies within a drainage basin.</p>	<p>The management strategies of drainage basins. Management schemes within the Taff Valley Cost –benefit analysis of flood control schemes in York</p>	G4.2

## UNIT G2

### Changing Human Environments

#### Theme 1 – Investigating Population Change

Key Question for investigation	Content	Opportunities to deliver the requirement for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested Examples Reference to 4.1 page 12	Links to other units
1.1 What is demographic change?	<ul style="list-style-type: none"> <li>• The net change in the population size caused by the inputs of births and in-migration and the outputs of death and out-migration.</li> <li>• Global population growth, totals, distribution and density.</li> </ul>	Interpretation of world population maps and graphs.	Useful sources to acquire introductory data are World Bank data and the Population Reference Bureau. ( <a href="http://www.prb.org">www.prb.org</a> ). Census data for own home area.	
1.2. How and why do populations change naturally?	<ul style="list-style-type: none"> <li>• A study of countries at Stages 2-5 of the demographic transition to demonstrate variations in fertility and mortality rates, including infant mortality and life expectancy.</li> </ul>	Research the Internet for current population statistics.	Stage 2: Burkina Faso, Liberia, Somalia. Stage 3: Zimbabwe, Gabon, Namibia. Stage 4: Finland, France, Malta. Stage 5: Germany, Italy, Hungary. ( <a href="http://www.prb.org">www.prb.org</a> 2007)	G3A.4,5,6
1.3 What is the role of migration in population change?	<ul style="list-style-type: none"> <li>• Characteristics of different types of migration.</li> <li>• The economic, social and environmental impacts of migration on exporting and receiving countries/regions.</li> </ul>	A local study of an area of emigration and immigration.	Internal or external, forced or voluntary, duration and age. From North Eastern seaboard to California / Florida. West Africa to Tenerife. Java to East Timor. Retirement to Eastbourne. Permanent from the favelas of Sao Paulo to resettlement plots in Amazonia.	G3A.4,5,6

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
<p>1.4 What are the issues of the migration of refugees and asylum seekers?</p>	<ul style="list-style-type: none"> <li>• The causes and consequences of flows of refugees and asylum seekers into developed economies both from a historical and current dimension.</li> <li>• Housing.</li> <li>• Repatriation.</li> <li>• The attitudes and values of migrants and hosts.</li> <li>• Human rights.</li> </ul>	<p>A review of current news items that frequently feature issues of migration. Research a variety of opinions on migration and reasons why groups or individuals hold those opinions.</p>	<p>Eastern European migrants into the UK. Somali and Sudanese in Cardiff.</p>	<p>G3A.4,5,6</p>
<p>1.5 What are the causes and impacts of changing gender structures?</p>	<ul style="list-style-type: none"> <li>• Changing gender structures in populations as countries pass through the demographic transition.</li> <li>• Social, economic and political impacts of gender structures.</li> </ul>	<p>Research into employment statistics to reveal gender issues.</p>	<p>Population pyramids to demonstrate gender variations. Female emancipation in MEDCs. China's one child policy. Female infanticide in India. IVF and 'designer' babies.</p>	<p>G3A.6</p>
<p>1.6 What are the demographic challenges facing countries?</p>	<ul style="list-style-type: none"> <li>• The demographic causes and effects of ageing societies including issues such as dependency, workforce and pensions.</li> <li>• The issues of high birth rates and high mortality rates – including AIDS.</li> <li>• Policies to alleviate the 'demographic challenges'</li> </ul>	<p>Identifying old age hotspots at local, regional and national scales. Investigating how an ageing society may influence local voting patterns.  Research into aid organisations and charities.</p>	<p>Pro-natalist policies for MEDCs - UK, Italy or Japan.  Birth control policies for LEDCs – Botswana, Swaziland, Mozambique or any appropriate African country.</p>	<p>G3A.4,6</p>

## UNIT G2

### Changing Human Environments

#### Theme 2 – Investigating Settlement Change in MEDCs

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested Examples Reference to 4.1 page 12	Links to other units
2.1 What are the distinctive features of settlements?	<ul style="list-style-type: none"> <li>• The settlement hierarchy/continuum comprising mega-cities, cities, towns, villages and hamlets.</li> <li>• The urban-rural continuum.</li> <li>• The distinctiveness of places - perceptions of places/local areas.</li> </ul>	<p>Classifying settlements in the local area.</p> <p>Perceptions and representations of urban and rural places from maps, images and fieldwork experience.</p>	Any appropriate locations using <a href="http://www.multimap.com">www. multimap.com</a> .	G3B.4
2.2 How does the social and cultural structure of settlements vary and why?	<ul style="list-style-type: none"> <li>• Patterns of intra-urban migration leading to ghettoisation and student districts.</li> <li>• The reasons for counter urbanisation and re-urbanisation.</li> <li>• Social patterns and diversity of life styles that are influenced both by human and physical factors.</li> </ul>	Land use survey to identify the landscape manifestations of social and cultural structures in settlements.	Local villages, towns and cities. Use of small area census data to illustrate concepts of social and cultural areas in cities. Planners, estate agents, financial institutions, aspect, social and cultural changes.	G3B.1 G3B.4 G3A.5
2.3 What are the issues of the inner city?	<ul style="list-style-type: none"> <li>• The reasons why regeneration is considered appropriate including deindustrialisation, dereliction, wasteland and social exclusion and global economic changes.</li> <li>• Evaluation of the success of regeneration schemes in social, economic and environmental terms.</li> </ul>	Field investigation of a regenerated area.	Swansea Valley, Cardiff Docks, London Docklands, Liverpool Docks, Salford. Examples from local towns or cities. Globalisation: the impact of industrialisation in LEDCs e.g. China on British inner cities	G3A.5 G3B.2 G3B.5 G3B.8 G4.4

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
2.4 What are the issues being faced in the CBD?	<ul style="list-style-type: none"> <li>The issues of access, pedestrianisation, entertainment districts, uniformity of retailing, office districts and transport.</li> <li>An understanding of the necessity of maintaining / enhancing a vibrant retailing experience in the face of competition from other retail locations away from the CBD and from the Internet.</li> </ul>	Field study of one CBD.	Any town or city with a recognisable CBD: e.g. Bangor, Birmingham, Cardiff, Leicester, Shrewsbury, Swansea. The impact of Congestion Zones and proposals for future zones.	G3B.5 G3B.8
2.5 How is the rural-urban fringe changing and why?	<ul style="list-style-type: none"> <li>The pressures on green belts from recreation (golf and stadia), retailing and business/ office parks and government housing targets, bypasses and ring road developments.</li> <li>Evaluation of the impact of changes.</li> </ul>	Land use mapping on the urban fringe with reference to current and proposed developments from the local planning department.	Local and /or regional examples e.g. Cribbs Causeway, Bristol; Madejski Stadium, Reading; Culverhouse Cross, Cardiff.	G3B.5 G3B.8
2.6 How are rural settlements changing and why?	<ul style="list-style-type: none"> <li>Perceptions of rurality.</li> <li>The nature of rural settlements and changing rural settlements to include consideration of peripherality, isolation; abandonment; second homes; homes for local employees and retirement; employment; retailing and service provision.</li> <li>The changing social profile of settlements.</li> <li>The social impacts of the changing rural economy.</li> </ul>	Internet research or field investigation of a village and the issues of growth, decline, remoteness and exclusion.	Contrasting villages and reasons for change e.g. areas in Snowdonia, Lake District. Rural areas under pressure from commuting and second home ownership e.g. Welsh Marches, Pembroke, Vale of Glamorgan.	G3.B.4 G3.B.5

## A2 GEOGRAPHY

The course consists of:

### Unit G3 (30%) Contemporary Themes and Research in Geography

#### Section A – Contemporary Themes

##### Candidates to choose from six optional themes

**One from**

1. Extreme environments – Desert **and** Tundra
2. Landforms and their management – **either** Glacial **or** Coastal
3. Climatic hazards

**One from**

4. Development
5. Globalisation
6. Emerging Asia – the geography of **either** India **or** China

This Section will enable the student to follow a balanced course of one selected physical and one selected human environment. Assessment is through essays that are designed to provide stretch and challenge.

**Synoptic assessment**, testing candidates' understanding of the connections between the different elements of the subject and their holistic understanding of the subject, is a requirement of all A level specifications. In the context of Geography this means:

Assessment of candidates' ability to draw on their understanding of the connections between different aspects of the subject represented in the specification and demonstrate their ability to 'think like a geographer'.

In G3 Section A, essay questions will explore key geographical concepts through linkages between physical and human geography, or issues or problems that will require candidates to **draw together and apply relevant integrated knowledge and understanding of the specification**.

This will require higher order skills in constructing answers. Candidates will need to draw on knowledge, understanding and skills from across the specification to inform their understanding of topics, to recognise the linkages between different elements of geography, and to appreciate the broad concepts which underpin their geographical studies.

#### G3 Section B: Individual Research Enquiry

This part of the specification provides the opportunity for the student to carry out individual research and out of classroom work, including fieldwork, on a pre-set topic area based on a range of themes:

Candidates will select **one** Research Investigation Theme from the following list:

- |         |                                 |
|---------|---------------------------------|
| G3.B.1  | Geography of Crime              |
| G3.B.2  | Deprivation                     |
| G3.B.3  | Geography of Disease            |
| G3.B.4  | Environmental Psychology        |
| G3.B.5  | Leisure and Recreation          |
| G3.B.6  | Microclimates                   |
| G3.B.7  | Atmospheric and Water Pollution |
| G3.B.8  | Geography of Retailing          |
| G3.B.9  | Rivers                          |
| G3.B.10 | Small-scale Ecosystems          |

A year in advance, WJEC will issue the **topic areas** to be researched in preparation for the examination. The topic areas may require primary or secondary data investigation depending on the theme selected for assessment.

For example, the topic areas for the January 2010 examination will be issued in December 2008 and for the June 2010 paper in May 2009.

Assessment in the examination will be through a two-part essay selected from **one** of the ten topic areas. This will be a **synoptic assessment task** based on an individual research enquiry that allows candidates to **draw together and apply relevant knowledge, understanding and skills of enquiry**.

One part will examine general research methodology related to the topic area. The second part will examine the findings of the candidate's own research.

There are no prescribed specifications for this Section of the paper. Candidates will be expected to develop their own research on the topic area with tutor guidance. Candidates will be expected to bring knowledge and understanding of the topic area, and the methodology of researching the topic so that they can demonstrate their command of the topic when answering the unseen question. It is anticipated that centres will endeavour to encourage candidates to select their own research topic areas with guidance from their tutors. The selection of a single topic area by a centre is not encouraged because it can lead to stereotypical answers that might not address the Assessment Objectives.

Candidates will be required to answer the question in a separate answer book and this Section will be marked separately. The questions will be given out after one and a half hours when Section A has been handed in.

Candidates should be tutored to establish a suitable investigative structure and sequence of enquiry related to their selected topic area. This should include:

- reading and researching existing literature on the topic area;
- acquiring appropriate data from primary and/or secondary sources;
- understanding what the data shows including the construction of bias tables where appropriate;
- organising the data and evidence in a manner that can be understood and critically evaluated and used to respond to unseen questions on the topic area;
- draw tentative conclusions from the information which may be used to respond to the unseen examination question;
- evaluating the evidence in relation to existing geographical knowledge and understanding.

Some topic areas will depend heavily on secondary research while others will provide the opportunity for some primary data collection.

## UNIT G3 Section A Contemporary Themes and Research in Geography

### Theme 1 – Extreme Environments

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What are the characteristics of a desert environment that make it extreme?	<ul style="list-style-type: none"> <li>• The climatic, biotic and soil characteristics of a desert environment.</li> <li>• The links between climate, biotic and soil characteristics.</li> </ul>	Basic introduction to an ecosystem.		G1.1.1
1.2 How is human activity causing pressures on the desert environment?	<ul style="list-style-type: none"> <li>• The threats that are posed by               <ol style="list-style-type: none"> <li>i. population growth;</li> <li>ii. mineral exploitation;</li> <li>iii. farming;</li> <li>iv. tourism.</li> </ol> </li> <li>• The positive and negative outcomes of human activity.</li> </ul>	Internet research – Google Earth images.	Mineral exploitation in the Australian deserts. Desertification in the Sahel. Water use, salinisation and sea water penetration. Tourism in North Africa or Dubai	G1.1.2
1.3 What are the strategies that can be used to manage human activity in deserts?	<ul style="list-style-type: none"> <li>• Strategies that attempt to               <ol style="list-style-type: none"> <li>i. conserve the desert environment;</li> <li>ii. alleviate the impacts human activity;</li> <li>iii. control the use of the desert environment;</li> <li>iv. monitor the impacts of human activity.</li> </ol> </li> <li>• The role of local, national and international groups in the management of the desert environment.</li> </ul>	Case study research to investigate the methods used in a variety of global locations.	Development of National Parks. – Western USA Use of windbreaks and 'magic stones'. Darfur and Mali as illustrations of conflicts to be resolved over desert use.	G1.1.5

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 What are the characteristics of the arctic and alpine tundra environment that make it extreme?	<ul style="list-style-type: none"> <li>• The climatic, biotic and soil characteristics of a tundra environment.</li> <li>• The links between climate, biotic and soil characteristics.</li> </ul>	<p>Virtual fieldwork.</p> <p>Vegetation changes up a slope in North Wales.</p>	<p>Altitudinal zonation of plants.</p>	G1.1.1
1.5 How is human activity causing pressures on the alpine tundra environment?	<ul style="list-style-type: none"> <li>• The threats that are posed by                             <ol style="list-style-type: none"> <li>i. mineral exploitation;</li> <li>ii. airborne pollution;</li> <li>iii. global warming;</li> <li>iv. tourism.</li> </ol> </li> <li>• The positive and negative outcomes of human activity.</li> </ul>	<p>Research on regional threats to the tundra.</p> <p>Use of travel brochures to assess threats to Greenland or northern Scandinavia.</p>	<p>Alaska North Slope.</p> <p>Tourism in Churchill area.</p>	G1.1.4
1.6 What are the strategies that can be used to manage human activity in alpine tundra environments?	<ul style="list-style-type: none"> <li>• Strategies that attempt to                             <ol style="list-style-type: none"> <li>i. conserve the tundra environment;</li> <li>ii. alleviate the impacts human activity;</li> <li>iii. control the use of the tundra environment;</li> <li>iv. monitor the impacts of human activity.</li> </ol> </li> <li>• The role of local, national and international groups in the management of the tundra environment.</li> </ul>		<p>Alaska.</p> <p>Strategies to control recreation in the Alps.</p>	G1.1.5

## UNIT G3 Section A Contemporary Themes and Research in Geography

### Theme 2 - Landforms and their Management – Glacial or Coastal Either, Theme 2(a) - Glacial Landforms and their Management

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What is a glacial system and what are the dynamics of glacial environments?	<ul style="list-style-type: none"> <li>• Glacier mass balance.</li> <li>• The impact of climatic change on glacier budgets.</li> <li>• The relationship between climatic fluctuations and the geomorphological work done by ice.</li> <li>• Cold and warm based glaciers, their types and rates of movement.</li> </ul>	Investigation of glacial advance during the Pleistocene or the 'Little Ice Age' and glacial retreat associated with global warming.		G1.1.2
1.2 What are the processes of glacial weathering and erosion and what are the resultant landforms?	<ul style="list-style-type: none"> <li>• Weathering and erosion in the glacial zone.</li> <li>• Landforms of glacial erosion to include macro-scale, meso-scale and micro-scale landforms.</li> </ul>	Field visit to area(s) of glacial erosion to study erosional landforms.	Snowdonia, Lake District, Scottish Highlands.	
1.3 What are the processes of glacial transport and deposition and what are the resultant landforms?	<ul style="list-style-type: none"> <li>• Transport and deposition in the glacial zone.</li> <li>• Landforms of glacial and fluvioglacial deposition.</li> </ul>	Field visit to areas of glacial deposition to study depositional landforms.	Southern Scotland, Vale of Eden, north west England and Co. Mayo, north west Ireland.	
1.4 What are the effects of deglaciation on the landscape?	<ul style="list-style-type: none"> <li>• The effects of deglaciation on the landscape to include periglacial, fluvial and sub-aerial processes.</li> </ul>	Field visit to glacial area(s) affected by periglacial processes.	Solifluction deposits Rhossili Down, Gower. Patterned ground, Cairngorms. Modified glacial valley profiles, Neath and Swansea Valleys.	

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
<p>1.5 Why are glacial environments important?</p>	<ul style="list-style-type: none"> <li>• The impact of glacial processes and landforms on human activity.</li> <li>• The impact of human activities on glacial environments.</li> <li>• Opportunities and limitations for human activity presented by the shift of the permafrost limit.</li> </ul>	<p>Study of impact of avalanches.</p> <p>Study of tourism's impact on Snowdonia or Cairngorms and the shrinkage of glaciers due to global warming.</p>	<p>Cairngorms, Aspen, Zermatt, Cormier</p> <p>Alaska, Siberia.</p>	<p>G1.1.4</p>
<p>1.6 What are the methods used to manage glacial environments and how successful are these strategies?</p>	<ul style="list-style-type: none"> <li>• Management of the impacts of glacial processes and landforms on human activity.</li> <li>• Management of the impacts of human activities on glacial environments.</li> <li>• Assessment of the success of strategies for managing either glacial processes/landforms or human activities.</li> </ul>	<p>Investigation into 'controlled' avalanches, snow-retention structures and avalanche-deflection structures.</p> <p>Study of impact of shrinking glaciers on year round skiing.</p>	<p>Verbier – covering glaciers.</p>	

## UNIT G3 Section A Contemporary Themes and Research in Geography

### Or, Theme 2(b) - Coastal Landforms and their Management

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What is a coastal system and what are the dynamics of coastal environments?	<ul style="list-style-type: none"> <li>• The coastal system.</li> <li>• Coastal sediment cells.</li> <li>• The state of dynamic equilibrium in the coastal system.</li> <li>• Wave types and characteristics and their variations over time and space.</li> </ul>		<p>These could be studied with detailed reference to one sediment cell.</p> <p>Holderness coastline.</p>	
1.2 What are the processes of coastal erosion and what are the resultant landforms?	<ul style="list-style-type: none"> <li>• Weathering and erosion in the coastal zone.</li> <li>• Landforms of coastal erosion.</li> <li>• Sea level rises and erosion.</li> </ul>	Field study of a stretch of coast to study erosional landforms.	These could be studied using specific examples of erosional landforms e.g. Holderness coastline, Isle of Purbeck and Jurassic Coast.	G1 1.4
1.3 What are the processes of marine transport and deposition and what are the resultant landforms?	<ul style="list-style-type: none"> <li>• Transport and deposition in the coastal zone.</li> <li>• Landforms of coastal deposition.</li> <li>• Sea level rises and deposition.</li> </ul>	Field study of a stretch of coast to study depositional landforms.	These could be studied using specific examples of depositional landforms. e.g. Dungeness, Essex marshes,	
1.4 What is the role of geology in the development of coastal landforms?	<ul style="list-style-type: none"> <li>• Lithological controls on the development of coastal landforms.</li> <li>• Structural controls on the development of coastal landforms.</li> </ul>	Field study of a stretch of coast to study geological controls on the development of landforms.	Purbeck coast (discordant coastline). Lulworth Cove (concordant coastline).	

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.5 Why do coastal environments need to be managed?	<ul style="list-style-type: none"> <li>• The impact of coastal processes and landforms on human activity.</li> <li>• The impact of human activities on coastal environments.</li> </ul>	Field study of human action on beaches, dunes, marsh destruction and offshore dredging.	Port developments such as Dibden Bay, Southampton. The Wash. Newport Levels. Holderness coastline. Hallsands, Devon.	
1.6 What are the methods used to manage coastal environments and how successful are these strategies?	<ul style="list-style-type: none"> <li>• Management of the impacts of coastal processes and landforms on human activity.</li> <li>• Management of the impacts of human activities on coastal environments.</li> <li>• Assessment of the success of strategies for managing either coastal processes/landforms <b>or</b> human activities.</li> </ul>	Study of SSSIs and coastal reserves - RAMSAR sites and National Parks.	Flood defences, Netherlands. Pembrokeshire National Park.	

## UNIT G3 Section A

### Contemporary Themes and Research in Geography

#### Theme 3: Climatic Hazards

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 How does global atmospheric circulation give rise to global climatic zones?	<ul style="list-style-type: none"> <li>• Atmospheric movement.</li> <li>• The tri-cellular model: the Hadley, Ferrel and Polar cells.</li> <li>• The patterns of winds and the world's pressure belts.</li> </ul>		G1 1.1	
1.2 Why do seasonal and periodic variations of climate occur?	<ul style="list-style-type: none"> <li>• Seasonal variations in the position of the Inter-Tropical Convergence Zone (ITCZ), the associated migration of the heat equator and movement of wind and pressure belts, the effects of warm and cool ocean currents and temperature differences between continental land masses and oceans.</li> <li>• Seasonal changes in precipitation, temperature, winds and pressure levels.</li> <li>• Periodic changes in climate.</li> </ul>	<p>NOAA website maps.</p> <p>Analysis and interpretation of graphs showing cycles of temperature variation over short and long term time scales.</p>	<p>ITCZ in West Africa or Zimbabwe.</p> <p>The El Nino/La Nina cycle in the Pacific.</p>	G1 1.1/2
1.3 What are the world's major climates?	<ul style="list-style-type: none"> <li>• The main climatic types in tropical regions.</li> <li>• The main climatic types in temperate regions.</li> <li>• Climatic types display distinctive characteristics of temperature, precipitation, winds and pressure.</li> </ul>	<p>Analysis of climatic data.</p>	<p>Equatorial, savanna, monsoon and hot desert climates.</p> <p>West margin European, continental interior and east margin maritime climates.</p> <p>These could be studied with detailed reference to one climatic type chosen from either a tropical or a temperate region.</p>	G1.1.1

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 What are the causes of low-pressure and high pressure hazards?	<ul style="list-style-type: none"> <li>The role of jet streams and Rossby waves in controlling the formation of weather systems.</li> <li>Low pressure system formation and associated hazards of storms, tropical cyclones and tornadoes.</li> <li>High pressure system formation and associated hazards of drought in tropical climates or drought, frost and fog in temperate climates.</li> </ul>	<p>Internet research to find weather maps to illustrate appropriate conditions.</p>	<p>Hurricane Katrina (2005). 'Tornado Alley', Great Plains, USA. Great Storm (1987). Drought in northern Kenya (2006). Drought in S E England.</p>	
1.5 What are the inter-relationships between human activity and climate?	<ul style="list-style-type: none"> <li>The short-term and long-term effects of low-pressure climatic hazards on human activity.</li> <li>The short-term and long-term effects of high-pressure climatic hazards on human activity.</li> <li>The impacts of human activity on climate in both the short and long term.</li> </ul>	<p>Research into the short and long term effects of a Hurricane event using data from the National Hurricane Centre and NOAA. Research into the short and long term effects of drought.</p>	<p>Hurricane Katrina (2005). 'Tornado Alley', Great Plains, USA. Great Storm (1987). Drought in northern Kenya (2006). Drought in S E England. Smog, atmospheric pollution, global warming, drought and ozone destruction. Centres are encouraged to use recent or current examples.</p>	G1.1.4
1.6 What strategies are used to reduce the impact of climatic hazards ?	<ul style="list-style-type: none"> <li>Strategies to reduce the impact of                             <ul style="list-style-type: none"> <li>(i) low-pressure climatic hazards;</li> <li>(ii) high-pressure climatic hazards;</li> <li>(iii) human activity on climate.</li> </ul> </li> <li>Assessment of the success of strategies for reducing low- pressure <b>or</b> high pressure climatic hazards.</li> </ul>	<p>Investigation into legislation at the national and international (Kyoto Treaty, Montreal Protocol) scales to control atmospheric pollution and emissions. What is their contribution to reducing emissions?</p>	<p>Study of the reliability of forecasting – The Great Storm (1987), Hurricane Katrina (2005). Drought in Kenya (2006) and Zimbabwe (2002)</p>	G1.1.4-6.

## UNIT G3 Section A Contemporary Themes and Research in Geography

### Theme 4 - Development

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What is Development and what is the Development Gap?	<ul style="list-style-type: none"> <li>• Changing definitions of development.</li> <li>• Conventional development divides. The development gap/continuum.</li> </ul>	<p>Contested meanings of development.</p> <p>Examination of the students' roles as global citizens and their potential contribution to closing the development gap.</p>	<p>Development statistics for contrasting countries such as the USA and Ethiopia.</p> <p>The 'First', 'Second' and 'Third' Worlds.</p> <p>Brandt's 'North-South' divide.</p> <p>MEDCs and LEDCs.</p>	G2.1.2
1.2 How can development be measured and how useful are these measures?	<ul style="list-style-type: none"> <li>• Simple and composite indicators used to measure development.</li> <li>• Qualitative indicators.</li> <li>• Limitations of indicators.</li> </ul>	<p><a href="http://www.undp.org">www.undp.org</a> for development statistics.</p>	<p>Economic, social and demographic indicators.</p> <p>Freedom, security, sustainability and the plight of indigenous people such as Aborigines, Yanomami, Bushmen of Kalahari.</p>	G2.1.2
1.3 What factors have led to contemporary differences in development?	<ul style="list-style-type: none"> <li>• Physical, economic, social, political and cultural factors affecting the rate and nature of development.</li> <li>• The globalisation of economic activity and the rise of NICs/RICs and oil rich countries.</li> </ul>	<p>Research into why Africa is the least developed continent.</p>	<p>Rostow's model and levels of development.</p> <p>Frank's Dependency Theory.</p> <p>Singapore, Malaysia.</p> <p>South Korea, Saudi Arabia.</p>	G3A.5 G3A.6

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 How and why are development patterns changing?	<ul style="list-style-type: none"> <li>• Contemporary global development divisions.</li> <li>• Development issues in a changing world to include sustainable development and the status of women.</li> <li>• Economic change resulting in differentiation between different groups of countries.</li> </ul>	World Bank data.	The World Bank Classification. Issues of sustainable development in China and the USA. Women in sub-Saharan Africa. A case study of rapid economic change in Asia	G4 G3A.5 G3A.6
1.5 What hinders the closing of the development gap?	<ul style="list-style-type: none"> <li>• The burden of Third World Debt.</li> <li>• Trade blocs.</li> <li>• Social constraints and cultural barriers.</li> </ul>	Research of the effects of debt on one named country. Research on a trade bloc. Research into the lack of empowerment of some groups.	Kenya, Uganda, Tanzania. EU, ASEAN or NAFTA. Women in sub-Saharan African countries	
1.6 What types of strategies exist for reducing the development gap and how effective are these strategies?	<ul style="list-style-type: none"> <li>• Different types of aid: bilateral, multilateral and emergency aid.</li> <li>• Free trade and fair trade.</li> <li>• Foreign direct investment and the role of TNCs.</li> <li>• Debt rescheduling, debt abolition and debt for conservation swaps.</li> </ul>	Investigation of the types of aid provided by one NGO such as Oxfam, CAFOD, Action Aid or The Red Cross.  UN Millennium Development Goals. UN Global Compact 2000 New Partnership for Africa (NEPAD) 2001 & Commission for Africa (2004), Make Poverty History.	Comparison of 'bottom up' approaches from NGOs such as Oxfam, CAFOD with 'top down' approaches by governments and international organisations. WTO talks. Case of sugar or coffee or cotton or bananas. Example of TNC impacts such as Unilever, Nike, Thomson. Poverty Reduction Strategy Programmes (PRSPs) and the HIPC initiative. Kenya, Vietnam. The effect of these strategies could be studied through a case study of the effects of aid, FDI, trading reforms or initiatives to reduce debt on one named country.	G3 A.5

## UNIT G3 Section A

### Contemporary Themes and Research in Geography

#### Theme 5 - Globalisation

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What is globalisation and global shift?	<ul style="list-style-type: none"> <li>• Concepts of cultural, economic, environmental and political globalisation.</li> <li>• The evolution of globalisation – stages in its development.</li> <li>• The global shift as the movement of economic activities.</li> </ul>	Examination of students' lifestyles and their concepts of global dependence.	Introduce Rostow and core-periphery models. Historical context	
1.2 What factors have led to current economic globalisation?	<ul style="list-style-type: none"> <li>• Financial factors such as investment.</li> <li>• Computer technologies.</li> <li>• Transport and communication technologies.</li> <li>• The role of the World Trade Organisation.</li> <li>• Trade Blocs</li> </ul>		A time line to examine factors through time.  EU, ASEAN, NAFTA.	G2 1.4, 1.5
1.3 How have companies globalised and shifted locations?	<ul style="list-style-type: none"> <li>• Global companies - TNCs/MNCs.</li> <li>• The patterns of global manufacturing shift.</li> <li>• Location factors for the global shift.</li> <li>• Service sector shifts.</li> <li>• The impact of outsourcing and offshoring</li> </ul>	Examination of TNCs in a region and reasons for their location. Local job losses and where jobs went.	FT500. Manufacturing TNC e.g. Dell, VW, Toyota. Service companies e.g. HSBC, CSFB. Case studies of outsourcing and offshoring on exporting and importing regions/ societies.	G4
1.4 Who wins from the global shift and globalisation?	<ul style="list-style-type: none"> <li>• Global development indicators that identify NICs and RICs.</li> <li>• The rise of the NICs/ Asian Tigers.</li> <li>• Benefits of being an NIC, and benefits to investing countries.</li> <li>• The rising superpowers India and China.</li> </ul>	Investigation into where students' clothing and electronic goods are made.	Malaysia, Singapore, South Korea, Taiwan, Thailand. Detailed examples of industrialising regions - Shanghai as an industrial region and Bangalore as a service industry region.	G3A.4 G3A.6

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.5 Who loses from global shift and globalisation?	<ul style="list-style-type: none"> <li>• The negative effects of being an NIC socially and environmentally.</li> <li>• Factors leading to deindustrialisation.</li>   <li>• Changing employment in MEDCs.</li> <li>• The environmental effects of globalisation.</li> </ul>	Field investigation of local areas of derelict land.	Pollution in Taiwan  Case studies of regions of deindustrialisation e.g. Ruhr, Saarland, South Wales, Appalachia.  M4 corridor  Pollution case studies -Bhopal, Shanghai.	G4.4
1.6 What are the causes and effects of political and cultural globalisation?	<ul style="list-style-type: none"> <li>• Empires and super power status.</li> <li>• Westernisation.</li> <li>• The rise and re-emergence of other cultures.</li> <li>• Cultural integration.</li> <li>• Globalisation and the Development Gap.</li> </ul>	Field study of US influence on a High Street. Spatial evidence of the cultural shift.	Brief historical overview. Coca Cola, MacDonald's. Influence of minorities on places – expatriate areas, retailing press, churches and mosques.	G2.1.3,4 G3A.4

## UNIT G3 Section A Contemporary Themes and Research in Geography

### Theme 6 – Emerging Asia Either, Theme 6(a) - China

Key question for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What are the main physical and demographic characteristics of the country of China?	<ul style="list-style-type: none"> <li>• A brief overview at the national scale of patterns of               <ul style="list-style-type: none"> <li>(i) climate;</li> <li>(ii) relief, drainage and water availability;</li> <li>(iii) natural resources;</li> <li>(iv) population distribution;</li> <li>(v) regional differences in levels of development.</li> </ul> </li> </ul>	The challenges created by scale in China - the size of the physical landscape and the enormity of all data values. Analysis of national development indices.		
1.2 Why and how is the economy changing?	<ul style="list-style-type: none"> <li>• Changes in economic policies.</li> <li>• New industries in the changing economy.</li> <li>• Factors affecting the growth of new industries and the contrast between coastal areas and the interior.</li> <li>• Impact of the changing age structure on the economy.</li> </ul>	Research current issues in the business world that affect China from sources such as The Economist, China Daily, The Financial Times.	'Open Door' modernisation of the economy. Government policies such as SEZs and foreign investment. Impacts of a youthful population on the labour market and the emerging problem of the ageing population.	G2.1.5,6
1.3 What are the economic and social challenges facing rural communities?	<ul style="list-style-type: none"> <li>• Changes in the organisation of agriculture and rural economic activities.</li> <li>• The effect of population policies in rural areas.</li> <li>• The impacts and challenges for rural areas of migration.</li> <li>• Social welfare services such as health and education.</li> <li>• Sustainable development.</li> </ul>	Research the issues of food security in China.	Privatisation of agriculture and growth of TVEs (Town and Village Enterprises). Government, state and local policies and influence on industrial development.	G4.1

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 What are the economic and social challenges facing urban communities?	<ul style="list-style-type: none"> <li>• Changes in the organisation of economic activities in urban areas.</li> <li>• Migration to urban areas and increasing social inequality.</li> <li>• Social welfare services such as health, education and housing.</li> <li>• Increasing rural-urban inequalities.</li> <li>• Sustainable development in towns and cities.</li> </ul>	<p>Investigate the scale of the problems facing the Chinese authorities.</p> <p>Research a case study of planning in Beijing.</p>	<p>A case study of Beijing to illustrate these issues.</p> <p>The current challenges of developing the Interior such as Tibet.</p>	G4.4
1.5 What are the effects of globalisation on China?	<ul style="list-style-type: none"> <li>• The role of foreign firms in changing and developing the economy.</li> <li>• The importance of exports and the role of the WTO.</li> <li>• The economic and political impacts of China's trade with the rest of the world.</li> </ul>	<p>Research the relationships between China and Africa, or one African nation such as Sudan, Angola, and Kenya.</p>	<p>Government policies to encourage rapid economic growth.</p> <p>Foreign firms forcing change in manufacturing.</p> <p>Accession to the WTO 2001.</p> <p>Chinese overseas investment e.g. in Africa.</p>	G3A,4,5
1.6 What are the environmental challenges and solutions facing China?	<ul style="list-style-type: none"> <li>• The causes and consequences of               <ul style="list-style-type: none"> <li>(i) soil erosion;</li> <li>(ii) industrial pollution;</li> <li>(iii) sustainable use of water resources.;</li> <li>(iv) the need for energy supplies.</li> </ul> </li> <li>• The balance between economic growth and sustainable development.</li> </ul>	<p>Research one controversial environmental issue or location.</p>	<p>Soil erosion in the loess plateau e.g. in Shaanxi or Hunan Provinces.</p> <p>Industrial pollution in Beijing.</p> <p>River pollution along the Huai River.</p> <p>Major water projects e.g. Three Gorges, South-North Water Transfer Project.</p> <p>River diversion schemes such as the Brahmaputra or the Mekong river headwaters.</p>	G4.2,3

**Or, Theme 6b – India**

Key questions for investigation	Content	Opportunities for research and out of classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What are the main physical and demographic characteristics of the country of India?	<ul style="list-style-type: none"> <li>A brief overview at the national scale of patterns of                             <ul style="list-style-type: none"> <li>(i) climate;</li> <li>(ii) relief, drainage and water availability;</li> <li>(iii) natural resources;</li> <li>(iv) population distribution;</li> <li>(v) differences in levels of development between states.</li> </ul> </li> </ul>	<p>An appreciation of India's demographics and the relative size of rural and urban populations. An awareness of the acute levels of poverty. Analysis of national development indices.</p>	<p>Contrasts e.g. between Punjab, Haryana and Uttar Pradesh.</p>	G4
1.2 Why and how is the economy changing?	<ul style="list-style-type: none"> <li>Changes in traditional agriculture.</li> <li>The role of agribusiness.</li> <li>The growth of service and financial industries.</li> <li>Factors affecting the growth of manufacturing industries.</li> <li>The need for major developments in infrastructure throughout India.</li> </ul>	<p>Research current issues in the business world that affect the country from sources such as The Economist, The Financial Times.</p>	<p>Large agribusinesses such as Monsanto – Mahyco. Technology-based service and financial industries localised in cities such as Delhi, Bangalore, Chennai, Kolkata e.g. the Bangalore software industry. Manufacturing industries such as steel and pharmaceuticals. Development of SEZs to attract foreign direct investment e.g. Mumbai, Gopalpur. .</p>	G4.1
1.3 What are the social and economic challenges facing rural communities?	<ul style="list-style-type: none"> <li>The traditional socioeconomic characteristics of rural India.</li> <li>The impacts of migration.</li> <li>Social welfare services in rural areas.</li> <li>Food production and combating hunger after the Green Revolution.</li> <li>The relationship between population growth, hunger and sustainability in rural India.</li> </ul>	<p>Research the issues of food security / famine / hunger in India.</p>	<p>Social, religious and cultural groups such as Dalits and Brahmans Policies to address the sustainability of population-resource relationships.</p>	G2.1,3,4 G4.1

Key Question for investigation	Content	Opportunities to deliver the requirements for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.4 What are the economic and social challenges facing urban communities?	<ul style="list-style-type: none"> <li>• Changes in the type of economic activities.</li> <li>• Migration to urban areas and the inter-dependence of rural and urban populations.</li> <li>• Delivering modern infrastructure and social welfare services.</li> <li>• Increasing inequalities within urban areas; the informal sector and urban poverty.</li> <li>• Sustainable development in cities.</li> </ul>	<p>Research case study of planning in Delhi, Kolkata, Mumbai</p>	<p>The rise of Bollywood and global consumerism. Case study of a major city e.g. Delhi, Kolkata, Mumbai, Bangalore. Prestige projects e.g. Commonwealth Games. Strategies for sustainable development in Delhi or Mumbai.</p>	
1.5 What are the effects of globalisation on India?	<ul style="list-style-type: none"> <li>• Conflicting views of the benefits of globalisation for India.</li> <li>• The impacts of global trade on the national economy.</li> <li>• The growth of Indian TNCs.</li> <li>• The effects of the 1991 debt crisis and structural adjustment.</li> <li>• The impact of globalisation on India's poor.</li> </ul>		<p>Overseas investment by Indian TNCs e.g. in oil, steel, pharmaceuticals and telecommunications.</p>	G3A.4,5
1.6 What are the environmental challenges and solutions facing India?	<ul style="list-style-type: none"> <li>• The causes and consequences of               <ul style="list-style-type: none"> <li>(i) deforestation;</li> <li>(ii) soil erosion;</li> <li>(iii) industrial pollution in major cities;</li> <li>(iv) sustainable use of water resources.</li> <li>(v) the need for energy supplies.</li> </ul> </li> <li>• The balance between economic growth and sustainable development.</li> </ul>	<p>Research one controversial environmental issue or location.</p>	<p>The water crisis of Delhi and the Yamuna River. A case study of the Ganga Action Plan. The impact of citizen's groups (People's Movements) in challenging environmental degradation and urban development such as Sardar Sarovar project and the Chipko movement.</p>	G4.2-4

### **G3 Section B: Individual Research Enquiry**

This part of the specification provides the opportunity for the student to carry out individual research and out of classroom work, including fieldwork on a pre-set title based on a range of prescribed topics:

Candidates will select **one** Research Investigation Theme from the following list and base their investigation on the pre-release theme (page 25):

G3.B.1	Geography of Crime
G3.B.2	Deprivation
G3.B.3	Geography of Disease
G3.B.4	Environmental Psychology
G3.B.5	Leisure and Recreation
G3.B.6	Microclimates
G3.B.7	Atmospheric and Water Pollution
G3.B.8	Geography of Retailing
G3.B.9	Rivers
G3.B.10	Small scale Ecosystems

Examples of the **topic areas** for research based on the above **themes**.

G3.B.1	Patterns of criminal activity
G3.B.2	Deprivation in MEDCs
G3.B.3	Physical environments and disease
G3.B.4	Age and environmental perception
G3.B.5	Social benefits of an area of leisure
G3.B.6	Rural microclimates
G3.B.7	Managing pollution incidents
G3.B.8	Retailing in the urban core
G3.B.9	Managing discharge
G3.B.10	Heathlands and moorlands

## Unit G4

### Sustainability

**Synoptic assessment is a requirement of both A2 units. In G4 the decision making/problem solving/issues evaluation exercises require candidates to draw on relevant knowledge, understanding and skills of the specification to tackle a decision, problem or issue that is new to them. The final question will provide 'stretch and challenge'.**

A Resource Folder will be released ahead of the examination in early December and May. The material in the booklet will be drawn from a combination of the four themes in G4. Guidance on additional investigation will be given with these materials. Further study may consist of giving greater depth to materials provided, or researching more widely, making comparisons with other examples.

The G4 question paper will be marked out of 80. Questions in Section A will be set on ideas indicated by the resource booklet, accounting for 55 marks. There will be opportunities for knowledge and understanding from other areas of G4 that candidates have studied, besides those included in the resource booklet, to be used in answering questions in this section.

In Section B, one question will be set (25 marks) that does not rely so heavily on the resource booklet. This question will expect candidates to draw on knowledge, understanding and application from not only G4 but also from other units that have been studied at both AS and A2 Geography to help in formulating an answer.

The major focus in all the four themes in G4 is sustainability. There are many definitions of sustainability. Two well-known ones are:

1. The Brundtland Commission, that stated it is 'Development which fulfils the needs of the present generation without jeopardising the possibilities of future generations to fulfil their needs.'
2. The Countryside Commission have expanded it to 'Sustainable development means meeting four objectives, at the same time, in the UK and in the world as a whole. These are:
  - social progress which recognises the needs of everyone;
  - effective protection of the environment;
  - prudent use of natural resources; and
  - maintenance of high and stable levels of economic growth and employment.'

These and other definitions will all allow candidates to gain full credit.

Resources chosen for the resource booklet will highlight issues, whilst giving information that can be used in answering questions. Some initial questions, carrying a relatively low mark load, may help candidates focus on information related to issues. Later questions will focus on the issues themselves, possible solutions and encourage evaluation of them. The recognition of a variety of attitudes and values of individuals, governments, pressure groups and other interest groups will contribute a good deal towards achieving good evaluation.

It is expected that teaching each of the themes will often focus on issues. The opportunities for study given under 'Suggested examples' illustrate extreme cases related to the content. None are mandatory, and many other alternatives would serve the purpose. It is expected that for each theme, one well-chosen case study, along with one or more contrasting examples to generate discussion, could draw together all the relevant material to cover all the key questions of the theme.

## UNIT G4 Sustainability

### Theme 1 Sustainable Food Supply

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
1.1 What is the global pattern of food consumption?	<ul style="list-style-type: none"> <li>• Global pattern of low calorie intake.</li> <li>• Pattern of high food consumption.</li> </ul>	Collection of information on calorie intake of a range of local people	Famine and its consequences in Wajir district of Kenya 2006. Institute of Medicine Report on obesity in USA September 2006.	
1.2 What factors promote or hinder food production?	<ul style="list-style-type: none"> <li>• Physical.</li> <li>• Economic.</li> <li>• Political.</li> <li>• Technological.</li> </ul>	Visit to local farm - what production is possible? Research on one commodity traded internationally, e.g. coffee.	Rice growing in Kedah Plain, Malaysia. Soil degradation in south-west Zimbabwe. Supermarket-farmer relationships. EU common agricultural policy. WTO discussions on agriculture. Restrictions on agriculture in National Parks.	G1.1.1 G3A.1
1.3 Can food production be sustainably increased?	<ul style="list-style-type: none"> <li>• Hydroponics and aeroponics.</li> <li>• The Blue Revolution.</li> <li>• Genetic modification.</li> <li>• The Second Green Revolution.</li> </ul>	Extent of poly-tunnel use in local agriculture.	Aerogreen Technology – soil-less farm Singapore. Prawn farming, Supanburi, Thailand. GM debate, e.g. Monsanto v FOE. Manmohan Singh's 7 point plan for India's agriculture.	
1.4 Can a sustainable food supply be maintained in the future?	<ul style="list-style-type: none"> <li>• Draw together the above ideas to critically assess attitudes towards the sustainability of food supplies.</li> </ul>		Mozambique - to cover all major points.	

## UNIT 4 Sustainability

### Theme 2 Sustainable Water Supply

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
2.1 What physical factors determine the supply of water?	<ul style="list-style-type: none"> <li>• Climate.</li> <li>• Relief.</li> <li>• Geology.</li> </ul>	Study of variation in annual rainfall at local station. Visit an installation of the local water utility.	Monthly rainfall patterns of contrasting areas. Great Salt Lake. London Basin aquifer. Norway rainfall and storage.	G1.1.1 G1.2.1 G3A.3
2.2 How do human activities influence water supply and demand?	<ul style="list-style-type: none"> <li>• Demographic.</li> <li>• Economic.</li> </ul>	Analysis of literature on water usage by local utility.	Trends in water demand in SE England - domestic, industrial. Competing uses in Murray-Darling Basin and consequences for amount and quality of water.	
2.3 How can water supply and demand be managed sustainably?	<ul style="list-style-type: none"> <li>• New storage capacity.</li> <li>• Water transfers.</li> <li>• Groundwater sources.</li> <li>• Desalination.</li> <li>• Recycling.</li> <li>• 'Grey' water.</li> <li>• Reducing consumption.</li> </ul>	Research on one major dam project in the world, e.g. Three Gorges. Information on water treatment by local utility.	Problems of Itaipu dam. Turkey and Syria disputes over Euphrates. Saltwater intrusion into groundwater on Norfolk coast. Desalination in Saudi Arabia. NEWater in Singapore. Grey Water Recovery System. Anglian Water's water efficiency plan.	
2.4 Can sustainable water supplies be maintained in the future?	<ul style="list-style-type: none"> <li>• Draw together above ideas to critically assess attitudes towards the sustainability of water supplies.</li> </ul>		California - to cover all major points.	

## UNIT 4 Sustainability

### Theme 3 Sustainable Energy

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
3.1 What problems are associated with the supply of energy?	<ul style="list-style-type: none"> <li>• Economic.</li> <li>• Environmental,</li> <li>• Political,</li> <li>• Technological.</li> </ul>	Air pollution via lichen on gravestones.	Carbon footprints. Study of SO <sub>2</sub> role in global warming and acid rain. Brazil biofuels. Nuclear waste disposal options. Problems arising from Itaipu dam. Wind farm protest lobby.	G1.1.3
3.2 How and why is the demand for energy changing?	<ul style="list-style-type: none"> <li>• Economic.</li> <li>• Social.</li> <li>• Technological.</li> </ul>	Research on one aspect of economic growth of either India or China.	Growth of air transport 1980 - 2005. Growth of energy production in China 1990 - 2005. Range of new energy-using devices.	G3A.4 G3A.5
3.3 How can the demand for energy be managed sustainably?	<ul style="list-style-type: none"> <li>• Alternative sources.</li> <li>• Greater efficiency.</li> <li>• Demand reduction.</li> </ul>	Survey of energy efficiency ratings of white goods in electrical stores.	Eddington Report. Carbon trading. International co-operation. Scroby Sands wind farm. LCD v cathode ray energy demand. Energy efficiency ratings. Calculation of energy saving of 5 people each travelling 100km to a meeting v. a video conference.	
3.4 Can a sustainable energy supply be maintained in the future?	<ul style="list-style-type: none"> <li>• Draw together above ideas to critically assess attitudes towards the sustainability of energy supplies.</li> </ul>		Sweden - to cover all major points.	

## UNIT G4 Sustainability

### Theme 4 Sustainable Cities

Key Question for investigation	Content	Opportunities for research and out-of-classroom work including fieldwork Reference to 4.1 page 12	Suggested examples Reference to 4.1 page 12	Links to other units
4.1 How can cities throughout the world be classified?	<ul style="list-style-type: none"> <li>• Size.</li> <li>• Rate of growth.</li> <li>• Level of development.</li> </ul>	Visits to areas that are undergoing or have undergone re-development.	<p>Old established MEDC cities - redevelopment of La Defense business district in Paris.</p> <p>Modern NIC cities - Singapore's One North biomedical park.</p> <p>Rapidly-expanding LEDC cities - Lagos industry and housing.</p> <p>New forms of cities - post-modern cities, e.g. Los Angeles; 'Edge cities', e.g. Tyson's Corner.</p>	G2.2.3
4.2 What pressures currently confront cities and how are they changing them?	<ul style="list-style-type: none"> <li>• Transport and communications.</li> <li>• Disparities in wealth.</li> <li>• Areal extent.</li> <li>• Quality of environment.</li> </ul>	Measuring environmental quality across one large urban area. Research on contrasts of waste disposal, LEDC v. MEDC city.	<p>Bangkok traffic congestion.</p> <p>Wireless Norwich.</p> <p>Extremes of wealth Rio de Janeiro.</p> <p>London green belt.</p> <p>Green city concerns.</p>	G2.2.3
4.3 What attempts have been made to find sustainable solutions to problems faced by cities?	<p>Strategies to deal with</p> <ul style="list-style-type: none"> <li>• transport and communications;</li> <li>• disparities in wealth;</li> <li>• areal extent;</li> <li>• quality of environment.</li> </ul>	Research using World Urbanisation Prospects (2001), UN Population Division.	<p>Curitiba public transport.</p> <p>Housing development in Lagos.</p> <p>Seoul new towns and new industrial locations.</p> <p>Re-development and re-invention of Manchester.</p> <p>MICE in Singapore.</p>	G2.2.4
4.4 How sustainable are cities?	<ul style="list-style-type: none"> <li>• Draw together above ideas to critically assess attitudes towards the sustainability of cities.</li> </ul>		Shanghai - to cover all major points.	

## 5 SCHEME OF ASSESSMENT

AS and A level qualifications are available to candidates following this specification.

### AS

The AS is the first half of an A level course. It will contribute 50% of the total A level marks. Candidates must complete the following **two units** in order to gain an AS qualification.

		Weighting Within AS	Weighting Within A Level
<b>G1</b>	Changing Physical Environments	50%	25%
<b>G2</b>	Changing Human Environments	50%	25%

### G1: Written Paper (1 hour 30 minutes)

There are three questions based on the content of Unit G1:

1. A three part structured data response question based on Theme 1.
2. A three part structured data response question based on Theme 2.
3. A three part question on the **research and out-of-classroom work, including fieldwork carried out in relation to Themes 1 and 2. This will include data response material.**

### G2: Written Paper (1 hour 30 minutes)

There are three questions based on the content of Unit G2:

1. A three part structured data response question based on Theme 1.
2. A three part structured data response question based on Theme 2.
3. A three part question on the **research and out-of-classroom work including fieldwork carried out in relation to Themes 1 and 2. This will include data response material.**

### Advanced

The A level specification consists of two parts: Part 1 (AS) and Part 2 (A2).

Part 1 (AS) may be taken separately and added to A2 at a further examination sitting to achieve an A level qualification, or alternatively, both the AS and A2 may be taken at the same sitting.

Candidates must complete the AS units outlined above plus a further two units to complete A level Geography. The A2 units will contribute 50% of the total A level marks.

		Weighting within A2	Weighting within Advanced
G3*	Contemporary Themes and Research in Geography	60%	30%
G4*	Sustainability	40%	20%

\*Includes synoptic assessment

### **G3: Written Paper (2 hours 15 minutes)**

A 2 hours 15 minutes written paper, with two essay questions to be completed, one **from** each optional theme studied and one question based on the **individual** research enquiry carried out by the candidate from the findings of a chosen pre-released topic area.

Pre-release topic areas for G3 Section B will be issued a year in advance in December for the winter series and in May for the summer series. **This means that titles issued in December 2008 will be used for January 2010 and in May 2009 for June 2010.**

### **G4: Written Paper (1 hour 45 minutes)**

A 1 hour 45 minutes synoptic paper using pre-release material

Pre-release resource materials for G4 will be issued in December six weeks prior to the winter series and in May six weeks prior to the summer series.

### **Synoptic Assessment**

Synoptic assessment, testing candidates' understanding of the connections between the different elements of the subject and their holistic understanding of the subject, is a requirement of all A level specifications. In the context of Geography this means:

Assessment of candidates' ability to draw on their understanding of the connections between different aspects of the subject represented in the specification and demonstrate their ability to 'think like a geographer'.

Elements of synoptic assessment tasks will be included in G3 and G4:

- In G3 Section A, essay questions will explore key geographical concepts through linkages between physical and human geography, or issues or problems that will require candidates to draw together and apply relevant integrated knowledge and understanding of the specification.
- In G3, Section B an essay based on an individual research enquiry that allows candidates to draw together and apply relevant knowledge, understanding and skills of enquiry.
- In G4 the decision-making/problem-solving/issues-evaluation exercises require candidates to draw together relevant knowledge, understanding and skills of the specification to tackle a decision, problem or issue that is new to them. The final question will provide 'stretch and challenge'.

### Quality of Written Communication

Candidates will be required to demonstrate their competence in written communication in each of the assessment units where they are required to produce extended written material. Mark schemes for these units include the following specific criteria for the assessment of written communication:

- legibility of text; accuracy of spelling, punctuation and grammar; clarity of meaning;
- selection of a form and style of writing appropriate to purpose and to the complexity of the subject matter;
- clear and coherent organisation of information and use of specialist vocabulary where appropriate.

### Availability of Units

<b>Availability of Assessment Units</b>				
<b>Unit</b>	<b>January 2009</b>	<b>June 2009</b>	<b>January 2010 &amp; each subsequent year</b>	<b>June 2010 &amp; each subsequent year</b>
<b>G1</b>	✓	✓	✓	✓
<b>G2</b>	✓	✓	✓	✓
<b>G3</b>			✓	✓
<b>G4</b>			✓	✓

## Awarding, Reporting and Re-sitting

The overall grades for the GCE AS qualification will be recorded as a grade on a scale from A to E. The overall grades for the GCE A level qualification will be recorded on a grade scale from A\* to E. Results not attaining the minimum standard for the award of a grade will be reported as U (Unclassified). Individual unit results and the overall subject award will be expressed as a uniform mark on a scale common to all GCE qualifications (see table below). The grade equivalence will be reported as a lower case letter ((a) to (e)) on results slips, but not on certificates:

	Max. UMS	A	B	C	D	E
Units 1 and 2 (weighting 25%)	100	80	70	60	50	40
Unit 3 (weighting 30%)	120	96	84	72	60	48
Unit 4 (weighting 20 %)	80	64	56	48	40	32
AS Qualification	200	160	140	120	100	80
A Qualification	400	320	280	240	200	160

At A level, Grade A\* will be awarded to candidates who have achieved a Grade A in the overall A level qualification and 90% of the total uniform marks for the A2 units.

Candidates may re-sit units prior to certification for the qualification, with the best of the results achieved contributing to the qualification. Individual unit results, prior to certification of the qualification have a shelf life limited only by the shelf life of the specification.

# 6

## KEY SKILLS

Key Skills are integral to the study of AS/A level Geography and may be assessed through the course content and the related scheme of assessment as defined in the specification. The following key skills can be developed through this specification at Level 3:

- Communication
- Application of Number
- Problem Solving
- Information and Communication Technology
- Working with Others
- Improving Own Learning and Performance

Mapping of opportunities for the development of these skills against Key Skills evidence requirement is provided in 'Exemplification of Key Skills for Geography', available on WJEC website.

# 7

## PERFORMANCE DESCRIPTIONS

### INTRODUCTION

Performance descriptions have been created for all GCE subjects. They describe the learning outcomes and levels of attainment likely to be demonstrated by a representative candidate performing at the A/B and E/U boundaries for AS and A2.

In practice most candidates will show uneven profiles across the attainments listed, with strengths in some areas compensating in the award process for weaknesses or omissions elsewhere. Performance descriptions illustrate expectations at the A/B and E/U boundaries of the AS and A2 as a whole; they have not been written at unit level.

Grade A/B and E/U boundaries should be set using professional judgement. The judgement should reflect the quality of candidates' work, informed by the available technical and statistical evidence. Performance descriptions are designed to assist examiners in exercising their professional judgement. They should be interpreted and applied in the context of individual specifications and their associated units. However, performance descriptions are not designed to define the content of specifications and units.

The requirements for all AS and A level specifications to assess candidates' quality of written communication will be met through one or more of the assessment objectives.

The performance descriptions have been produced by the regulatory authorities in collaboration with the awarding bodies.

## AS performance descriptions for geography

	Assessment objective 1	Assessment objective 2	Assessment objective 3
<b>Assessment objectives</b>	Demonstrate knowledge and understanding of the content, concepts and processes.	Analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts.	Select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.
<b>A/B boundary performance descriptions</b>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) demonstrate detailed knowledge and understanding of a range of concepts and processes</li> <li>b) demonstrate detailed knowledge and understanding of subject-specific material.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) analyse and interpret geographical information, issues and viewpoints</li> <li>b) offer a valid evaluation of geographical information, issues and viewpoints</li> <li>c) demonstrate the ability to apply geographical understanding to unfamiliar contexts at different scales.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) select and use appropriately a range of methods, skills and techniques (including new technologies) when investigating questions and issues</li> <li>b) reach valid conclusions and communicate findings clearly in a structured manner appropriate to the task.</li> </ul>
<b>E/U boundary performance descriptions</b>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) demonstrate some knowledge and understanding of some concepts and processes</li> <li>b) show basic knowledge and understanding of subject-specific material.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) offer limited and inconsistent analysis and interpretation of geographical information, issues and viewpoints</li> <li>b) attempt some limited evaluation of geographical information, issues and viewpoints</li> <li>c) show some limited ability to apply aspects of geographical understanding to unfamiliar contexts.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) use a limited range of methods, skills and techniques (which may include new technologies) to attempt to investigate questions and issues</li> <li>b) draw some limited conclusions</li> <li>c) communicate findings which broadly address the tasks.</li> </ul>

## A2 performance descriptions for geography

	Assessment objective 1	Assessment objective 2	Assessment objective 3
<b>Assessment objectives</b>	Demonstrate knowledge and understanding of the content, concepts and processes.	Analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts.	Select and use a variety of methods, skills and techniques (including the use of new technologies) to investigate questions and issues, reach conclusions and communicate findings.
<b>A/B boundary performance descriptions</b>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) demonstrate knowledge and understanding of a wide range of concepts and processes</li> <li>b) show thorough knowledge and understanding of subject-specific material.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) accurately and competently analyse and interpret geographical information, issues and viewpoints</li> <li>b) offer a thorough evaluation of geographical information, issues and viewpoints in relation to specific geographical concepts</li> <li>c) demonstrate the ability to apply accurate and appropriate geographical understanding to unfamiliar contexts with precision at a range of scales.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) select and use appropriately and accurately a wide range of methods, skills and techniques (including new technologies) when thoroughly investigating questions and issues</li> <li>b) reach substantiated and valid conclusions</li> <li>c) communicate findings accurately and appropriately to the task.</li> </ul>
<b>E/U boundary performance descriptions</b>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) demonstrate some knowledge and understanding of the main concepts and processes</li> <li>b) show some understanding of subject-specific material.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) show some attempts to analyse and interpret geographical information, issues and viewpoints with varying degrees of success</li> <li>b) offer some evaluation of geographical information, issues and viewpoints with variable success</li> <li>c) show some ability to apply geographical understanding to unfamiliar contexts with some degree of accuracy.</li> </ul>	<p>Candidates characteristically:</p> <ul style="list-style-type: none"> <li>a) use a range of methods, skills and techniques (which include new technologies) to investigate questions and issues with varying degrees of success.</li> <li>b) draw some straightforward conclusions</li> <li>c) communicate findings broadly appropriate to the task.</li> </ul>