Rewarding Learning

ADVANCED
General Certificate of Education
2017

Geography

Assessment Unit A2 2
assessing
Physical Geography and Decision Making

[AG221]

FRIDAY 9 JUNE, AFTERNOON

MARK SCHEME

MARK SCHEMES

Foreword

Introduction

Mark Schemes are published to assist teachers and students in the preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16- to 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published; the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

Introductory Remarks

The assessment objectives (AOs) for this specification are listed below. Students must:

AO1 demonstrate knowledge and understanding of the content, concepts and processes;

AO2 analyse, interpret and evaluate geographical information, issues and viewpoints and apply understanding in unfamiliar contexts;

AO3 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.

General Instructions for Markers

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all markers are following exactly the same instructions and making the same judgements so far as this is possible. Markers must apply the mark scheme in a consistent manner and to the standard agreed at the standardising meeting.

It is important to recognise that in some cases there may be other correct responses that are equally acceptable to those included in this mark scheme. There may be instances where certain judgements have to be left to the experience of the examiner, for example, where there is no absolute, correct answer.

Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate's response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

Levels of Response

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a "best fit" approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided that the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate's answer, is awarded.

General Descriptions for Marking Criteria

Knowledge and Understanding	Skills	Quality of Written Communication	Level
The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.	The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.	The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, punctuation and grammar.	3
The candidate will display an accurate to good knowledge and understanding of many of the relevant concepts/ ideas. Much of the body of knowledge that can be expected is given.	The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors or misapprehensions may be in evidence.	The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, punctuation and grammar. Legibility is satisfactory.	2
The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.	The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors or misapprehensions may be clearly evidenced.	The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, punctuation and grammar. Writing may be illegible in places.	1

Section A

Option A: Fluvial and Coastal Environments

AVAILABLE MARKS

1 (a) The candidate should present an annotated diagram/s to support an explanation of the way in which a relevant landform resulting from erosional processes was created.
Explanation presented as annotation is acceptable.

Level 3 ([6]–[8])
An accurate and well-presented diagram/s is/are given, along with a clear explanation of the chosen landform's creation. Depth and details are present. There is good use of appropriate terminology.

Level 2 ([3]–[5])
Either the diagram/s or explanation of the landform's creation is incomplete in a significant way (such as restricted depth and detail or poor quality of construction). There may be restricted use of appropriate terminology.

Level 1 ([1]–[2]
No diagram is presented or the diagram/s is/are irrelevant or very weak. The explanation of the landform's creation may be very restricted in depth, quality or relevance. Use of terminology may be poor. [8]

(b) The question demands an explanation of the operation of the engineering scheme shown in the Resources (hard engineering – curved seawall) and its benefits (e.g. coastal protection and amenity enhancement).

Level 3 ([6]–[7])
Both aspects of the question are addressed, strongly supported by information gleaned from the resources and fully-developed. The use of terminology is good.

Level 2 ([3]–[5])
Although both aspects of the question are addressed and adequately supported by information gleaned from the resources, development may be restricted. The use of terminology may be restricted.

Level 1 ([1]–[2])
The candidate may address only one aspect of the question, or present invalid comments. The explanation is poorly supported by information gleaned from the resources. The use of terminology may be restricted. [7]

(c) The candidate is asked to describe and evaluate the outcomes of a regional scale river basin management scheme.

Level 3 ([11]–[15])
The answer refers to an appropriate and relevant case study example. Candidates at this level address each element of the question explicitly (description of outcomes, evaluation of outcomes) and with validity and clarity. A high level of appropriate case study detail is given. Terminology is good.

Level 2 ([6]–[10]
The answer refers to an appropriate and relevant case study example. Although candidates at this level address each element of the question (description of outcomes, evaluation of outcomes) the response may be imbalanced or there may be some lack of clarity, validity and/or depth. Case study detail may be restricted. Terminology may be restricted.

AVAILABLE MARKS

Level 1 ([1]–[5])
The answer may refer to a case study of an inappropriate scale or nature. One or more elements of the question (description of outcomes, evaluation of outcomes) may be neglected. Case study detail may be very restricted. The response may be a cursory one. Terminology may be poor. [15]

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2 **(a)** For each of the two selected demands, general reference to place is required, along with an explanation as to why the associated demands upon rivers and their valleys are increasing. Candidates should be rewarded for validity of explanation, development of explanation, relevant detail, and range and appropriate use of terminology.

In general, population increase, urbanisation, the threat of global warning and associated search for environmentally sound practices, have increased the demand upon rivers and their valleys.
If reference to place is not given, award a maximum of [3] marks per demand. ([4] × 2)

Agricultural use. Rivers provide: sources of water for irrigation; flat, flood plain land which facilitates farming; alluvium-rich, fertile soils which support agricultural output.

Industrial use. Rivers provide: natural transportation networks (roads, bridges, railways, and airports can be constructed permitting transportation of raw materials and products); sources of water for industrial use; expanses of level land which facilitate industrial development.

Energy production. Rivers provide: sites for hydro-electric power production; river-mouth sites for tidal barrages; sites for development of industrial centres such as oil refineries and nuclear power stations. [8]

(b) Candidates are expected to make reference to the resources in evaluating the arguments both for and against the scheme.

Level 3 ([6]–[7])
Reference to the resources is strong. In their evaluation, the candidate identifies the effectiveness of the scheme and also recognises limitations that might exist. There is good use of appropriate terminology.

Level 2 ([3]–[5])
Reference to the resources may be restricted. In their evaluation the candidate identifies the effectiveness of the scheme but depth/detail may be restricted. Use of appropriate terminology may be restricted.

Level 1 ([1]–[2])
Reference to the resources may be cursory. Evaluation may be simplified and/or a straight lift from the resources. Use of appropriate terminology may be poor. [7]

(c) The candidate is asked to evaluate the arguments for and against coastal protection within a regional case study.

Level 3 ([11]–[15])
The answer refers to an appropriate and relevant case study example. Candidates at this level address each element of the question explicitly (evaluation for/evaluation against) with validity and clarity. A high level of appropriate case study detail is given. Terminology is good.

Level 2 ([6]–[10])
The answer refers to an appropriate and relevant case study example. Although candidates at this level address each element of the question (evaluation for/evaluation against), the response may be imbalanced or there may be some lack of clarity, validity and/or depth. Case study detail may be restricted. Terminology may be restricted.

Level 1 ([1]–[5])
The answer may refer to a case study of an inappropriate scale or nature. One or more elements of the question (evaluation for/evaluation against) may be neglected. Case study detail may be very restricted. The response may be a cursory one. Terminology may be poor. [15]

AVAILABLE MARKS

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Option B: The Nature and Sustainability of Tropical Ecosystems

AVAILABLE MARKS

3 **(a)** This question is focused on two of the three nutrient stores within the TRF biome and the reasons for the difference in their size. Firstly, the description of the relative size can be expected to be more than simply the Biomass is larger than the Litter. At any one time, the Biomass in a TRF contains some 90% of its nutrients so the size difference is larger than the litter store by a factor of 10–20 times. The explanation requires comment on why nutrients are tied into the biomass (including productivity, climate, vegetation structure and bio-diversity) and also why the Litter store is small (including rapid recycling due to climate, active decomposers and loss by run-off).
Note: no discussion of the soil store is required.

Level 3 ([6]–[8])
The answer accurately describes the relative difference between the two stores and clearly explains this with reference to the nature of both stores and the relative transfers and output flows. Good terminology is used with respect to the nutrient cycle and processes. Quality of written communication is excellent.

Level 2 ([3]–[5])
A description and explanation is provided but the clarity of the description and/or explanation is limited in its depth or detail. Quality of written communication is good.

Level 1 ([1]–[2])
A significant element of the answer is missing such as the reasons for the litter store being small in a TRF. An answer without valid explanation of the difference would be confined to this level. Quality of written communication may be poor. [8]

(b) There are up to nine characteristics illustrated by the profile and while not all need to be discussed the focus is on the processes that lead to these. Key processes linked to climate are leaching, (acidic pH, nutrient status, sesquioxides, thin humus, indistinct boundaries, intense weathering), rapid growth **and** nutrient uptake (thin humus layer). Time is an important factor in the depth of these soils and the intensity of weathering. Active organisms ensure boundaries are indistinct and rapid organic decay releases organic acids that give the low pH values.

Level 3 ([6]–[7])
Key processes are identified and used to are accurately explain the soil characteristics shown in the profile. There is good use of appropriate terminology.

Level 2 ([3]–[5])
Key processes are identified but the explanatory links to soil characteristics shown in the profile are limited in range or detail. Limited process terminology is used.

Level 1 ([1]–[2])
Only one or two characteristics are linked to any relevant processes noted. Depth of understanding and terminology is limited. [7]

AVAILABLE MARKS

(c) This question focuses on two aspects of salinisation, the causes of the problem and the attempted solutions. In both cases the answer must be illustrated from a regional scale study.

Level 3 ([11]–[15])
In the context of a valid regional scale case study, the causes of salinisation are explained with clarity. The attempted solutions are evaluated with depth and detail. The use of terminology is good.

Level 2 ([6]–[10])
Although the causes of salinisation are explained in the context of a valid regional scale case study, there may be a lack of clarity. There is some evaluation of the attempted solutions, but depth/detail may be lacking. The use of terminology may be restricted.

Level 1 ([1]–[5])
Answers that fail to develop one or more of the key elements – a relevant case study, causes or attempted solutions or evaluation – would be confined to this level. Alternatively the answer lacks detail or the use of appropriate terminology. [15] 30

4 **(a)** For both these tropical biomes of the ITCZ and the pressure belts and wind systems of the Hadley Cell provide the answer. For the TRF, candidates should show an understanding of the year-round dominant role of the Equatorial low pressure convergence (ITCZ) of surface Trade winds and convectional uplift in these regions. For desert regions it is the year-round dominance of sub-tropical surface high pressure (Horse latitudes) under subsidence from aloft that produces the 15–30° N and S distribution. A relevant diagram is a requirement in this question.

Level 3 ([6]–[8])
The text and the diagram provided demonstrate a clear comprehension of the role of the elements of the Hadley Cell, including the ITCZ with respect to both biomes. The answer also clearly indicates accurately the general location and climate characteristics of both TRF and tropical deserts. Quality of written communication is excellent.

Level 2 ([3]–[5])
The text and the diagram make relevant reference to the climate processes for both biomes but the explanation and/or location description is incomplete or limited. Quality of written communication is good.

Level 1 ([1]–[2])
The candidate shows limited knowledge or comprehension of the Hadley Cell and ITCZ. Alternatively, only one biome is explained or no reference is made to their location. The lack of an appropriate diagram would confine an answer to this level. Quality of written communication may be poor. [8]

(b) The definition of Productivity is the rate at which living material is produced by photosynthesis per unit area over time, some may refine the definition specifically to NPP ($g/m^2/yr$). [2]
The explanation of the tropical forests high values relative to the other land-based biomes is primarily about climate. The near perfect year round growing environment of the equatorial region ensures high productivity rates and therefore the high biomass. The annual hot and wet environment along with abundant daily high insolation means that photosynthesis is continuous.

AVAILABLE MARKS

The limitations of a nutrient poor soil are overcome by rapid and efficient nutrient recycling. Additionally, the multilayered forest structure provides numerous niche opportunities for plants (producers). [5]
Appropriate climate statistics required for [5]. [7]

(c) A relevant case study of a tropical forest ecosystem is required. A description of the management of this study given should be evaluated with respect to its sustainability and each of the three aspects of sustainability should be clearly addressed.

Level 3 ([11]–[15])
The candidate provides a relevant study with an accurate description of the attempt to manage the ecosystem. An evaluation is made of the management with reference to each of the three required aspects: environmental, economic and social. Appropriate terminology and case study detail is given.

Level 2 ([6]–[10])
A relevant case study is presented but either the detail or the evaluation of the attempt to be sustainable is underdeveloped. At least two of the three key aspects of sustainable development are addressed. Quality of written communication is good.

Level 1 ([1]–[5])
Answers at this level may be limited in a number of ways: a lack of relevant case study detail or an evaluation that does not address any two of the three key aspects of sustainable development. Quality of written communication may be poor. [15] 30

AVAILABLE MARKS

5 **(a)** A diagram is a requirement for this question and the focus is on the processes and resultant landforms at collision margins. The principal landform will be fold mountains while the relevant processes include convection currents in the asthenosphere and the collision of two continental plates. Initially there may be subduction of intervening oceanic plates. The final stage involves the shortening of the crust by crushing of sediments and plate material in folding and faulting. Use of an inappropriate margin. Maximum Level 1

Level 3 ([6]–[8])
A clear and relevant diagram/s is presented along with an accurate presentation of the sequence and processes behind the collision of tectonic continental plates leading to fold mountain formation. Good technical terminology is used and the linking of the diagram with the text is precise.

Level 2 ([3]–[5])
A relevant diagram is presented, although it may lack detail. A valid explanation of at least part of the formation process is provided and a valid resultant landform is identified. Overall the depth of the explanation and use of terminology may be limited.

Level 1 ([1]–[2])
The lack of a relevant diagram would confine an answer to this level. Alternatively, the explanation of the processes and landform description may be simplistic. Quality of written communication may be poor. [8]

(b) From the resource the environmental hazards are the ash cloud, contaminated grassland, weather/climate change and flooding while the benefits include heating, electrical production, reduced fossil fuel dependency, low carbon production and even new land creation. These and additional located examples of environmental hazards and benefits are required. This may include other forms of land destruction such as lahars or lava flows as well as benefits such as soil fertility. Other examples of hazards and benefits similar to those in the resource but in other locations may be valid such as geothermal energy or climatic impacts elsewhere.

Level 3 ([6]–[7])
Good use is made of the resource to identify and explain environmental hazards and benefits in the Icelandic context. The candidate avoids merely quoting the text. In addition further environmental benefits and hazards are identified with valid exemplar material provided. Quality of written communication is excellent.

Level 2 ([3]–[5])
Both the resource-based and other environmental hazards and benefits are identified but either or both is restricted in range, depth or examples presented. Quality of written communication is good.

Level 1 ([1]–[2])
An answer that only uses the resource or makes no use of it would be confined to this level. Quality of written communication may be poor. [7]

(c) Accurate detail of one relevant MEDC or LEDC earthquake case study is required here. Discussion of two factors influencing management of the earthquake are required, namely perception and stage development. It is expected that management will cover preparation as well as the immediate and long-term responses to the event.

Level 3 ([11]–[15])
Details of management of the effects of a relevant case study (MEDC/LEDC) are provided. The role of perception and stage of development in the management are all discussed in an appropriate way. Quality of written communication is excellent.

Level 2 ([6]–[10])
Answers, in which the case study detail or the discussion of the two factors influencing the management of the earthquake effects is limited in depth, are confined to this level. Quality of written communication is good.

Level 1 ([1]–[5])
The response lacks one of the key elements namely, any relevant case study material, or the role of perception and level of development on management. Quality of written communication may be poor. [15]

AVAILABLE MARKS

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AVAILABLE MARKS

6 **(a)** Description and explanation of **any two** of the three effects is required and for each the answer should explain why the effect may occur in the context of earthquake activity and what the likely impacts may be. Reward clear causal links to seismic activity and valid potential impacts.
Some may use exemplar material and while not a requirement, this may be a good approach. (4 × [2])

Landslides. The downhill movement of soil and rock material may be initiated by the ground shaking of an earthquake. As a trigger mechanism this can generate movement on unstable slopes at both a small local scale or regionally. The impacts may be environmental, scarring hillslopes or diverting and blocking rivers causing floods or directly impact on the built environment with homes/settlements and infrastructure destroyed on the failing slopes or by the landslide debris at the base of the slope.
Floods. These may be caused by earthquake shaking in a number of ways including the coastal impact of tsunamis, the failure of river levees, the blocking of rivers by landslides or the rupturing of water pipelines or dams and reservoirs. The potential impacts include the environmental and social disruption associated with any form of flooding including loss of homes, infrastructure, clean water shortage, contamination, lack of water to fight fires that may also have been started, etc.
Fires. These would be a consequence of damage to the built environmental rather than natural events. The destruction of gas or oil pipelines along with electricity cables can create fires or, as in the case of Kobe, where paraffin or gas stoves were upset by seismic shaking and set flammable wooden homes alight. Impacts would include property destruction, loss of life and environmental destruction. [8]

(b) In essence the answer is that A is a destructive plate margin with the subduction of the North American plate beneath the Caribbean Plate (trench and volcanic island arc). B is a Conservative (transform) plate margin where no subduction or indeed creation of plate material occurs but tension as the two slide past each other leads to seismic activity.

Level 3 ([6]–[7])
Both types of margin are accurately identified and the processes involved clearly explained in relation to the tectonic activity noted. The resource is used directly to discuss the processes and landforms seen. Quality of written communication is excellent.

Level 2 ([3]–[5])
While the two margins are accurately identified the processes involved in the distribution of the tectonic activity at both is not fully developed. Possibly the use of the resource is restricted. Quality of written communication is good.

Level 1 ([1]–[2])
There is little understanding of the two margins or perhaps only one is described in terms of the tectonic processes involved. Quality of written communication may be poor. [7]

(c) A relevant small-scale case study of an attempt to predict volcanic activity is required. The prediction methods employed are described and the overall effectiveness of the prediction evaluated.

Level 3 ([11]–[15])
A relevant study is presented along with accurate detail of the efforts made at prediction of the volcanic event. The prediction made is evaluated in terms of its effectiveness. Quality of written communication is excellent.

Level 2 ([6]–[10])
While a relevant study is presented with some detail of the efforts made at prediction, the evaluation of its effectiveness is restricted by its depth or its balance. Quality of written communication is good.

Level 1 ([1]–[5])
The lack of a valid case study or any appropriate evaluation would confine an answer to this level. Alternatively, a valid case study lacking detail of the prediction efforts and a significant evaluation may be similarly restricted. Quality of written communication may be poor. [15]

AVAILABLE MARKS
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Section A

Section B

AVAILABLE MARKS

Introduction: Some Guiding Principles

The ideas outlined in the 'Guidance on Content' section are lines of thought that candidates might take in their report. They are not to be seen as the definitive answer, though it is to be expected that the points outlined below will feature, if only in part, in most responses. When allocating marks look favourably on responses which:

(a) avoid undue verbatim quoting from Resource Booklet and adopt a consistent style;

(b) use the full range of the resource material appropriate to the task – particularly where it is provided in non-literary format such as infographics, printed maps and photographs;

(c) apply knowledge and concepts that are not specifically raised in the resource material, yet are both illuminating and relevant to the task;

(d) maximise opportunities presented by the resource material;

(e) appreciate that "bias" might exist in resource material which expresses particular views;

(f) avoid undue repetition of the same answer material in different sections or, if overlap is unavoidable, present it in a fresh way; and

(g) back up points with specific detail, e.g. giving statistical information where it is provided rather than making vague statements when details are readily available.

Guidance on Content

A. Introduction (Briefly describe the proposed project and discuss the need for it.)

Dún Laoghaire was formerly a ferry port south of Dublin, but the ferry closed in 2015. The project is to build a new berth to accommodate large cruise ships. Cruising holidays are becoming a more important form of tourism and the number of cruise passengers worldwide is approaching 25 million. Ships are getting larger and so ports have to be developed to accommodate them. Currently only Cobh, near Cork, allows the largest cruise ships to tie up, allowing tourists easy access to shore. At present, large cruise ships visiting Dún Laoghaire have to anchor in Dublin Bay and tenders are used to bring the tourists ashore. This is difficult if the weather is poor, and is inconvenient for passengers. If Dún Laoghaire wants to ensure that cruise liners continue to visit the port, with the economic benefits that will bring to the town and surrounding area, then it will have to develop the harbour so that the ships can tie up at a berth.

The main part of the development will be a new berth midway between the present East and West Piers. This will be 435 m long and will allow the larger ships, up to 340 m in length, to tie up on the eastern side. This will include the Freedom-class ships which are 330 m long. The harbour will have to be dredged to allow these ships to reach the berth, as will a 2.5 km approach channel in the bay. A turning circle 500 m across will also be dredged. Supporting developments will involve the construction of reception buildings and a coach park for 22 tour buses as well as car parking facilities. There will also be a holding area, with space for an additional 20 tour buses. It is hoped that the development will be completed between 15 to 18 months after it begins. Ferry traffic is declining so there is the need to develop strategies to ensure that the harbour is safe through cruise tourism.

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Level 3 ([6]–[8])
The candidate clearly, although briefly, describes the project and discusses the need for it. Both are considered fully. Precise figures and facts will be used where possible, particularly from the maps and diagrams. Quality of written communication is excellent.

Level 2 ([3]–[5])
The candidate makes fewer clear and correct points. There is little or no development of any point, but points made are valid. There may be a major imbalance between the description of the project and need for it, or there may be a lack of detail. Quality of written communication is good.

Level 1 ([1]–[2])
The candidate presents little content and a lot of it is irrelevant to the need for the development or the description of it. Some of the points made may lack validity. There may be excessive verbatim use of resources. Quality of written communication may be poor. [8]
If only need or description is present, maximum [4]

B. The likely impact

AVAILABLE MARKS

(i) People and the economy (Discuss the possible beneficial effects of the proposed development on people and the economy and the counterarguments.)

Cruise tourism is a rapidly growing phenomenon worldwide, with numbers increasing from around 4 million in 1990 to almost 25 million today. Newer Freedom-class vessels are larger than before and, in 2013, 131 ships were operating in Europe with the potential of carrying 145,000 passengers. Cruise ships from other areas, especially the USA, added another potential 104,000 passengers. This is big business and, for those ports able to attract the larger cruise ships, there is the potential of economic prosperity.

This development will cost €18 million, but its economic impact on Dún Laoghaire is estimated as being between €16 million and €41 million each year, after 20 years in operation. There is also employment with 200 full-time jobs being created in the building of the development and, when completed, between 70 and 250 permanent jobs in Dún Laoghaire-Rathdown (DLR) county. These will be needed, as the Stena ferry has now closed, which must have impacted on local people. An examination of a Geographic Information System (Resource 7D1) highlights areas of DLR with high deprivation indices. Saltynoggin, for instance, has a deprivation in some areas which is classed as disadvantaged, and there are areas even closer to the port which are equally deprived. There has been growing unemployment in DLR, with a doubling of the numbers between 2006 and 2011. At its peak, 13% of the population of the county was unemployed. In April 2015, there were 5293 people out of work. Thirteen percent of these had experience of construction or related employment which would make them ideal candidates for the 200 jobs that will be created in the building of the development. Even more jobs (between 239 and 829) will be created across Ireland if the development is built.

When the cruise ships come to the port, there will be a lot of benefit to local businesses. In the best case scenario, there will be 1,100,000 visitors to DLR by 2046. This will bring in €132 million each year. While some of this will not be spent in DLR, research has shown that more and more passengers coming ashore – it can be over half of them – do not take the coach tours laid on. This means that their money will not be spent in Glendalough, but in the local area. The crew of the ship will also spend money locally. As Councillor Barry Saul has said, we must build this development to “bring about a larger economic bonus”, which can come about with the “increase in footfall and spending”.

The people of the town will also benefit in other ways. Tall Ships could visit the port which would bring in additional benefit. Better pedestrian access will connect the harbour and the centre of Dún Laoghaire, and public transport will be upgraded, including the DART station close to the port (Resource 7A).

The changes to the port are not as great as some have made out in terms of recreational use. The difference in the amount of permitted mooring areas before and after the development is very small (Resources 7B1 and 7B2) and substantial parts of the harbour remain available for this. Indeed Resource 7C2 illustrates just how much space is still available, even when a large cruise ship is in port. There are still 37 hectares available for rowing and sailing, and Dublin Bay continues to be available for use.

Counter

AVAILABLE MARKS

This proposal is very damaging to the port and many of the economic benefits that it might deliver could still happen, even if the new development is not built. The proponents' own figures show that, without the development, the number of tourists using cruises will continue to increase with 192 cruise ships forecast to visit in 2046, bringing 481,000 visitors, up from only 220,000 in 2017 (Table 1). This Do-Nothing Scenario would leave the fine harbour as it is, preserving its potential as a port for recreation and for tourism, and bringing economic benefits to Dún Laoghaire. Smaller cruise ships, less than 200 m long, could be accommodated in the harbour without any damaging developments being required.

Building the development might not bring the economic benefits claimed. The Port of Dublin is embarking on a much larger scheme for cruise ships costing €230 million compared to only €18 million being invested in the Dún Laoghaire scheme. It will have two cruise berths and is only 8 km from this proposed scheme. As passengers who go to the Port of Dublin will be much closer to the city of Dublin and its attractions, perhaps fewer cruise ships will visit Dún Laoghaire even if a new berth is available. If that is the case, the fine historic port, and its potential economic contributions to DLR will have been destroyed.

Large numbers of jobs for the local area have been promised. However, the promised jobs are unlikely to go to local people. DLR is one of the richest counties of Ireland with 20% more of its population in professional occupations than in Ireland as a whole. Of those looking for work, the specialist skills required are unlikely to be common.

Even if the cruise ships came in the numbers forecast, there is likely to be little economic benefit to the town and the surrounding county. There are 42 coaches ready to take the visitors off to see popular tourist sites such as Glendalough. It is unlikely that these visitors, with everything they need supplied in the malls and arcades and pubs and shops on the ship, will spend much in the local facilities of Dún Laoghaire. Many tourists may choose not to come ashore at all.

Local people value the harbour as it is, and use it for recreational purposes. Resource 7C3 shows people walking, exercising and boating, and there is also evidence of sailing. The sheltered harbour is a safe place to learn to sail, and when the new berth splits the harbour in two, this will be lost permanently. Mooring space for small boats will be reduced (Resources 7B1 and 7B2). The sailing community bring economic benefit to the town all year round, not the seasonal economic benefit that cruises might bring. The sailing community numbers are not insignificant with 1200 sailors brought to the town each summer. Local talent nurtured in Dún Laoghaire harbour has produced Olympic athletes – this will be threatened if this development was allowed to be constructed.

NB Some candidates may discuss environmental factors in this section and this is acceptable, so long as they focus on the economic and social impacts of such changes to the environment. In B ii, should the same environmental factors be revisited, candidates should not merely repeat the information, but should treat it in a fresh way.

AVAILABLE MARKS

Level 3 ([9]–[12])
Candidate states clearly the main benefits and the counterarguments. The discussion will be detailed and comprehensive. The account will have many of these characteristics:

- The points made will be consistently relevant and logically structured
- The ideas will demonstrate insight and a level of sophistication
- Clear understanding of all concepts will be demonstrated
- Use will be made of most of the relevant resource material, including that in diagrammatic form in the maps, graphs, photographs and other resources, and understanding of the resources will be demonstrated – no significant points will be omitted
- Figures, where available and appropriate, will be used to good effect
- Ideas will be expressed clearly and effectively
- Quality of written communication will be excellent.

Level 2 ([5]–[8])
Candidate will have fewer lines of thought or discussion may be limited. However, while ideas may lack depth and/or detail, they are still adequate. There may be a heavy imbalance between the two sides of the argument. The answer may concentrate on material from one source, e.g. the text, and not utilize the full range of resources available. The account may show deficiencies in the following ways:

- Understanding displayed but an over-reliance on verbatim quoting in places, even though appropriate
- Resource material used but some information not as well exploited as it could be
- Largely related to the question but some irrelevant material introduced
- Ideas not expressed particularly logically or clearly
- Quality of written communication will be good.

Level 1 ([1]–[4])

- Simple understanding demonstrated but sketchily dealt with
- Excessive verbatim use of resources
- Some use made of the resource material but many relevant resources omitted
- Little or no structure or logic in the ordering of content
- Quality of written communication may be poor. [12]

If only arguments or counterarguments presented, maximum [6]

B. (ii) The environment (Discuss the potential negative environmental effects of the proposed development and the counterarguments.)

AVAILABLE MARKS

Cruise ships have been described as "the single most environmentally destructive form of tourism". As the ships get larger, they become more polluting. Friends of the Earth (FoE) (Resource 7D2) tell us that a single ship, Oasis of the Seas, which was the largest ship in the world when launched in 2009 with a capacity of 6000 passengers, needs enough power in one month that would supply 77,000 American households – 97,000 kW. A ship half that size produces seven tonnes of waste every day. Cruising also generates CO_2. On average, each week 970 kgs of CO_2 are produced for each passenger, three times as much as would have been produced on land. Even when in port, a cruise ship will generate 67 tonnes of CO_2 during a ten hour stay. A quarter of all the cruise liners examined by FoE in 2013 got the lowest scores for sewage treatment, reduction of air pollution and preserving water quality. Oasis of the Seas uses 27,000 litres of oil every hour, and needs power even when berthed to run its air conditioning and electrical systems. All of these "massively polluting floating apartment blocks", as environmentalists have dubbed them, have the potential to produce pollution.

The dredging of the harbour and its approaches, and a turning circle north of the harbour entrance, is ongoing work creating 710,000 m^3 of spoil, which has to be dumped. Resource 7A indicates that the Burford bank spoil ground is only 6 km from shore. This will be the equivalent of burying an area the size of 70 Croke Parks with 1 m of spoil, a very large volume which will impact on the seabed ecology of the area. The proponents of the scheme accept that there will be disturbance to habitats by the dumping of spoil from the dredging.

Indeed, the proposal, if it were to go ahead, will have an irreversible impact on the historic harbour in Dún Laoghaire, reducing its potential for recreation and leisure for the future. In other words it could damage the environment for no benefit. As Peter Kerrigan of the local Ratepayers Association put it, the harbour will be destroyed and Dún Laoghaire will be left with "the mess of a failed project". Alison Hackett also voiced concerns about the environmental damage to this fine 200 year old harbour, as the development would "destroy its natural open shape and beauty".

Even the building of the new berth will impact on the environment. Piles will have to be sunk into the floor of the harbour by drilling and pile-driving. Even the proponents of the scheme concede that this will be noisy and will have an impact on habitats.

Counter

The spoil from the dredging will be disposed of in the Burford Bank spoil ground, well away from Dún Laoghaire and the Port of Dublin. The amount of spoil is quite modest, at only 10% of what has been proposed needing disposed of in the Port of Dublin development of cruise berths. The disturbance to habitats from such dredging and dumping is not significant.

The berth being constructed is built onto piles driven into the floor of the harbour, which support a concrete deck. There will be some impact on marine habitats but, like the dredging, these will not be significant. The developers will also take other steps to ensure that the impact on the marine ecology is reduced.

AVAILABLE MARKS

The existing Stena line ferry pier is unattractive (Resource 7C4) and the new berth is insignificant when viewed from the West Pier for example (Resource 7C1). With a cruise ship alongside (Resource 7C2), it makes an attractive sight for the port. The Dún Laoghaire Harbour Masterplan recognises the harbour as "one of the most beautiful man-made harbours in the world" and this development will enhance that, by integrating the port more closely with the town and by making it a port of international calibre and enhancing the environment.

NB Some candidates may discuss economic factors in this section and this is acceptable, so long as they focus on the environmental impact and its consequent cost. In Bi, should the same economic factors have been covered, candidates should not merely repeat the information, but should treat it in a fresh way.

Level 3 ([6]–[8])
Candidate states clearly the potential negative environmental effect and the counterargument. The discussion will be as detailed and comprehensive as the resources allow.
The account will have many of these characteristics:
- The points made will be consistently relevant and logically structured
- The ideas will demonstrate insight and a level of sophistication
- Clear understanding of all concepts will be demonstrated
- Use will be made of most of the relevant resource material, including that in diagrammatic form in the resources – no significant points will be omitted
- Figures, where available and appropriate, will be used to good effect
- Ideas will be expressed clearly and effectively
- Quality of written communication will be excellent.

Level 2 ([3]–[5])
Candidate will have fewer lines of thought or discussion may be limited. However, while ideas may lack depth and/or detail, they are still adequate. There may be a heavy imbalance between the two sides of the argument. The account may show deficiencies in the following ways:
- Understanding displayed but an over-reliance on verbatim quoting in places, even though appropriate
- Resource material used but some information not as well exploited as it could be
- Largely related to the question but some irrelevant material introduced
- Ideas not expressed particularly logically or clearly
- Quality of written communication will be good.

Level 1 ([1]–[2])
- Simple understanding demonstrated but sketchily dealt with
- Excessive verbatim use of resources
- Some use made of the resource material but many relevant resources omitted
- Little or no structure or logic in the ordering of content
- Quality of written communication may be poor. [8]

If only arguments or counterarguments are presented, maximum [4]

C. Conclusion (State clearly your decision and justify it on the basis of the greater overall benefits)

	AVAILABLE MARKS

The recommendation may overlap with some of the points made in B in relation to the potential economic, social and environmental impact of the harbour development. However, the emphasis here has to be on the greater overall benefits of developing or not developing the project in Dún Laoghaire port and the contrary view. In this section, for example, candidates can weigh up the relative merits of arguable damage to the environment with possible economic development and employment for local people.

There is no mark for stating a decision alone without a justification.

Level 3 ([8]–[10])
Candidate states clearly a decision. A range of reasons is provided in justification. The account will have many of the following:
- There is evidence that the arguments of both sides are being balanced, one against the other
- Links are made between diverse aspects of resource material, not possible in Section B
- Points are consistently relevant and logically structured
- There is a clear grasp of the concepts used

Quality of written communication is excellent.

Level 2 ([4]–[7])
There are fewer lines of thought or discussion, but what is provided is relevant and correct or supportable in what is argued. There may be deficiencies such as:
- Too much verbatim quoting or overuse of quotations in full
- Important sections of resource material not utilised
- Irrelevant material introduced
- Ideas not expressed particularly logically or clearly
- Understanding of concepts not always clearly demonstrated

Quality of written communication is good.

Level 1 ([1]–[3])
- Few lines of thought and sketchy in detail
- Large gaps in the use of resource material
- Little or no structure or logic in the ordering of the concepts
- There may be excessive verbatim use of resources

Quality of written communication may be poor. [10]

Format
Clear format headings using the headings provided throughout [1]
Clear subheadings using the subheadings provided in Section B [1] [2]

Role
Role of Dr Jim Robinson, advisor for An Bord Pleanála, adopted [1]
Role maintained [1] [2]

Graph
Reference in report [1]
Appropriateness of the technique used [1]
Accuracy of the data presented [3]
Conventions (key, labelled axes, title) [3] [8] 50

Section B **50**

Total **110**