

## **IMPORTANT NOTICE**

### **Cambridge International Examinations (CIE) in the UK and USA**

With effect from the June 2003 examination Cambridge International Examinations will only accept entries in the UK and USA from students registered on courses at CIE registered Centres.

UK and USA private candidates will not be eligible to enter CIE examinations unless they are repatriating from outside the UK/USA and are part way through a course leading to a CIE examination. In that case a letter of support from the Principal of the school which they had attended is required. Other UK and USA private candidates should not embark on courses leading to a CIE examination after June 2003.

This regulation applies only to entry by private candidates in the UK and USA. Entry by private candidates through Centres in other countries is not affected.

Further details are available from Customer Services at Cambridge International Examinations.

# **GEOGRAPHY 2217**

## **GCE Ordinary Level**

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This syllabus (2217) is available to candidates in all parts of the world with the following exceptions.

Candidates in **Brunei** must enter 2230

Candidates in **Southern Africa** must enter for 2223.

## INTRODUCTION

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GCE Ordinary Level syllabuses are designed as two-year courses for examination at age 16 plus. This syllabus is available for examination in both the June and November sessions.

The main sections of this syllabus are:

Aims

Assessment Objectives

Assessment

Curriculum Content/Guidance

Glossary

## AIMS

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The aims of the syllabus are the same for all students. These are set out below and describe the educational purposes of a course in Geography for the GCE Ordinary Level examination. They are not listed in order of priority.

The aims are to encourage students to develop:

1. a sense of place and an understanding of relative location on a local, regional and global scale;
2. an awareness of the characteristics and distribution of a selection of contrasting physical and human environments;
3. an understanding of some of the processes affecting the development of such environments;
4. an understanding of the spatial effects of the ways in which people interact with each other and with their environments;
5. an understanding of different communities and cultures throughout the world and an awareness of the contrasting opportunities and constraints presented by different environments;
6. an appreciation of environments, thereby enhancing a sense of responsibility for the care of the earth;
7. a range of skills and techniques in observing, selecting, analysing and presenting data;
8. The ability to use a wide range of geographical information in making judgements and reaching decisions.

## NOTES

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This is a new syllabus that will be available for examination in both the June and November sessions from June 2004 onwards. This syllabus is available to Centres throughout the world, but specifically replaces 2220 (Caribbean), 2225 (Mauritius/Seychelles) and 2227 (Pakistan, Bangladesh and Nepal), which will be examined for the last time during 2003.

# ASSESSMENT OBJECTIVES

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The four assessment objectives in Geography are:

- A Knowledge with understanding,
- B Analysis,
- C Judgement and decision making,
- D Investigation (enquiry skills, practical skills and presentation skills).

A description of each assessment objective follows.

## A KNOWLEDGE WITH UNDERSTANDING

Students should be able to demonstrate an understanding of:

1. the wide range of processes, including human actions, contributing to the development of
  - (a) physical, economic, social, political and cultural environments and their associated effects on the landscapes;
  - (b) spatial patterns and interactions which are important within such environments;
2. the inter-relationships between people's activities and the total environment and an ability to seek explanations for them;
3. the importance of scale (whether local, regional or global) and the time at which spatial distributions and the working of systems are considered;
4. the changes which occur through time in places, landscapes and spatial distribution.

## B ANALYSIS

Students should be able to:

5. select, organise, present and interpret geographical data;
6. use and apply geographical knowledge and understanding in verbal, numerical, diagrammatic, pictorial and graphical form;
7. use geographical data to recognise patterns in such data and to deduce relationships.

## C JUDGEMENT AND DECISION MAKING

Through their geographical training students should be able to:

8. reason, make judgements (including evaluation and conclusions) which demonstrate, where appropriate
  - (a) sensitivity to, and a concern for, landscape and the environment;
  - (b) an aesthetic and environmental appreciation of the earth including its people, places, landscapes, natural processes and phenomena;
  - (c) an appreciation of the attitudes, values and beliefs of others in cultural, economic, environmental, political and social issues which have a geographical dimension;
  - (d) an awareness of the contrasting opportunities and constraints of people living in different places and under different physical and human conditions;
  - (e) a willingness to review their own attitudes in the light of new knowledge and experiences;
9. recognise the role of decision making within a geographical context as affected by

- (a) the physical and human contexts in which decisions are made;
- (b) the values and perceptions of groups or individuals;
- (c) the choices available to decision makers and the influences and constraints within which they operate.

#### **D INVESTIGATION (ENQUIRY, PRACTICAL AND PRESENTATION SKILLS)**

Students will be expected to demonstrate the ability to do the following:

10. select and use suitable basic techniques for observing, collecting, classifying, presenting, analysing and interpreting data;
11. use a variety of sources for obtaining information including maps, plans, pictures, statistics and written material;
12. depict information in simple map and diagrammatic form;
13. select, use and present geographical information in an appropriate form and an effective manner.

#### **SPECIFICATION GRID**

The relationship between the assessment objectives and components of the scheme of assessment.

Paper	Assessment Objective			
	A	B	C	D
	Knowledge with Understanding	Analysis	Judgement and decision making	Investigation
1	40%	30%	30%	-
2	10%	60%	15%	15%

The assessment objectives are weighted to give an indication of their relative importance. They are not intended to provide a precise statement of the number of marks allocated to particular assessment objectives.

# ASSESSMENT

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## *Scheme of assessment*

All candidates will take Paper 1 and Paper 2

### **Paper 1: Geographical Themes** (1 hour 45 minutes) (75 marks)

Candidates will be asked to answer three questions (3 x 25 marks).

The question paper will be divided into three sections of two questions each, with each section based on one of Themes 1, 2 or 3. Candidates will answer one question from each section.

Section A will consist of two questions on Theme 1, Population and Settlement

Section B will consist of two questions on Theme 2, The Natural Environment

Section C will consist of two questions on Theme 3, Economic Development and the Use of Resources

Questions will be resource-based, will involve problem solving and free-response writing, and will set tasks described in Assessment Objectives A, B, C.

### **Paper 2: Investigation and Skills** (2 hours 15 minutes) (90 marks)

The paper will be divided into two sections. Candidates must answer all the questions in Section A and one question from two in Section B.

Section A (60 marks) will be skills-based and will test a candidate's ability to handle various ways of depicting geographical information. The questions will be neutral in that they will not require specific information of place. Candidates will be able to demonstrate skills of analysis and interpretation and application of graphical and other techniques as appropriate. One question will be specifically based on a large-scale (1:25 000 or 1:50 000) topographical map of a tropical area such as Zimbabwe, the Caribbean or Mauritius and will include a full key. Questions in Section A will assess mainly Assessment Objective B.

Section B (30 marks) will assess the techniques used in basic first-hand investigations from a theoretical point of view. The questions will test the methodology in various types of fieldwork as well as the ability of candidates to present, interpret and analyse data. Candidates will need to be familiar with hypothesis formulation and testing. Questions in Section B will mainly be concerned with Assessment Objective D, though Assessment Objectives B and C may also be tested.

## *Centres should note:*

- (i) that candidates are not allowed to use atlases for the written papers;
- (ii) all measurements on the written papers will be metric;
- (iii) the twenty-four hour clock only will be quoted on the written papers.

## **Weighting of papers**

Paper 1	50%
Paper 2	50%

# **CURRICULUM CONTENT AND GUIDANCE**

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The curriculum is divided into four themes which are collectively designed to develop an understanding of both the natural and human environment:

1. Population and Settlement
2. The Natural Environment
3. Economic Development and the Use of Resources
4. Geographical Investigation and Skills

The curriculum gives the teacher the opportunity to select case studies to illustrate the themes. Candidates are expected to show their understanding of these themes by reference to appropriate case studies. It is envisaged that Theme 4, Geographical Investigation and Skills, is integrated within the other three Themes for teaching purposes, rather than being taught as a separate unit.

In the examination the resource material contained in the questions is selected from various parts of the world. This means that candidates are often dealing with areas of the world with which they are not familiar, but the resources include sufficient information for the question to be answered without the necessity of specific regional knowledge. The resource materials are designed to prompt candidates to relate general principles they have studied to the particular examples given. In addition, some questions encourage candidates to use information from specific case studies they have made.

For each part of the syllabus or topic a brief outline is provided, followed by amplification which details what the candidates should be able to do on completion of that topic.

**THEME 1. Population and Settlement**

- 1.1 Population dynamics**
- Describe the growth of the world's population and associated problems and show an understanding of the causes and consequences of over-population.
  - Identify and suggest reasons for contrasting patterns of population growth in different parts of the world as influenced by birth rate, death rate and migration.
  - Describe the consequences (benefits and problems) of different patterns of population growth.
  - Identify and suggest reasons for different types of population structure as shown by age/sex pyramids.
  - Identify the major influences on population density, population distribution and population movements.

<i>Amplification</i>	
<b>1.1 Population dynamics</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe and suggest reasons for the rapid increase in the world's population in recent times, 'the population explosion'.</li> <li>- Define the main factors influencing population growth - birth rate, death rate and migration.</li> <li>- Describe the relationship between population growth and resources and explain why problems may result in some areas such as overpopulation and under-population.</li> <li>- Identify and suggest reasons for contrasting patterns of population growth in different world areas as influenced by differences in birth rate, death rate and migration. Factors affecting these influences should be considered such as differences in social, economic and other factors e.g., government policies and their impact upon birth rates, differences in health care, social and other factors influencing death rates. These factors should be illustrated by reference to selected examples.</li> <li>- Describe the consequences (benefits and problems) of different patterns of population growth. Consideration should be given to variations in the size and nature of dependent populations and standards of living.</li> <li>- Identify and suggest reasons for different types of population structure as shown by age-sex pyramids. Candidates should be able to describe population pyramids and relate them to the different stages of the Demographic Transition Model.</li> <li>- Identify the major influences on population density and population distribution. Reference should be made to physical, economic and human factors.</li> <li>- Describe and suggest reasons for population movements. Reference should be made to internal movements such as rural-urban migration as well as to international movements both voluntary and involuntary.</li> </ul>

Throughout population studies candidates should make use of statistics, graphs, diagrams and maps.



**1.2 Types of settlement**

- Describe and explain the factors influencing the size, development and function of urban and rural settlements and their spheres of influence.
- Describe and give reasons for the varying patterns of urban morphology in developed and developing countries.
- Identify and explain the changes in urban land use.
- Describe the problems of urban areas and their possible solutions.
- Describe the effects on the environment resulting from urbanisation.

<i>Amplification</i>	
<b>1.2 Types of settlement</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe the patterns of rural settlements - dispersed, linear, nucleated.</li> <li>- Explain how physical factors (relief, soil, water supply) and other factors such as accessibility, agricultural land use, influence the sites and patterns of rural settlements.</li> <li>- Describe and explain the factors which may influence the size, growth and functions of rural and urban settlements.</li> <li>- Describe and suggest reasons for the hierarchy of settlements and services.</li> <li>- Describe and explain the internal structure (morphology) of towns and cities to include the Central Business District (CBD), residential areas, industrial areas, the provision of open spaces and transport routes. Differences in the patterns of urban structures in cities of the developing and developed countries of the world should be identified.</li> <li>- Describe and suggest reasons for changes in urban land use, especially through time with the growth and development of urban settlements.</li> <li>- Describe problems associated with the growth of urban areas such as congestion in the CBD, housing shortages, traffic congestion. Suggested solutions to overcome these problems should be illustrated by reference to selected examples.</li> <li>- Describe the effects of urbanisation on the environment - pollution (air, water, visual and noise), the results of urban sprawl on surrounding areas, the growth of out-of-town urban activities - shopping areas, sports facilities etc.</li> </ul>

Settlement studies offer opportunities for developing survey map skills, photograph interpretation, geographical investigations, etc.

**Theme 2. The Natural Environment**

**2.1 Structure, landforms and landscape processes**

- Describe the origin, characteristics and broad distribution of seismic and volcanic activity, fold mountains and rift valleys. Show a basic understanding of plate tectonics.
- Describe weathering, river processes, glacial processes, marine processes and processes of wind action in deserts. Describe and explain the landforms associated with these processes.

<i>Amplification</i>	
<p><b>2.1 Structure, landforms and landscape processes</b></p> <p><b>Structure</b></p> <p><b>Landforms and Landscape Processes</b></p> <p><b>Weathering</b></p> <p><b>River Processes</b></p>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe the general distribution of fold mountains, volcanoes and earthquake zones and explain how this distribution is related to movements at plate boundaries. The processes leading to the formation of rift valleys and block mountains should also be studied.</li> <li>- Show a basic understanding of plate tectonics, describing the global pattern of plates, their structure, and be aware of plate movements - plates moving away from each other (sea floor spreading), plates moving towards each other (subduction) and plates sliding past each other.</li> </ul> <p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Recognise that weathering involves the breakdown of rock <i>in situ</i>, and as such should be distinguished from erosion.</li> <li>- Describe what is meant by different types of weathering - physical/mechanical, chemical and biological.</li> <li>- Explain the main factors influencing the type and rate of weathering - climate and rock features. The influence of climate on the rate of weathering could be illustrated with reference to simple explanation as to why weathering is more rapid in humid tropical regions of the world than in temperate regions.</li> </ul> <p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding of the work of a river in eroding, transporting and depositing. Reference should be made to the erosional processes of hydraulic action, corrasion, corrosion (solution) and attrition. River transport should include the processes of traction, saltation, suspension and solution. Reasons why and where in a river's course deposition takes place should be studied. It should be realised that the effectiveness of the river processes concerned will vary according to the volume and velocity of the running water and the nature of the load (boulders, pebbles, sand and silt) which in turn will be affected by the bed-rock along the course of the river.</li> <li>- Describe and explain the landforms associated with these processes.</li> </ul> <p><i>A study should be made of the following</i></p> <ul style="list-style-type: none"> <li>- Forms of river valleys - long profile and shape in cross section, rapids, waterfalls, potholes, meanders, oxbow lakes, deltas, levées and flood plains.</li> </ul>

<p><b>Glacial Processes</b></p>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding of the glacial processes in eroding, transporting and deposition. Reference should be made to the erosional processes of plucking and abrasion, assisted by freeze-thaw rock weathering. Transport of rock materials (moraine) as sub-glacial moraine (ground moraine), englacial moraine, lateral moraine and medial moraine should be understood.</li> <li>- Describe and explain the landforms associated with the processes.</li> </ul> <p><i>A study should be made of the following glacial landforms</i></p> <ul style="list-style-type: none"> <li>- Glacial troughs (U-shaped valleys with truncated spurs), corries (cirques), aretes, pyramidal peaks, hanging valleys, rock basins, roche moutonnees. Landforms resulting from deposition of moraine - terminal moraine, boulder clay and drumlins.</li> </ul>
<p><b>Marine Processes</b></p>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding of wave processes in eroding a coastline and re-sorting and depositing materials removed through erosion. Candidates should understand the types of waves (constructive and destructive) and the components of waves, swash and backwash. The erosional processes of wave action should include an understanding of corrasion, hydraulic action, corrosion and attrition. Transport of material along a coastline should be appreciated; onshore and offshore movements together with an understanding of movement along a coastline (longshore drift). The action of wind in shaping coastal sand dunes should also be understood.</li> <li>- Describe and explain the landforms associated with these processes.</li> </ul> <p><i>A study should be made of the following coastal landforms</i></p> <p>Cliffs, wave-cut platforms, caves, arches, stacks, bay and headland coastlines, beaches, spits and bars, coastal sand dunes and marsh.</p>
<p><b>Processes of Wind Action in Deserts</b></p>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding of the processes in eroding, transporting and deposition. Reference should be made to the erosional processes of wind action - abrasion, deflation and attrition.</li> <li>- Describe and explain the landforms associated with the processes of wind action.</li> </ul> <p><i>A study should be made of the following landforms</i></p> <ul style="list-style-type: none"> <li>- Rock pedestals (mushroom rocks), yardangs, zeugens, desert pavements, large enclosed hollows (deflation hollows) - some of which may extend down to water bearing rocks for an oasis to develop, dunes</li> <li>- barchans (crescent-shaped dunes) and seif dunes (ridge-shaped).</li> </ul>

In studying landforms use should be made of photographs, survey maps and field studies (where possible).

- 2.2 Weather, climate and natural vegetation**
- Describe the methods of collecting and measuring meteorological data.
  - Describe and explain the climate of a region of each of the following:  
tropical rain (evergreen) forest,  
tropical grassland (savanna),  
tropical desert,  
Mediterranean vegetation.
  - Describe the characteristics of the natural vegetation of the regions named above and show, in each case, the relationship between the climate and the natural vegetation.

<i>Amplification</i>	
<b>2.2 Weather, climate and natural vegetation</b>	<i>Candidates should be able to</i>
<b>Weather</b>	<ul style="list-style-type: none"> <li>- Draw, describe and explain the use and siting of the following instruments at a weather station: rain-gauge, maximum-minimum thermometer, wet and dry bulb thermometer (hygrometer), barometer, anemometer and wind vane.</li> <li>- Make calculations using information from these instruments.</li> <li>- Describe and explain the characteristics, siting and use made of a Stevenson screen.</li> <li>- Describe the main types of cloud and be able to estimate the extent of cloud cover.</li> </ul>
<b>Climate</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe and explain the main characteristics of the climate in the regions listed in the syllabus [tropical rain (evergreen) forest, tropical grassland (savanna), tropical desert, Mediterranean vegetation]: temperature - mean temperature of the hottest month, mean temperature of the coolest month, therefore the annual range; - rainfall the amount and seasonal distribution; other climate features - wind, cloud, humidity, etc. Factors influencing these characteristics should be noted such as latitude, pressure systems and the winds to which they give rise, distance from the sea, altitude and ocean currents. Candidates should be familiar with climatic graphs showing the main characteristics of temperature and rainfall of the climates in the regions listed.</li> </ul>
<b>Natural Vegetation</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe the characteristics and distribution of the four types of natural vegetation listed in the Syllabus [tropical rain (evergreen) forest, tropical grassland (savanna), tropical desert, Mediterranean vegetation].</li> <li>- Explain the relationship of each type of natural vegetation to features of the climates outlined above.</li> </ul>

Weather studies should involve the use of simple weather instruments where possible. Weather data offers many opportunities for data handling and presentation.

**2.3 The inter-relationship of physical and human geography**

- Demonstrate the inter-relationship of the natural environment and human activities to natural landscapes, climate and natural hazards.

<i>Amplification</i>	
<b>2.3 The inter-relationship of physical and human geography</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate an understanding that the natural environment presents hazards and offers opportunities for human activities. Reference could be made for example to the hazards posed by volcanic eruptions, earthquakes, tropical storms, flooding and drought.</li> <li>- Use could be made of the study of contemporary examples to illustrate. This information would provide candidates with valuable case study information. Such examples could form resource material given in examination questions when candidates might be expected to illustrate inter-relationships between the natural environment and human activities from the data presented. Reference to the opportunities and problems posed for people could be incorporated when studies are made of the natural environment, for example the advantages and difficulties offered by river flood plains and deltas.</li> </ul>

**Theme 3. Economic Development and the Use of Resources**

- 3.1 Agricultural systems**
- Describe and identify the influence of inputs (natural and human) on the processes and outputs (products) of each of the following agricultural systems:  
a large-scale system of commercial farming,  
small-scale subsistence farming,  
small-scale cash-crop farming.
  - Recognise the causes and effects of over-production and shortage of food.

<i>Amplification</i>	
<b>3.1 Agricultural systems</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe in general terms the main features of an agricultural system: inputs, processes and outputs.</li> <li>- Describe the influence of natural and human inputs on the processes and outputs of examples of the agricultural systems listed in the syllabus [a large-scale system of commercial farming, small-scale subsistence farming, small-scale cash-crop farming]. Studies should include natural inputs (relief, climate and soil) and human inputs (economic, social and sometimes political). Their combined influences on the scale of production, methods of organisation and the products of each system should be studied. Reference may be made to an example such as plantation agriculture or extensive commercial cereal farming or extensive livestock production etc., to illustrate a large-scale system of commercial farming. Examples such as intensive subsistence rice cultivation or shifting cultivation etc., could profitably illustrate a system of small-scale subsistence farming, and market gardening might be used to illustrate small-scale cash crop farming. Other illustrations might be selected rather than the above. In each case reference should be made to a detailed case study.</li> <li>- Recognise the causes and effects of over-production and shortage of food. The former may be illustrated by reference to improvements in technology, together with economic and political factors such as incentives to grow more food crops in certain developed countries of the world. Effects such as food surpluses should be noted. Shortages of food may be related to natural problems such as soil exhaustion, drought, floods, tropical cyclones, pests, disease etc. There should be an awareness of the effects of these natural problems on selected areas mainly within the developing world. Economic and political factors and their effects upon food shortages should be noted, for example low capital investment, poor distribution/transport difficulties, wars etc. The effects of food shortages in encouraging food aid and measures such as those of the 'Green Revolution' to produce more food should also be considered.</li> </ul>

**3.2 Industrial systems**

- Classify industries into primary, secondary and tertiary.
- Describe and identify the influence of inputs (materials, power, capital, labour, transport) on the processes and outputs (products and waste) of industrial systems.
- Describe the factors influencing the location of each of the following processing and manufacturing industries: motor vehicle assembly, high technology industries, craft industries.

<i>Amplification</i>	
<b>3.2 Industrial systems</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Classify industries into primary, secondary and tertiary and be able to give illustrations of each.</li> <li>- Demonstrate an understanding of an industrial system: inputs, processes and outputs (products and waste). Specific illustrations of industrial systems may be provided when the three industries listed in the Syllabus [motor vehicle assembly, high technology industries, craft industries] are studied.</li> <li>- Describe how a variety of factors must be considered when seeking the location for the three industries listed in the Syllabus. Selected examples should be made to provide candidates with case study details of the three industries. In considering craft industries reference should be made to factors such as skilled labour, availability of materials, government encouragement in some developing countries and markets including tourists.</li> </ul>

**3.3 Leisure activities and tourism**

- Describe and account for the growth of leisure facilities and tourism in relation to the main attractions of the physical and human landscape.
- Assess the benefits and disadvantages of tourism to a receiving area.

<i>Amplification</i>	
<b>3.3 Leisure activities and tourism</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe and explain the growth of leisure facilities and tourism in relation to the main attractions of the physical and human landscape in an area or areas selected for study.</li> <li>- Demonstrate an understanding that the effects of a growth in tourism are generally positive and that careful management is needed if problems are to be avoided. Reference could be made to advantages accruing from tourism such as growth in income, an increase in foreign exchange, employment opportunities, the development of infrastructure and facilities which may be used by the local population, the encouragement of other developments to take place in an area, cultural advantages etc. Disadvantages might include seasonal unemployment, under-use of facilities at certain times of the year, increased congestion, pollution, a shortage of services e.g., water supplies, social/cultural problems, damage to the physical landscape etc. A selected sample study should be used to illustrate both the benefits and disadvantages associated with the growth of tourism.</li> </ul>

- 3.4 Energy and water resources**
- Describe the significance of non-renewable fossil fuels (coal, oil, natural gas) and renewable energy supplies (geothermal, wind, waves, tides, running water, solar, biogas).
  - Describe the factors influencing the development and siting of power stations (coal-fired, gas-fired, oil-fired, hydro-electric power, nuclear).
  - Describe the uses of and competition for water resources: agricultural, domestic and industrial demand.

<i>Amplification</i>	
<b>3.4 Energy and water resources</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Describe the significance of non-renewable fossil fuels in terms of their availability in certain areas and in terms of the contribution made by coal, oil, natural gas and wood in supplying vast amounts of energy.</li> <li>- Describe the growing significance of renewable energy supplies [geothermal, wind, waves, tides, running water, solar, biogas] to reduce dependence upon fossil fuels, to alleviate the world's energy crisis, and to offer opportunities for the development of alternative energy sources.</li> <li>- Describe the factors influencing the siting of different types of electrical power stations with reference to those listed in the Syllabus [coal-fired, gas-fired, oil-fired, hydro-electric power, nuclear].</li> <li>- Describe the uses made of water for agriculture, domestic and industrial demand. Candidates should also recognise that in certain areas there is competition for the use of the available water resources, requiring careful management.</li> </ul> <p>All these aspects would benefit from the selection of appropriate case studies.</p>



**3.5 Environmental risks and benefits: resource conservation and management**

- Demonstrate the need for resource conservation and management in different environments.
- Describe how agriculture, extractive industries, manufacturing industries, energy production, tourism and transport may improve the quality of life and/or pose threats to the environment including interference with natural ecosystems; soil erosion; the green-house effect and global warming; pollution.
- Identify areas at risk and describe any attempts to maintain, conserve or improve the quality of the environment.

<i>Amplification</i>	
<b>3.5 Environmental risks and benefits: resource conservation and management</b>	<p><i>Candidates should be able to</i></p> <ul style="list-style-type: none"> <li>- Demonstrate the need for resource conservation and management in different environments. It is not intended that candidates should be familiar with a wide variety of illustrations here. Rather by the use of well selected case studies, possibly integrated with the study of other concepts referred to above, candidates become familiar with general principles and can illustrate from these examples.</li> <li>- Identify and describe the benefits associated with the development of agriculture, extractive industries, manufacturing industries, energy production, tourism and transport. This could be incorporated with the studies outlined above (3.1 - 3.4).</li> <li>- Describe how these developments may also pose threats to the environment when natural ecosystems are interfered with, including soil erosion, global warming/the green-house effect and pollution (air, water, noise and visual).</li> <li>- Identify areas at risk from these threats to the environment and describe attempts made to maintain, conserve or improve the quality of the environment.</li> </ul>

**Theme 4. Geographical Investigation and Skills**

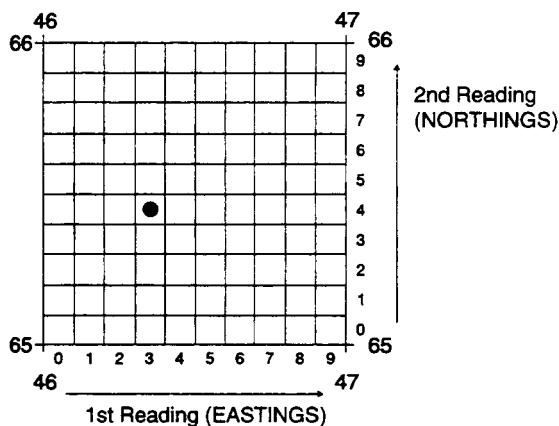
It is envisaged that the content in Theme 4 is integrated within the other three themes for teaching purposes. In the examination, candidates will be set a series of tasks on issues relating to one or more of syllabus themes:

1. Population and Settlement
2. The Natural Environment
3. Economic Development and the Use of Resources.

**4.1 Geographical Skills**

The geographical skills identified below will be assessed in Section A of Paper 2. Some of the skills may also be assessed in the interpretation and analysis of resources used in Paper 1.

<i>Amplification</i>	
<b>Mapwork Question</b>	<p>The large-scale maps chosen for examination purpose shall be on a scale of either 1:25 000 or 1:50 000 and will always contain a full key.</p> <p>Candidates should recognise that twenty of the marks available on this paper are awarded to the Mapwork Question and, therefore, it is essential that they become proficient in map reading skills to enable them to describe and analyse topographical maps.</p> <p>Candidates should be able to use a co-ordinate reference system and be able to give and to read four figure and six figure grid references to locate places. For example the six figure grid reference for the dot on the grid below would be 463654.</p>



	<p>Candidates should be able to give the compass direction and the bearing from grid north of one place from another. It is, therefore, important that they have protractors in the examination room with them. They should be able to measure horizontal distances, use scale lines and read contours to calculate differences in height. The information so gained should enable candidates to calculate gradients using the formula:</p> $\frac{\text{Vertical Interval}}{\text{Horizontal Equivalent}} = \frac{\text{(Difference in height)}}{\text{(Horizontal distance)}}$ <p>It should be noted that both measurements must be made in the same units before the calculation can be made.</p> <p>Cross-sections may be set for interpretation but candidates will not be asked to construct them.</p>
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	<p>Candidates should be able to translate the scale of a feature by describing its size and shape in real terms. They should also be proficient in using the key to the map to enable them to identify features on the map.</p> <p>Candidates should be able to draw inferences about the physical and human landscape by interpretation of map evidence such as patterns of relief, drainage, settlement, communication and land use.</p> <p>Candidates are advised to practice dividing a map into broad areas of markedly differing relief such as low river valleys and steep sided upland and to give brief descriptions of them using appropriate geographical terms (such as ridge, plateau, scarp, flood plain) and simple adjectives showing an appreciation of their nature (such as broad, flat, steep sided, deeply cut, gently sloping). To interpret these maps candidates should be able to recognise essential differences in density of drainage, pattern of streams, gradients or sizes of streams in relation to the relief. They should be able to describe the physical features of coastlines and the shape and form of river channels as they are shown on large-scale maps. Likewise, practice in describing land use variation in association with differing types of relief should be part of the preparation for the examination. The interpretation of 'human' features would also require candidates to recognise and analyse patterns of settlement (dispersed, nucleated, linear) and candidates should be able to draw sketch maps illustrating these patterns. Candidates should be able to interpret and describe features of urban morphology as represented on large scale maps. Candidates should be able to describe the functions of and services provided by settlements. They should also be able to give reasons for the site and growth of individual settlements. Communication networks should be recognised in terms of their type and density in relation to physical and human features.</p> <p>Explanations should be based clearly on map evidence showing the interaction between humans and their physical environment e.g., differences in land use between upland and lowland, differences in land use within a town, differences between dense settlement on river plains and sparse settlement on steep upland slopes.</p> <p><b>NOTE:</b> It must be stressed that all answers to the mapwork question must be based on map evidence only.</p>
<p><b>Maps, Diagrams, Graphs, Tables of Data, Written Material</b></p>	<p>Questions will be set using some or all of these resources. They should be regarded as important ways of representing geographical data. They may be used to illustrate a basic principle and it is essential that candidates should be directed towards their interpretation. For example, a population pyramid may be used to illustrate the age and sex structure of a country. With such a resource a candidate may be required to describe the broad features of the population structure to show comparisons and contrasts between the male and female populations, the working and non-working population and the young and old age groups.</p> <p>Maps based on global and other small scales may be used and candidates may be asked to identify and describe significant features of the human and physical landscape on them - e.g., population distribution, population movements, transport networks, settlement lay out, relief and drainage. Candidates may be asked to recognise patterns and deduce relationships.</p> <p>Candidates will be expected to be able to extract specified geographical information from simple graphs, diagrams, tables of data and written material. Pie graphs may be used and candidates may be asked to describe variations and identify trends in information from two-dimensional graphs or more complex graphs. Graphs may show, for example, temperature, birth rate, death rate, energy, rainfall distribution, river discharge.</p>

	<p>Candidates may be required to plot information on graphs when axes and scales are provided.</p> <p>Data tables may provide information on physical phenomena, on economic activities, on population/settlement, on agricultural and manufacturing output; and candidates may be asked to describe and analyse features and trends from the data provided. They may also be asked to suggest an appropriate form of graphical representation for the data provided.</p> <p>Written material may be extracts from books, periodicals and newspapers and candidates will be expected to show an understanding of the material presented.</p>
<b>Photographic and Pictorial Material (including Field Sketches)</b>	<p>Oblique photographs will be used. Candidates should be able to describe human and physical landscapes (landforms, natural vegetation, land use and settlement) and geographical phenomena from photographs. Simple descriptions only will be required.</p> <p>Candidates may be expected to add specified detail on maps or other material provided thereby applying geographical knowledge and understanding. Candidates may also be asked to use supporting material in conjunction with large-scale maps to identify, describe and analyse features and thereby recognise patterns and deduce trends.</p>

#### 4.2 Geographical Investigation

A primary feature of questions to be included in Section B of Paper 2 is that they will involve an appreciation from a theoretical standpoint of the range of techniques appropriate to a variety of field work studies associated with this level of examination.

In this context relevant aspects of Assessment Objective D, Investigation, are significant. Questions will test the methodology used in the application of the following types of enquiry skills in field work:

- (a) questionnaires;
- (b) observation;
- (c) counts such as pedestrian and traffic counts;
- (d) measurement techniques appropriate to river, beach and weather studies (Syllabus Theme 2.1 and 2.2).

Methods used to process and to present data obtained by these enquiry skills will also be tested. These methods will include both cartographical techniques and statistical techniques. Enquiry skills and presentation skills are to be studied against the background of the range of other aspects involved in field work. Questions may involve the aims of particular studies and in this context will include, for example, the development of suitable hypotheses appropriate to specific topics. An ability to analyse data collected and to formulate conclusions, as required by Assessment Objectives B and C, will be examined in this section.

<i>Amplification</i>	
<b>Illustrative Techniques</b>	A knowledge of the illustrative techniques to present data across the topics for Section B of Paper 2 is required. This should include, for example, various types of graphs, maps and diagrams: line graphs, bar graphs, divided bar graphs, histograms, flow diagrams and scattergraphs.
<b>Enquiry skills</b>	Questions on this paper will test knowledge and application of the methodology used in the following types of enquiry skills in field work. Methods used to process and to present data obtained by these enquiry skills will also be assessed.

<b>Questionnaires</b>	Reference should be made to the topics across the themes in the Syllabus for which questionnaires would be suitable. Consideration should be given to factors such as the following: oral and written questionnaires, layout of a questionnaire, format such as the wording of questions, length of questions, number of questions, locations and times to conduct a questionnaire, sampling methods and size of sample, the importance of a pilot survey. Studies should be related to the variety of themes in the Syllabus for which questionnaires would be suitable, including spheres of influence, the use of services, shopping habits, a farm study, a factory or industrial study, leisure activities, tourism, attitudes of the public to developments associated with particular resources. Studies should include devising aims and hypotheses, examples of data and illustrative techniques such as line graphs, bar graphs, divided bar graphs, histograms and maps. Studies should also include the use of questionnaires to obtain information from an individual or a small group of individuals relating to a particular topic and purpose. With reference to themes in the Syllabus this could include pedestrians, shopkeepers, farmers and hotel owners.
<b>Observation</b>	Consideration should be given to Syllabus themes which would be relevant for Section B of Paper 2 when observation is used as the enquiry skill for data collection. For Theme 1, studies could include land use in urban areas such as lay-out, types of buildings, characteristics of the Central Business District (CBD), comparative studies of shopping centres including size, range of services and accessibility. Observations based on the inter-relationship of physical and human aspects in a suitable area would be appropriate for Theme 2 such as a study of weather change from season to season and how it affects human activity, or how slopes can affect natural vegetation or agricultural land use. For Theme 3, the topics could include agricultural land uses in a limited area, the lay-out of a farm and selected characteristics of a tourist resort, or the competing demands for supplies of water in a locality. As with the other enquiry skills, observations of phenomena should also be linked to aims and hypotheses, to the collection, presentation and analysis of data. Methods to record data collection such as maps and record sheets should be considered where relevant as well as the use of sampling methods where appropriate.
<b>Counts</b>	Pedestrian and traffic counts especially for studies in urban areas are two significant types, but references should also be made to other aspects in the Syllabus where counts are possible. Leisure activities and aspects of tourism are particular examples. Studies should include the wording and interpretation of aims and hypotheses relevant to the circumstances in which a particular count may take place. Appropriate methods for the collection of data including, for example, instructions to recorders should be known relating to the collection and type of data. Consideration should be given to the different ways in which data can be represented in various circumstances, such as isoline maps, flow diagrams and scattergraphs. In the collection of data for pedestrian counts reference should be made to the comparative values of static and moving counts. Studies should also involve analysing and arriving at conclusions from specific data in relation to the aim or aims of a study

<b>Measurement Techniques</b>	<p>River studies should include the methods used and the equipment required to measure the width and depth across a river channel, the gradient of a river's course, the speed of flow, changes in depth over a short period of time and the size and shape of the bedloads. An understanding of the methods to calculate from relevant data features such as the speed of flow, cross-sectional area of a river channel and discharge should be included.</p> <p>Beach studies should include methods used and the equipment required to establish the profile of a beach, the size and shape of pebbles, the movement of beach material and the direction of waves.</p> <p>For both river studies and beach studies a knowledge of the equipment is required including, for example, quadrats for selecting pebbles on a beach, a clinometer to determine angle of slope and a pebbleometer or ruler and callipers to measure pebbles.</p> <p>As in studies involving other enquiry skills, consideration should be given to factors such as aims and hypotheses, illustrative techniques to present data and analysis of data. Studies should also include evidence of the application of knowledge and understanding of the formation of features for which data is collected.</p> <p>Methods used at a weather station to record the weather using observation and instruments should be studied. Consideration should be given to temperatures, humidity precipitation, wind strength including application of the Beaufort scale, wind direction, atmospheric pressure, sunshine, cloud amount and cloud type. Factors such as the locations for instruments and the methods used to take recordings should be included. Students should be able to plan a record sheet to show recordings over a number of days and also methods such as temperature graphs and wind roses to show specific information. Features such as the pattern of weather shown on a record sheet or by illustrative techniques should be identified. Local studies involving weather should provide a useful foundation especially if the practical aspects of data collection are included.</p>
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## RECOMMENDED PROCEDURES FOR STUDY

Students should be made aware of the general requirements of Section B of Paper 2 before studies of particular topics are introduced. References should be made to the range of aspects involved in a geographical study, such as, formulating aims and hypotheses/key questions, using enquiry skills to collect data, illustrative techniques to present data, making analyses of data and the formulation of conclusions.

An introduction to this paper could be made by choosing a detailed study at an appropriate stage after the teaching of a specific topic for Paper 2 from one of the syllabus themes. Each topic which is selected should enable a significant range of the skills relevant to be considered in depth.

### *Data Collection*

An understanding of the range of methods required for data collection should be developed. For some topics it may be possible for candidates to have an opportunity to gain some experience, however limited, of the practical aspects involved in data collection. A questionnaire could be a possible example and, depending on the location of a Centre, recording data on a form for a pedestrian or traffic count.

### *Field Exercises*

Consideration should be given to actual field exercises where enquiry skills may be used to obtain different types of data. In such cases the inter-relationships of phenomena could provide the basis for a study. Pedestrian counts, traffic counts and observation on land use could, for example, provide (i) the basis for a topic involving a study of competition for space in an urban area or (ii) changes in rural land use (types of farming, afforestation, crops, roads, buildings, water storage and supply).

# GLOSSARY

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It is hoped that this glossary of terms used in the Geography Papers (and which is relevant only to Geography) will prove helpful to candidates as a guide, i.e., it is neither exhaustive nor definitive. The glossary has been deliberately kept brief with respect to the descriptions of their meanings. Candidates should appreciate that the meaning of a term must depend in part on its context.

**NOTE: Illustrative technique as quoted in this glossary encompasses such things as maps, diagrams, sketches, graphs, etc.**

<i>Annotate</i>	Add labels of notes or short comments to meet specific requirements usually on an illustrative technique.
<i>Calculate</i>	Is used when a numerical answer is required. In general, working should be shown, especially where two or more steps are involved.
<i>Compare</i>	Set out the factual details to show how far things either agree/disagree or are alike/unlike. For a comparison, two elements or themes are required. Candidates will be required to identify similarities and differences in written statements or as shown by illustrative techniques.
<i>Complete</i>	To add the remaining detail or details required
<i>Contrast</i>	Identify differences.
<i>Define or State the meaning of or What is meant by</i>	To describe accurately, giving the meaning of, definition of.
<i>Describe</i>	Set out the factual details of. To give a written account to meet a specific requirement e.g., to give an account of something in terms of size, shape, height, etc. May also be seen as <i>Give an account of</i> . Is often coupled with other command words such as <i>Name and describe</i> [name the feature and set out the factual details of], <i>Describe and explain</i> [set out the factual details and give reasons for], <i>Describe how, when or where</i> [directives toward a particular aspect for which a written account is required].
<i>Devise or Plan</i>	Presentation of a particular feature such as a form or questionnaire to meet a specific requirement or requirements.
<i>Draw</i>	Make a sketch of. Often coupled with <i>a labelled diagram</i> [draw a diagram/illustration with labels to identify its features].
<i>Explain or Account for</i>	Give reasons for a particular feature
<i>Factor</i>	Characteristic bringing about a certain result
<i>Feature</i>	A characteristic of
<i>Giving your views</i>	Say what you think about
<i>How</i>	In what way? To what extent? By what means/method. May be coupled with <i>Show how, [prove how, demonstrate how]</i> .
<i>Identify</i>	Select or recognise a specific feature or
<i>Illustrating your answer</i>	Account for by using specific examples or diagrams. Often coupled with <i>by a labelled diagram</i> [use of an illustrative technique relating to a specific aspect or aspects in a question to include relevant words or terms to identify particular features].
<i>Insert or Label</i>	Placing specific names or details to an illustrative technique in response to a

	particular requirement.
<i>List</i>	Identify and name a number of features to meet a particular purpose. Where a given number of features is specified this should not be exceeded.
<i>Locate</i>	Find the place of.
<i>Mark</i>	Indicate or show an illustrative technique a particular feature or features.
<i>Match</i>	Identify two or more statements or illustrative techniques in which there is an element of similarity or inter-relationship.
<i>Measure</i>	Implies that the quantity concerned can be directly obtained from a suitable measuring instrument. The units should always be given.
<i>Name</i>	To state or specify or identify. To give the word or words by which a specific feature is known.
<i>Pattern</i>	A particular arrangement or distribution of items e.g., settlements. May be asked to <i>Suggest a pattern</i> or <i>Identify a pattern (or trend)</i> [recognise a particular sequence or a number of sequences]
<i>Reasons</i>	Explain, justify, give the causes of.
<i>Refer to</i> or <i>With reference to</i>	Write an answer which uses some of the ideas provided in an illustrative technique or other additional material such as a case study.
<i>State</i>	Set down in brief detail. To refer to an aspect of a particular feature by a short statement or by words or by a single word.
<i>Study</i>	Examine closely, pay special attention to, look carefully at and interpret.
<i>Suggest</i>	Set down your ideas on or knowledge of. Propose, put forward for consideration. Often coupled with <i>Why</i> [requires an explanation based on your ideas]
<i>Use or Using the information provided</i>	Base your answer on the information provided (on the content of an illustrative technique or a written statement).
<i>What</i>	Used to form a question concerned with selective ideas/details/factors.
<i>What differences are shown between A and B</i>	Use comparative statements to test the changes involved as A changes to B. Factual descriptions of A and B are not required.
<i>Where</i>	At what place? To what place? From what place?
<i>With the help of information in</i>	Write an answer which uses some of the information provided in the illustrative technique as well as additional material.
<i>Why</i>	For what cause or reason?