Centre Number				Paper Reference	Surname
Candidate Numbe	r			Candidate Signature	Other Names

1313/1F Edexcel GCSE Geography B

Paper 1F

Decision Making Exercise

Specimen Paper

Time: 1 hour 15 minutes

Materials required for the examination

None

Items included with these question papers None

N0000

Instructions to Candidates

In the boxes above, write your centre number, candidate number, the paper reference, your signature, your surname and other names.

The paper reference is shown towards the top left-hand corner of the page. If more than one Paper Reference is shown, you should write the one for which you have been entered.

Answer all questions.

Write your answers in the spaces provided in this question paper. If you need more space, use the extra writing page at the back of this book. If you use this make sure that you show the number of the question you are answering.

Information for Candidates

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2) There are 5 questions in the question paper. There are no blank pages. The total mark for this paper is 63.

Advice to Candidates

You will be assessed on your ability to organise and present information, ideas, descriptions and arguments clearly and logically, taking account of your use of grammar, punctuation and spelling.



Question Leave

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Success through gualifications

Answer ALL questions in this book

1.	Look a	at Figure 1(a) in the Resource Book. It is a fact file on Holderness.	
	(a)	What rock is Holderness formed from?	
			(1)
	(b)	The map in Figure 1(b) shows that many villages have been lost to the sea since Roman times. How many villages have been lost?	
			(1)
	(c)	Why do the cliffs of Holderness erode rapidly?	
			(1)
	(d)	What problem does this erosion cause for farmers?	
			(1)

Total 4 marks

(a)	Look	at Photograph A in the Photograph Book. It shows a cliff near Easington.	
	(i)	The fence posts are 1m high. Estimate the height of the cliff.	
		Metres	(1)
	(ii)	The cliff had recently fallen away. Give two pieces of evidence from the photograph that show this.	
		1	
		2	
			(2)

2.

Part (b) begins on the next page

- (b) Look at Figure 2 in the Resource Book. It gives information about rates of erosion on the Holderness coast.
 - (i) Use information from the table to **complete the graph** below. Draw the bars for Atwick, Hornsea and Dimlington High Land.



(3)



..... metres per year

(1)

(iii) Why do you think the rate of erosion is not the same all along the coast? Refer to particular places in your answer. The map (Figure 1(b)) may help you. (3) (c) Look at Figure 3 in the Resource Book. It gives information about the cliffs of Holderness. (i) The cliffs are eroded by abrasion and hydraulic action. Explain the meaning of these terms. Abrasion Hydraulic action (2) (ii) Name the type of **mass movement** that occurs on the cliffs. (1) (iii) The erosion of the cliffs does not produce wide beaches. Explain why. (1)

- (d) Look at Figure 4 in the Resource Book. It gives information about transport and deposition
 - (i) Long-shore drift occurs on the Holderness coast. The diagram below shows how this happens.



Write the numbers from the key in the correct places on the diagram.

(4)

- (1) has already been put in to help you)
 - (ii) Give the **compass** direction of the long-shore drift shown in the diagram above.

(1)

(iii) Find Bridlington on the map in Figure 1(b) in the Resource Book. There is not much long-shore drift at Bridlington. Why do you think this is so?

(2)

 Sediment from the Holderness cliffs is transported to a number of places. Some of these places are Lincolnshire, Essex, The Netherlands, Germany and Denmark.

Two of these places are labelled X and Y on the map in Figure 4. Name them.

X	• • • • • • • • • • • • • • • • • • • •
•	
Y	(2)
	(2)

Total 23 marks

3.	(a)	Look coast	at Figure 6 in the Resource Book. It gives information about some types of tal defence used in Holderness.
		(i)	Explain how a sea wall protects the coast.
			(2)
		(ii)	State two factors to consider when deciding the type of coastal defence to build.
			(2)
	(b)	Look	at Photograph E. It shows a cliff south of Withernsea.
		(i)	Two types of coastal defence are shown in the photograph. Name them.
			1
			2
		(ii)	Explain why the sea is stained brown.

(c) Look at Photographs C and D. They show the coastal defences built at Mappleton in 1991.

After these defences were built in 1991, the rate of cliff erosion **to the south** of Mappleton increased.

Explain why it increased.

	•••••••••••••••••••••••
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	(3)
	(-)

Total 10 marks

4.	(a)	Stud	y Figure 7 on	the insert she	et. It gives in	formation ab	out the Easi	ington area	•
		(i)	Spurn Head Name a coa	is a spit. stal process w	hich causes a	spit to form.			
									(1)
		(ii)	There is a n Explain what	ature reserve	e at Spurn Hea erve is.	ıd.			
									(1)
		(iii)	The Lagoon What do the	ns are an SSSI e letters SSSI s	stand for?				
									(1)
	(b)	Find	Easington se	wage works o	on the map in l	Figure 7.			
		(i)	How far is t	he Easington	sewage works	from the cli	ff-edge (coa	stline)?	
				metres					(1)
		(ii)	Suppose the How many	e cliffs erode a years will it ta	t a rate of 2 m ke for the clif	etres a year. Is to retreat t	o the sewag	e works?	
			Underline	your choice fro	om the list bel	OW.			
			35yrs	85yrs	105yrs	245yrs	325yrs	560yrs	(1)
	(c)	Lool prote	c at Figure 9 i ecting the cos	in the Resourc at at Easington	e Book. It giv.	ves some pec	pple's opinic	ons on	
		(i)	The local co	ouncillor talks	about protect	ing trans-nat	ional compa	nies.	
			Name the t	wo companies	she is talking	about.			
			1						
			2						
									(1)

(ii)	Which person thinks groynes must be built to give the coast long-term protection?
	(1)
(iii)	The British Gas spokesperson says "the gas terminals are vital to the British economy".
	What evidence is there for this in Figure 8?
	(1)
(iv)	Conservationists may like some features of the trial reef (Option 3 in Figure 10).
	State two of the features they may like.
	1
	2(2)
(v)	Some conservationists may still be against the scheme to build several off- shore reefs. Suggest one reason why.
	(1)

Total 11 marks

- 5. There are **four** possible responses to the cliff erosion in the Easington area.
 - 1. Build a rock revetment to protect just the British Gas terminal.
 - 2. Build a longer rock revetment to protect the caravan park, the village and the British Gas terminal.
 - 3. Build a trial off-shore reef, made from concrete-filled rubber tyres. If the trial is successful, build a series of larger reefs.
 - 4. Do nothing let nature take its course.

(I)	Which one of these four responses do you think would be best?
	Response chosen
	Explain the advantages of your choice.
	(6)
	(I)

(ii)	Choose one of the responses that you rejected. Give reasons why you rejected it.
	Response rejected
	Reasons for rejecting it.
	(6)

Total 12 marks

End

1313/1F

Edexcel GCSE

Geography B

Paper 1F

Decision Making Exercise

RESOURCE BOOK



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Erosion at Holderness, on the Yorkshire coast

The Issue

- All along the Holderness coast the cliffs are eroding rapidly.
- Easington is a village on the coast of Holderness.
- The buildings on the cliff top are in danger of falling into the sea.
- What, if anything, should be done to protect the coast of Easington?

Holderness Fact file

- Holderness is a rural area with a few large settlements. It lies to the south of Flamborough Head, and to the north of the Humber Estuary.
- It is an **undulating plain**, mostly below 25m in height.
- Holderness is formed form **boulder clay**. This is a rock that was deposited by icesheets. It consists mainly of clay, but has some sand and larger stones mixed in with it.
- When boulder clay is drained, it provides fertile soils that are good for intensive arable farming.
- All along the Holderness coastline there are soft clay **cliffs**, which erode rapidly. The retreating coast is a major problem for local land owners. 80,000 square metres of good quality agricultural land are lost to the sea each year.
- To the north of Holderness, the cliffs of Flamborough Head are made of **chalk**. They are an important sea bird breeding site.
- The clay cliffs of Holderness have limited wild-life interest. However, the sediments released from the cliffs are very important because they are carried by the sea to form the tidal mud flats of the Humber Estuary and other areas around the North Sea.
- Spurn Head on the Humber Estuary is a sand and shingle spit. It is famous for migrating wading birds and wildfowl. It has been made into a National Nature Reserve.

Figure 1(a)



Figure 1(b)

Rates of Erosion

• Boulder clay is soft and unconsolidated so it is easily weathered and eroded. On average, the Holderness cliffs are retreating at a rate of 1.8m a year – this is the fastest rate of erosion in Europe. However, the rate does vary from place to place along the coast, and over time. The most destructive waves occur when winds blow from the north or the north-east.

Place	Average rate of erosion		
	(metres per year)		
Low Skirlington	0.5		
Atwick	1.0		
Hornsea	0.6		
Mappleton	2.9		
Cowden	2.4		
Aldbrough	2.8		
Hilston	2.6		
Withernsea	0.9		
Dimlington High Land	2.6		
Easington	1.9		

Average annual rates of erosion in Holderness (1974-1991) (based on information from University of Hull)

- David and Sue Earle own a dairy and chicken farm at Great Cowden, 2 km south of Mappleton. They say their land was eroding 1m per year before the coastal defence scheme at Mappleton was completed in 1991. Since then, erosion has been 10m per year. Cows have been lost over the cliff and farm buildings have had to be knocked down.
- Shawn and Evonne Mars own a pig farm near Great Cowden. The rate of cliff erosion on their land was 10 times greater after the Mappleton defence scheme was built. In 1995, the cliff retreated 15 metres. Shawn and Evonne are suing the council over the loss of their farmland.

Figure 2

Cliff Processes



- In dry weather the boulder clay shrinks and cracks. In wet weather, some rain runs over the surface of the clay and some enters the clay through the cracks. The clay loses its strength when it is wet.
- When waves reach the foot of the cliffs at high tide, the clay is eroded by **abrasion** and **hydraulic action**. The waves undercut the cliffs and in time the cliff slumps down (collapses).
- The slumped material is soon broken up and removed by the sea. It consists mainly of fine material (clay), rather than sand. As a result, the erosion of these cliffs does not produce wide **beaches** at their foot.



Transport and Deposition

- One million cubic metres of sediment are eroded from the cliffs of Holderness each year. The dominant winds come from the north or north-east, so the sediment is carried southwards by long-shore drift.
- The sea along the Holderness coast is stained brown because it carries so much sediment.
- Most of the sediment is washed into the Humber Estuary or onto the beaches of Lincolnshire. Some of the finest material travels to the Essex marshes and even to the shores of Denmark, the Netherlands and Germany. Holderness is the largest source of sediment for the North Sea.



Map of sediment transport

Figure 4

Rising Sea Levels

Global warming is likely to cause sea levels to rise between 38cm and 55cm by the year 2100.

The effects of a rise in sea level include:

- Beaches will become narrower and erosion will increase
- High tides will reach the cliffs more often so they will erode faster
- Estuaries and lagoons will become larger and deeper
- If the sea breaks through shingle barriers, the lagoons could become bays

Figure 5

Types of coastal defence already used in the Holderness Area

PLACE	EXISTING COASTAL DEFENCES
Bridlington (pop. 31,000) Fishing port and holiday resort	• Sheltered naturally by Flamborough Head
with bathing beaches of EU quality standard	Concrete sea walls and wood groynes. Built in the late 19 th century and regularly repaired.
Hornsea (pop. 7,500)	
Holiday resort with bathing beach of EU quality standard.	• Wooden groynes, and concrete sea wall. Built in early 1900s and repaired in 1980s.
Mappleton (pop. 100)	
Small village (on the B1242 coast road) in a farming area	 Rock revetment and rock groynes, with graded cliffs. Built in 1991 at a cost of £1.9m
	(Photographs C and D)
Withernsea (pop. 6,300)	
Holiday resort with bathing beach of EU quality standard	• Wooden Groynes built in late 19 th century.
	New sea wall with rock revetment built in 1980s.
	Rock toe work in 1990s
	(Photograph E)
Spurn Head	
Sand and shingle spit with a	• Clay embankment on the northern shore.
Pilot's base and a nature reserve. It has Heritage Coast status.	• Small concrete wall, in poor repair, on the western shore. Built in 1940s.
	• Concrete blocks and wooden groynes (now derelict) on eastern shore.

Figure 6

The Easington Area



Type of Energy	Million tonnes of oil equivalent	%
Petroleum	67	42
Natural Gas	56	35
Electricity	26	16
Coal and Coke	9	6
Others	2	1
Total	160	100

Figure 8 – Energy Consumption in United Kingdom by type of Energy (1996)

Should Easington be protected? Here are some opinions.			
Government official	Coastal protection schemes must be technically sound environmentally acceptable, and economically worthwhile, with benefits greater than costs.		
Tourist	Our family have spent several happy camping holidays at Easington. It's a lovely, quiet spot right next to the beach. Of course defences should be built to save it.		
Conservationist	Interfering with the coast at Easington will endanger the valuable wildlife habitats further south. Spurn Head itself would be at even greater risk of erosion.		
British Gas spokesperson	North Sea gas terminals are vital to the British economy. They must be protected.		
Easington Caravan Park owner	It would be almost as cheap to build 1,600 metres of revetment while the equipment is there, as it is to build 1,000 metres. My livelihood and several jobs are at stake.		
University lecturer	Defending Holderness is not the most important thing. It is more important to ensure the long-term stability of the coasts of EU countries that border the southern North Sea. Major cities like Amsterdam are located there.		
Local councillor	Should we only be protecting trans-national companies? What about our own residents?		
Engineering consultant	Coastal protection will not work unless you build groynes. A revetment or sea-wall will give short-term protection, but without groynes no system will succeed.		
Euro MP	If they only protect the gas terminal then the village will be exposed to even greater erosion. Look what happened after the Mappleton scheme.		
Withernsea resident	There are more deserving places in Holderness than Easington. The recent cliff falls at Withernsea mean the sea wall there urgently needs extending.		
Environmental	We should not be planning to fight against the sea. We should be		
group publicity officer	planning to work with the natural processes operating along the coast.		
County councillor	The council alone cannot afford to pay for expensive scheme. We would need government approval and a government grant to finance it.		
Easington resident	Some of the villagers died for their country in the last war. It will be a disgrace if Easington is allowed to fall into the sea.		

Γ

Figure 9

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What, if anything, should be done to reduce cliff erosion in the Easington area?

Four possible responses are:

1. Build a revetment of granite boulders along the foot of the cliffs to protect just the British Gas terminal.

It would be 1,000 metres long, and similar to the one build at Mappleton in 1991. The cliffs would also be graded. This scheme would cost £4.5 million. BP and British Gas would contribute £750,000 towards it.

2. Build a longer rock revetment (1,600 metres) to protect the caravan site and village, as well as the gas terminal.

The cliffs behind the revetment would also be graded. This scheme would cost $\pounds 7.0$ million and the gas companies would again contribute $\pounds 750,000$ towards the cost.

3. Build an Offshore Reef

Stage 1 – Trial Reef

This should be 6 metres high and about 800 metres offshore, where the water is at least 10 metres deep at low tide. It would be made from 5,500 cubic metres of concrete-filled rubber tyres tied together with ropes. The reef would cost £390,000. Local councils would have to find a sponsor such as the tyre industry to help with the cost. They would need to test the reef for at least 2 years, to see it if was stable, if it affected local currents, and if it caused any pollution.

Stage 2 – Full Scheme

If the trial was successful, a series of larger reefs protecting the entire Holderness coast might be built. It has been estimated that seven reefs, each 2 km long, would last 300 years and use 800 million tyres. The total cost of this scheme would be \pm 300 million. People in favour have suggested that the whole cost could be covered by the money received to dispose of the second hand tyres. The EU has banned the disposal of rubber tyres at rubbish tips.

4. Do nothing – let nature take its course.

The natural marine processes of erosion, transport and deposition would not be interfered with at all.

Figure 10



Figure 11 Location of possible coastal defences at Easington

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1313/1F

Edexcel GCSE

Geography B

Paper 1F

Decision Making Exercise

PHOTOGRAPH BOOK

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Photograph A – Easington cliff and beach



Photograph B – Easington Beach Caravan and Leisure Park



Photograph C – Rock revetment and graded cliffs at Mappleton



Photograph D – Rock groyne at Mappleton



Photograph E –Cliffs south of Withernsea



Photograph F – Cliffs further south of Withernsea



Photograph G – Easington Village



Photograph H – Easington Gas Terminal

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GCSE

Mark Scheme

GEOGRAPHY 1313 PAPER 1F



GENERAL MARKING INSTRUCTIONS

The mark scheme is based on a combination of direct credit marking and levels of response marking.

When levels of response marking are used, the examiner should determine the highest level reached by the candidate before awarding marks within the range allocated to that level of response. Do not be afraid to give full marks.

Not all points mentioned in the mark scheme against each level need to be met for an answer to start scoring at that level. It will be possible for a candidate to reach a score through either the breadth or depth of the answer.

Where a points mark scheme is used, candidates should be credited for each valid point made, whether the points give extra breadth or greater depth. The wording of the question should be used to determine the validity of the points offered: for example an answer requiring explanation could not gain full marks if it only describes; a question requiring 'reasons for ...' could not get full marks if only one reason is offered in depth – some breadth would be required.

The answers suggested in the mark scheme are for guidance only. In many cases it will be possible for candidates to offer valid, plausible alternatives. Examiners should use their professional judgement to decide whether a given answer is acceptable. In cases of any doubt, the examiner should refer the answer to their team leader or the principal examiner.

Where appropriate, annotated diagrams are acceptable as a substitute for text and can gain full marks if they meet the requirements of the mark scheme.

1.	(a)	Boulder clay/clay/clay plus sand and stones	1
	(b)	28	1
	(c)	Made of soft rock	1
	(d)	Loss of land/soil (1) Loss of livestock (1) Farm buildings lost (1)	1

Total 4 marks

2.	(a)	(i)	3 to 4 metres
	()	(-)	

	(ii)	Fallen rock/clay at cliff-foot (1) Exposed pipe in cliff-face (1)	
		Undermined tarmac/path near cliff-top (1)	1 x 2
(b)	(i)	Three correct bars	1 x 3
	(ii)	0.5	1
	(iii)	¹ / ₂ mark for reason and ¹ / ₂ for elaboration, and further mark for example: Where coastal defences built (¹ / ₂) erosion is lower (¹ / ₂) eg Withernsea/Hornsea (1) Where sheltered by headland (¹ / ₂) erosion is lower (¹ / ₂) eg Low Skirlington/ Atwick (1) Where south/down drift of groynes (¹ / ₂) erosion is higher (¹ / ₂) eg Mappleton/Dimlington (1)	r 9 9 1 x 3
(c)	(i)	Abrasion = grinding action of sand, stones, etc flung by waves (1) Hydraulic action = force of water ($\frac{1}{2}$) in rock crevices ($\frac{1}{2}$)	s 1 x 2
	(ii)	Slumping	1
	(iii)	Boulder clay doesn't contain much sand/coarse material (1) Boulder clay is mainly fine material which is washed off-shore (1)	e 1
(d)	(i)	From top to bottom: 4, 3, 5, 2	1 x 4
	(ii)	South-east	1
	(iii)	Bridlington is sheltered by Flamborough Head (1) from dominant N/NE winds (1) Bridlington is protected by groynes (1)	1 x 2
	(iv)	X = Denmark	
		Y = Netherlands	1 x 2
			Total 23 marks

3.	(a)	(i)	Reflects waves (1) and so shields coast from erosion (1) and from sea flooding (1) It is harder than the boulder clay so erodes more slowly (1) It can be replaced when it is damaged, the cliff can't (1)	1 x 2
		(ii)	For example: Effectiveness in resisting erosion (1) Time to taken to build (1) Cost (1) Durability (1) Visual appearance (1) Ease of access to beach (1) Knock-on effects along the coast (1)	1 x 2
	(b)	(i)	Groyne (1) Rock armour/revetment/rip-rap (1) Rock toe work (1) Boulders (1)	1 x 2
		(ii)	Stained with sediment/clay	1
	(c)		Groynes at Mappleton reduced LSD (1) Beach builds up at Mappleton (1) Coast to south starved of beach (1) Cliffs therefore exposed to more destructive waves (1)	1 x 3
				Total 10 marks

4.	(a)	(i)	Long-shore drift (1) Deposition (1)	1
		(ii)	Area where wild plant and animals are protected	1
		(iii)	Site of Special Scientific Interest	1
	(b)	(i)	Any distance in the range 600 – 700 metres	1
		(ii)	325 years	1
			(If incorrect distance given in (b) (i) credit distance if it is an alternat approx. 2m/year)	ative, works out
	(c)	(i)	British Gas (½) BP (½)	¹ / ₂ x 2
		(ii)	Engineering consultant	1
		(iii)	They handle 25% of UK's natural gas supply	1
		(iv)	It uses waste/re-cycled material (1) It is not an eyesore (1)	1 x 2
		(v)	Reefs interfere with natural coastal processes OR We should plan with natural coastal forces, not against them (1)	
			If they check LSD, they may endanger the wildlife habitats to the south (1) If they disintegrate, they may pollute the coast (1) Tidal mud-flats elsewhere in the North Sea may be put at risk (1), increasing the risk of flood there (1)	1
			Tota	l 11 marks

(a) (i) No mark for choice of option. Credit valid reasons for choice of option.

Relevant criteria include:

Effectiveness in tackling erosion Cost Durability Ease of access to beach Nature/importance of the land use(s) protected Visual impact Possible knock-on effects elsewhere Likelihood of getting government permission

Level 1

Only considers a few relevant criteria.
Probably only uses obvious points from Figure 10 and maybe
Figure 9.
Gives simple points lifted from the Resource Booklet, eg:
'It will cost £4.5m'
'The gas terminals are vital to the British economy'
'The caravan part should be protected, otherwise jobs will be lost'.

For the top mark, make several simple points.

1 - 3

Level 2

Considers a number of relevant criteria, possibly using more sources Than just Figures 9 and 10.

Makes some simple points but also includes some developed ones, (ie elaborates with more detail, or explanatory comment).

e.g:

'An off-shore reef has the advantage of being the cheapest defence scheme'

'Scheme 1 could be completed more quickly than both 2 and especially 3'

Includes a few developed points to reach the top mark at this level. 4-6

5.

(ii) No mark for choice of rejected option. Relevant criteria are the same as in (a) (i)

Level 1

Only considers a few relevant criteria, probably only using obvious points from Figure 10 and maybe Figure 9.

Gives simple points lifted from the Resource Booklet, eg:

'It will cost £7 million' 'It won't work because it doesn't include groynes'

For the top mark, makes several simple points. 1 - 3

Level 2

Considers a number of relevant criteria, possibly using more sources than just Figures 9 and 10.

Makes some simple points but also includes at least one developed one, eg:

'The coast urgently needs protecting now, but the off-shore reef will take two years to test'

Includes a few developed points to reach the top mark at this level. 4-6 6

Total 12 marks

PAPER TOTAL 60 +3 QWC 63

ASSESSMENT OF QUALITY OF WRITTEN COMMUNICATION

Candidates will be assessed for the quality of written communication according to the following criteria:

Level 3	3	Candidates write in sentences which are clear, structured and coherent. They spell, punctuate and use the rules of grammar with few errors using a range of specialist terms appropriately and with precision.
Level 2	2	Candidates write in sentences with a clear and structured style. They spell, punctuate and use the rules of grammar with considerable accuracy.
Level 1	1	Candidates write in sentences with a limited structure. They spell, punctuate and use the rules of grammar with reasonable accuracy

DME FOUNDATION

			Objective	Marks
1	(a)		Skills	4
2	(a)		Skills	3
	(b)	(i), (ii)	Skills	4
		(iii)	Application	3
	(c)	(i), (ii)	Knowledge	3
		(iii)	Understanding	1
	(d)	(i), (ii)	Understanding	5
		(iii)	Application	2
		(iv)	Knowledge	2
3	(a)		Knowledge	4
	(b)		Skills	3
	(c)		Application	3
4	(a)		Knowledge	3
	(b)		Skills	2
	(c)	(i), (ii)	Skills	2
		(iii)-(v)	Application	4
5			Understanding	6
			Skills	6
Tot	als		Knowledge	12
			Understanding	12
			Application	12
			Skills	24
			TOTAL	60