



The Dublin
School of Grinds

6th Year
Geography
Higher Level
Kate Fortune

Most Popular Physical Essays

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Ref: 6/geo/h/kf/Geography



Pictured: Economics teacher Rónán Murdock

The final push for CAO points...

The Dublin School of Grinds is running 6-hour crash courses at the end of May and the beginning of June. These courses give students the best possible advantage as they prepare for the all-important State Examinations. One last ounce of effort could make all the difference.

Here is how these courses will benefit you:

- They will offer students one last opportunity to avail of expert teaching before the State Examinations
- They will provide students with a final boost of confidence before exam day
- They will give students an exam strategy plan to help them maximise their grade on the day

Note: At these courses our teachers will predict what questions are most likely to appear on your exam paper. These questions will be covered in detail and our teachers will provide you with model A1 answers.

FEES: €160 PER COURSE

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Crash Courses Timetable

6th Year			
Subject	Level	Date	Time
Accounting	H	Sunday 29th May	9am - 3pm
Biology	H	Saturday 28th May	9am - 3pm
Business	H	Sunday 29th May	2pm - 8pm
Chemistry	H	Saturday 4th June	9am - 3pm
Economics	H	Saturday 28th May	9am - 3pm
English	H	Sunday 29th May	9am - 3pm
English	H	Saturday 4th June	9am - 3pm
French	H	Saturday 4th June	9am - 3pm
Geography	H	Saturday 28th May	9am - 3pm
Irish	H	Saturday 4th June	9am - 3pm
Maths Paper 1	H	Saturday 4th June	9am - 3pm
Maths Paper 2	H	Sunday 5th June	9am - 3pm
Maths	O	Saturday 28th May	9am - 3pm
Maths	O	Saturday 4th June	9am - 3pm
Physics	H	Saturday 28th May	9am - 3pm
Spanish	H	Sunday 5th June	9am - 3pm

3rd Year			
Subject	Level	Date	Time
Business Studies	H	Sunday 5th June	9am - 3pm
English	H	Sunday 5th June	9am - 3pm
French	H	Sunday 29th May	9am - 3pm
Irish	H	Sunday 29th May	9am - 3pm
Maths	H	Sunday 29th May	9am - 3pm
Science	H	Saturday 4th June	9am - 3pm

H = Higher O = Ordinary

Please note that all courses will take place at our Learning Centre at The Primary School in Oatlands, Stillorgan, Co. Dublin.

Physical 30 Markers - B's and C's

Physical Geography Checklist	Tick
History/Theory of Plate Boundaries	
Land is created and destroyed at plate boundaries. Discuss.	
Global Distribution of Earthquakes	
Measurement and Effects of Earthquakes	
Global Distribution of Volcanoes	
Formation of Volcanic Landforms	
Positive and Negative Effects of Volcanoes	
Folding	
Folding and Faulting	
(Tsunami)	
Formation of two Igneous Rocks	
Formation of one igneous rock and an associated landform	
Formation of two Sedimentary Rocks	
Formation of one sedimentary rock and an associated landform	
Formation of two metamorphic rocks	
Karst Surface Landform – Limestone Pavement	
Karst Underground Feature – Dripstone Deposits	
Feature of Erosion (E.g. Waterfall)	
Feature of Deposition (E.g. Ox-bow lake)	
Isostatic Movement	
Human interaction with Rocks	
Human Interaction with fluvial processes (or coastal or glacial)	

Human Interaction with the Rock Cycle

***Notes:** This is a very common PHYSICAL essay-not a human essay. It is important to discuss the physical details as well as the human.

***Examiners Reports:** In order to get full marks, the candidate must discuss the rock cycle. This is nearly always left out.

*These notes will discuss drilling for natural gas/oil. (Other options are mining, quarrying, geothermal energy production.)

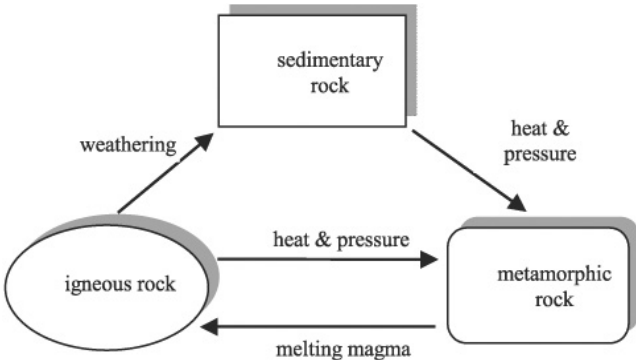
*Long question always-30 marks (15 SRPs). Approx 12.5 minutes.

Question Asked

- 2013
- 2011
- 2010
- 2009
- 2007
- 2006

Structure: Paragraphs by SRPs

- Rock Cycle - 2
- Natural Gas - 4
- Process of Drilling-2
- Kinsale Head-2
- Corrib Gas Field-2
- Ireland-2
- Advantages/Disadvantages (once asked as a question)-2 (be able to discuss more)

Paragraph 1 – The Rock Cycle	
<p>To start.....</p>  <p>Briefly explain this in words –rocks are constantly being created and destroyed but never lost.</p>	<p>In Particular....</p> <ul style="list-style-type: none"> • Sedimentary Rock. • Laid down is strata-lithification. This is connected to the development of gas/oil. • Examples: Sandstone, Shale.

Paragraph 2-Natural Gas	On land
<p>Usually at sea.....</p> <p>What is it?</p> <ul style="list-style-type: none"> • A fossil fuel • Non renewable (it will eventually run out) • 25% of the total energy demand in Ireland <p>How is it formed?</p> <ul style="list-style-type: none"> • Decayed plants and animals • Little Oxygen and heat • Bacterial action turns them into gas droplets • (Oil/Gas depends on heat) <p>Next?</p> <p>Gas is less dense than water (assuming in sea) It rises until it reaches an layer of impermeable rock Trap-Anticline Trap or Fault Trap - PHYSICAL</p>	<p>Gas deposits have been found on land. Process of extracting is similar to that of drilling but on land.</p> <p>It is called FRACKING.</p> <p>Legal in Britain but controversial in Ireland now.</p>

Paragraph 3 - Process	Paragraph 4-Kinsale Head
<p>Process of extracting natural gas/oil is DRILLING</p> <p>Stages:</p> <ul style="list-style-type: none"> • Locating Rock structures (traps) • Small explosions create seismic waves • 3-D Mapping • Exploratory Well is drilled • Determine extent and rate of flow 	<ul style="list-style-type: none"> • Cork Harbour • Producing since 1978 • Gas pumped 1000 metres below sea bed • Two other small pipelines • Production not going to last long

Paragraph 5 -Corrib Gas Field	Paragraph 6 - Use in Ireland
<ul style="list-style-type: none"> • Mayo • Very Controversial • Shell to Sea campaign • Danger 	<ul style="list-style-type: none"> • Bord Gais Eireann • Natural Gas Pipeline Network – increasing • Half a million households

Paragraph 7 - Advantages	Disadvantages
<p>Decreases our dependency</p> <p>Employment – direct and indirect (eg)</p> <p>Exploratory companies do not have to pay royalties to the state</p>	<p>Environmental – e.g. Corrib Gas Field</p> <p>Pollution in the drilling process</p>

Fifteen Trigger Words for SRPS	

Human Interaction with the Rock Cycle

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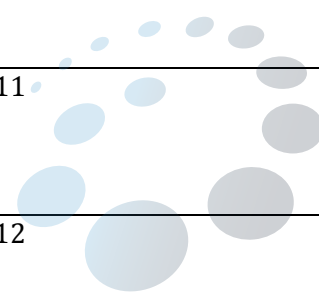
12

13

14

15

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Human Interaction with Fluvial Processes (River)

You need to be able to write about ONE activity only. In this case you should be able to use more than one example. Otherwise you would be asked on ONE example (and you could write up to three activities.)

These notes will prepare you for one example with three activities.

There will be notes at the end which you can add to one activity should the question on the day ask you for ONE activity only.

Example of one example question:

Explain, with reference to an example you have studied, how human activities have impacted on the operation of one of the following:

- ***River Processes***
- ***Mass Movement Processes***
- ***Coastal Processes***

Example of one activity question:

With reference to example(s) you have studied, account for ONE way in which humans attempt to influence natural processes in one of the following:

- ***River Processes***
- ***Mass Movement Processes***
- ***Coastal Processes***

Structure: Paragraphs by SRPs

Introduction - 4
Dams - 4
Levees - 4
Canalisation - 3
General - 1-2

Paragraph 1 - Introduction

What is a free flowing river? Undisturbed by humans from source to mouth – very few as they are seen as an economic source.

Reasons for it:
Energy, Flooding, Shipping, Settlement

Mississippi, USA

Third Largest drainage basin. 3 million km squared. 42 tributaries. 25,000km.

Paragraph 2 - Dams

Tennessee Valley Authority – 1930s. Flooding, soil erosion and malarial swamps. 9 dams with reservoirs behind which could store excess water and release it later.

Hydro electric turbines – largest supplier of electricity in USA. Jobs

Locks – navigation – vessels could move from one water level to another. 800km in length.

Maintain a minimum depth in the water during low flow. Malaria.

Reduced sediment load by 50%. Dams are filling up with sediment. River meeting a still body of water.

Paragraph 3 - Levees

What is a natural levee?

What do they do? Protect floodplains. Today, Mississippi has levees up to 10 metres in height.

Confluence of Ohio River to the delta – approximately 1600 kilometres long.

No locks or dams – levees only in lower course. However vicious circle – built upstream and then flood water is sent downstream and brings the problem with it – therefore levees need to be built there.

Floodgates – floods agricultural land rather than cities.

Paragraph 4 - Canalisation

Straightening the river by building canals through narrow necks of meanders in a river.

Today – over half of its course.

Gradient and velocity increased.

Example – New Orleans to Gulf of Mexico. 60km off meanders gone.

Paragraph 5 - Floods

2011. Caused by rainfall. Levees broken, floodgates opened. 14 million hectares flooded.

Fifteen Trigger Words	

Dams and levees - to fill in facts if more than one example allowed.

Blank area for writing facts about dams and levees.

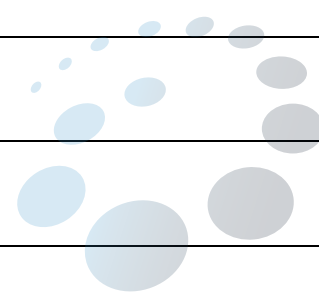
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Human Interaction with Fluvial Processes- 15 SRPS

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<u>15</u>

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18 /19 Feature of Erosion and Feature of Deposition

General Notes:

These notes are answered on fluvial features (river). You can answer it on coastal or glacial instead.

Feature of Erosion – Waterfall

Feature of Deposition – Ox-Bow Lake



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Feature of Erosion – Waterfall

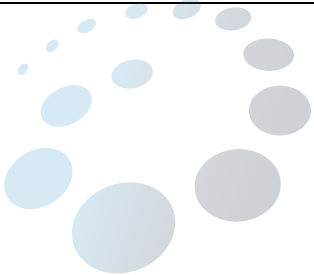
Feature: Waterfall

Example: Powerscourt Waterfall, River Dargle, Youthful Stage

Explanation:

- A waterfall is a feature of the youthful stage of a river. In this stage the river has a steep gradient and has lots of energy to erode. Valley is in a V shape.
- A river meets a band of soft rock (e.g. limestone) after flowing over hard rock (e.g. granite). The soft rock is less resistant than the hard rock.
- These are eroded at different speeds, this is called differential erosion. Soft rocks are eroded at a quicker pace than hard rocks.
- The rock is eroded through hydraulic action and abrasion. Hydraulic action is the erosion by the sheer power of water and abrasion is the erosion of the banks by the river's load.
- This erosion steepens the gradient of the river and eventually creates a vertical drop. The water falls onto the soft rock and erodes it further creating a plunge pool. This is through hydraulic action as the velocity of the water is increased as its falling.
- The falling water also erodes the soft rock beneath the hard rock as it falls. This creates an overhang. Eventually, the overhanging hard rock becomes so unstable it collapses.
- As it collapses into the plunge pool, the waterfall retreats upstream. This makes waterfall a temporary feature because headward erosion will eventually undermine all the hard rock.
- In the plunge pool, the falling water causes a swirling action called eddying. This further erodes the undercut soft rock and adds to the headward erosion of the river.
- As a river retreats upstream, it leaves a steep valley either side of the river. This is known as a gorge.
- Niagara Falls in Canada has a gorge of 12km in length.
- There are many well-known waterfalls in Ireland which add to its scenic beauty and create a lot of tourism. E.g. Killary Harbour, Mayo

Diagram



Feature of Deposition: Ox-Bow Lake

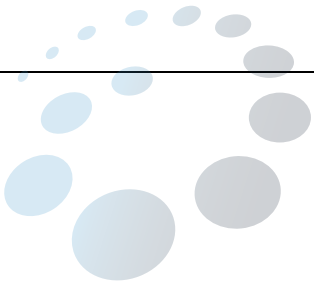
Feature:

Example:

Explanation:

- Bends occur in a river called _____ as a result of both _____ and _____.
- The major processes involved in their formation are _____ - action, abrasion cavitation and deposition.
- Erosion takes place on the _____ bank and deposition on the _____ bank. (Write in a D and E in relevant place)
- An ox-bow lake is formed when a _____ is cut off from a river. It is formed in the _____ course of the river because here the river has the least amount of _____ and _____ is dominant. In a meander, deposition or sediment builds up to create a gravel beach known as a _____ bar. Gradually, the inside banks are filled in with accumulated deposits, and the outside bends extend further and further. The meanders are becoming more pronounced and are forming loops.
- The side to side wandering of the river as the meanders get bigger is called _____. This occurs onto the floodplain of the river.
- The loop continues to bend further and further, until a thin strip of land called a _____ is created at the beginning and the end of the meander (trapped by the looping river bend).
- The turbulent water strikes the bend and eventually, the narrow neck is cut through by erosion. The processes of erosion include hydraulic action, abrasion and cavitation.
- When this happens, a new _____ is created, diverting the flow of the river during a time of high water level (flood).
- There is a slower flow at the sides of the new channel which results in _____ of sediment. This builds up and sealed the meander off from the new straight river channel.
- This leaves a horseshoe-shaped lake known as an oxbow lake. Over time the water evaporates and silt in-fills the lake.
- It is known as a _____ or a _____.

Diagram: (In stages)



Underground Karst Features

Introduction

General Introduction about Karst Landscape. (Similar to paragraph from sedimentary and landform essay)

- Limestone – Sedimentary – How is it formed
- Strata, bedding planes, joints, permeable
- Calcium Carbonate which is soluble
- Carbonation – explain in detail how limestone is chemically weathered:
- Rain water plus carbon dioxide = weak carbonic acid
- Weak carbonic acid + calcium carbonate in limestone = calcium bicarbonate
- This is removed in solution.
- As water passes through the permeable rock, it carries this solution with it underground. It is due to this that the underground feature: dripstone deposits are formed.

Example: Ailwee Caves, Burren, Co. Clare

Paragraph 2 – Explanation of Dripstone Deposits

1. A cave is an underground passage large enough to enter. If the roof collapses, a cavern is created – this is larger than a cave. Dripstone deposits are formed in caves and/or caverns.
2. Water passes through the permeable limestone underground bringing with it calcium bicarbonate.
3. As water with calcium bicarbonate reaches the cave, water and carbon dioxide are evaporated, leaving calcite. (pure calcium carbonate)
4. A stalactite is an icicle-like mineral formation that hangs from the ceiling. As CO₂ is evaporated, a ring of _____ is left around the water droplet, forming a soda straw. (A hollow stalactite). If the hollow becomes filled – the water flows down the outside – and over time the calcite deposits form a carrot shape stalactite.
5. As the drip of water hits the floor, more carbon dioxide and water evaporates, leaving deposits of calcite build up to form a stalagmite. These are generally thicker than stalactites.
6. As time goes on, stalactites and stalagmites may join to form a pillar.
7. If this process occurs along a crack in the ceiling, a curtain is formed. This a sheet of calcite that hangs from the roof of the cavern

Diagram - Dripstone Deposits



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Surface Karst Feature

Introduction:

General Introduction about Karst Landscape. (Similar to paragraph from sedimentary and landform essay)

- Limestone – Sedimentary – How is it formed
- Strata, bedding planes, joints, permeable
- Calcium Carbonate which is soluble
- Carbonation – explain in detail how limestone is chemically weathered:
- Rain water plus carbon dioxide = weak carbonic acid
- Weak carbonic acid + calcium carbonate in limestone = calcium bicarbonate
- This is removed in solution.

Feature: Limestone Pavement

Example: The Burren, Co. Clare

Explanation: Limestone Pavement

As the water trickles through vertical joints as opposed to through the rock itself the cracks are widened and deepened

These widened cracks are called grikes. The wider the grikes are, the faster the water can seep into the limestone. They can be up to 30cm by 100cm.

In between grikes there are flat ridges of rock called clints. Often on top of clints, carbonation attacks weak areas of rock. Acid rainwater may fill up in puddles and erodes it through solution. This results in hollows on the clints known as karren.

If water flows out of karren and down the sides of the grikes, furrows are left in the edge of the grikes. This process is known as fluting.

If a river is flowing over a limestone pavement it can erode the rock beneath it so that a hole is created. This is called a swallow or a sink hole. Rivers often disappear through these holes.

Where the river used to flow (but is now down a swallow hole) is known as a dry valley. The length of the dry valley is increased as more swallow holes are formed upstream.

Diagram: Limestone Pavement



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Kate Fortune

6th Year Geography Higher Level



Kate brings her reputation as an authority on the Geography Syllabus to The Dublin School of Grinds. In 2013, 91% of Kate's students achieved an A-grade or B-grade in their Leaving Certificate Examination. Nationwide this figure was just 36.8%.

Kate is regarded as a specialist Geography teacher and is extremely popular amongst students due to her focus on SRPs (Significant Relevant Points), which are key to unlocking the Geography marking scheme.



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