



Coimisiún na Scrúduithe Stáit State Examinations Commission

LEAVING CERTIFICATE EXAMINATION 2016

GEOGRAPHY – HIGHER LEVEL

FRIDAY 10 JUNE – MORNING 9.30 - 12.20

Examination Number

For the Examiner's Use Only

Part One Short-Answer Questions	Total Mark	Adv. Ex.	App. Ex.	App. Adv.
Question 1				
Question 2				
Question 3				
Question 4				
Question 5				
Question 6				
Question 7				
Question 8				
Question 9				
Question 10				
Question 11				
Question 12				
Accumulated Mark				
Disallowed Marks				
Net Mark				

Note: Remember to return this paper with your answer book.

Otherwise, you will lose marks.

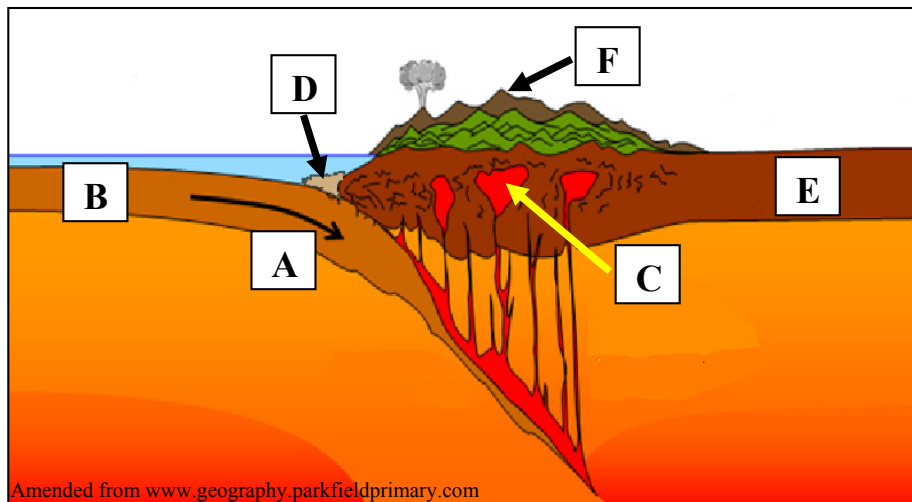
PART ONE – SHORT-ANSWER QUESTIONS – 80 MARKS

Attempt any **TEN** questions.

All questions carry equal marks.

THESE QUESTIONS ARE TO BE ANSWERED IN THE SPACES PROVIDED

1. The Tectonic Cycle



Examine the diagram above and answer each of the following questions.

- (i) Match each of the letters **A, B, C, D, E** and **F** with the feature that best matches it in the table below.

Feature	Letter
Continental crust	
Oceanic trench	
Mountain range	
Oceanic crust	
Subduction zone	
Magma chamber	

- (ii) Indicate whether the following statement is true or false, by circling the correct option.

Plutonic igneous rocks are formed at **C**.

True

False

[8m]

2. Volcanic Activity



Examine the photographs above and answer each of the following questions.

- (i) Match each of the photographs **A**, **B**, **C** and **D** with the feature or process that best matches it in the table below.

Feature / Process	Letter
Pyroclastic flow	
Lava fissure eruption	
Ash cloud	
Lava vent eruption	

- (ii) Indicate whether each of the following statements is true or false, by circling the correct option in each case.

- (a) Basic lava has a very high silica content.

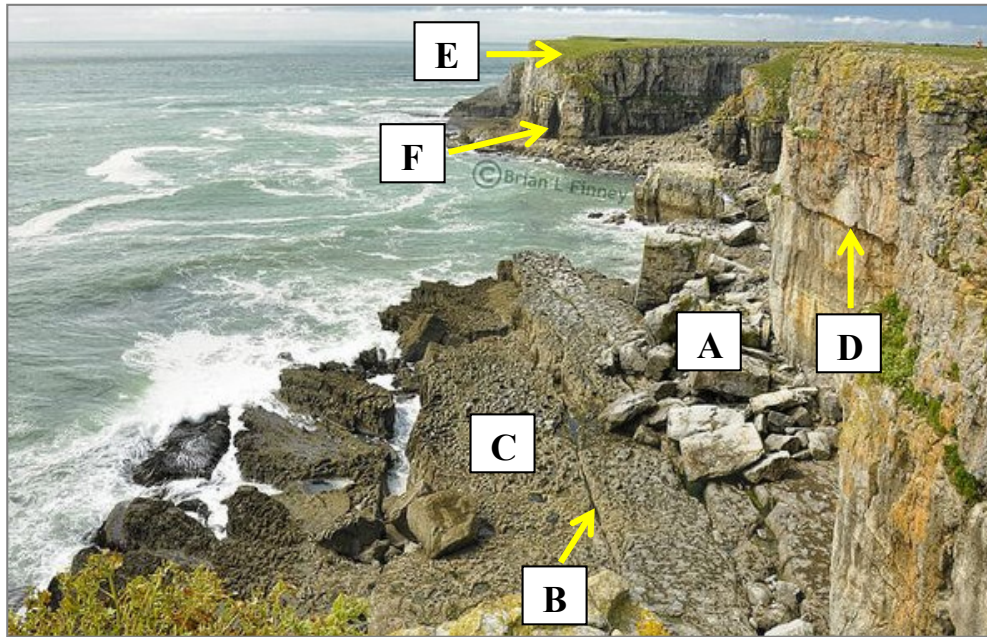
True *False*

- (b) Lava with a high silica content is most associated with explosive eruptions.

True *False*

[8m]

3. Coastal Landforms and Rock Structures



© Brian L Finney

Examine the photograph above and answer each of the following questions.

- (i) Match each of the letters **A**, **B**, **C**, **D**, **E** and **F** with the coastal landform or rock structure that best matches it in the table below.

Coastal Landform / Rock Structure	Letter
Joint	
Wave-cut platform	
Rock fall	
Sea cave	
Headland	
Bedding plane	

- (ii) Indicate whether the following statement is true or false by circling the correct option.

Rock structures such as joints and bedding planes are most associated with igneous rocks.

True

False

[8m]

4. Rocks

- (i) The list below contains a number of source materials from which rocks are formed and a number of metamorphic rocks.

Sand	Marble
Shells and fish bones	Gneiss
Magma	Quartzite

Complete the table below by inserting the correct terms from the list, to match each of the rocks named in the table with:

- (a) the source material most associated with it and
(b) the metamorphic rock most associated with it.

Rock Name	(a) Source Material	(b) Metamorphic Rock
Sandstone		
Limestone		
Granite		

- (ii) Name the rocks most associated with each of the following Irish locations.

(a) The Antrim Plateau _____

(b) The Burren _____

[8m]

5. Landforms

Examine the 1:50 000 Ordnance Survey map and legend accompanying this paper and answer each of the following questions in the table below.

- (i) Match each of the following landforms with the grid reference that best matches its location on the Ordnance Survey map, in the table below:
 - V-shaped valley
 - Cut-off meander
 - Drumlin
 - Lagoon.

- (ii) Indicate whether glacial processes or fluvial processes or coastal processes are most associated with the formation of each landform, by ticking the correct box in the table below.

Grid Reference	(i) Landform	(ii) Glacial Processes	(ii) Fluvial Processes	(ii) Coastal Processes
L 95 78				
L 93 78				
L 94 83				
L 92 85				

[8m]

6. Ordnance Survey Map

Examine the 1:50 000 Ordnance Survey map and legend accompanying this paper and answer each of the following questions.

- (i) Calculate the approximate area, in square kilometres, of Westport Bay, south of northing 85 and west of easting 95.

- (ii) What is the aspect of the slope at M 037 784?

- (iii) Measure the straight line distance, in kilometres, from the Post Office in Westport town to the Post Office at M 033 804.

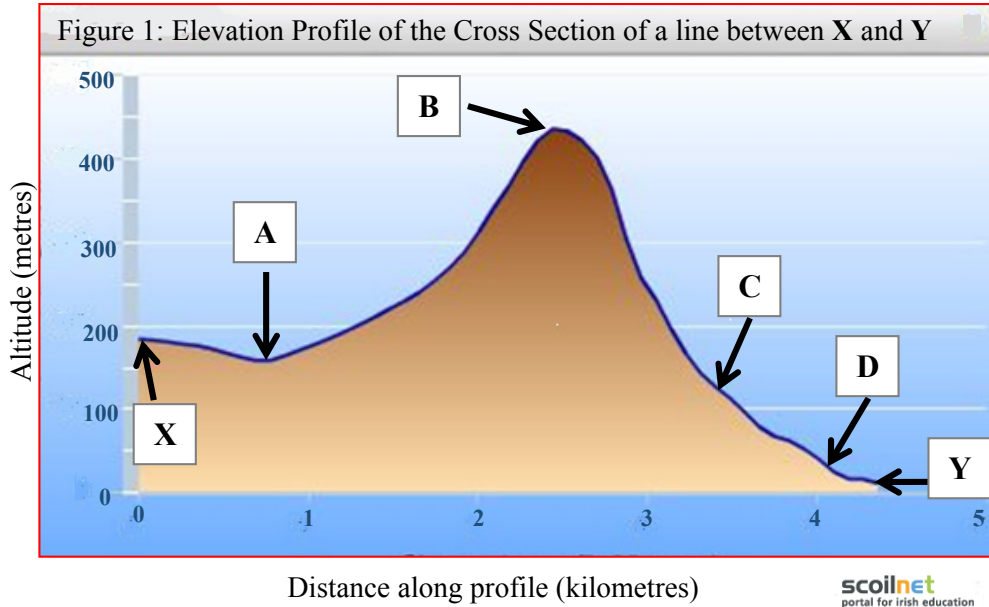
- (iv) Give a six-figure grid reference for the Trailhead on the waymarked walk, in the south of the Ordnance Survey map.

[8m]

7. Map Skills

Locate point **X**, L 936 781, and point **Y**, L 937 825 on the 1:50 000 Ordnance Survey map accompanying this paper.

Figure 1 shows an elevation profile of the cross section of a line between point **X** and point **Y** on the Ordnance Survey map.



Using the 1:50 000 Ordnance Survey map and legend and the elevation profile above, answer each of the following questions.

- (i) Match each of the letters **A**, **B**, **C** and **D** on the elevation profile above, with the feature on the Ordnance Survey map that best matches it in the table below.
- (ii) Indicate whether each feature in the table below is part of the physical landscape or cultural landscape, by ticking the correct box.

Feature on Ordnance Survey map	(i) Letter	(ii) Physical Landscape	(ii) Cultural Landscape
R335			
Owenwee River			
Conical Peak			
Waymarked Walk			

[8m]

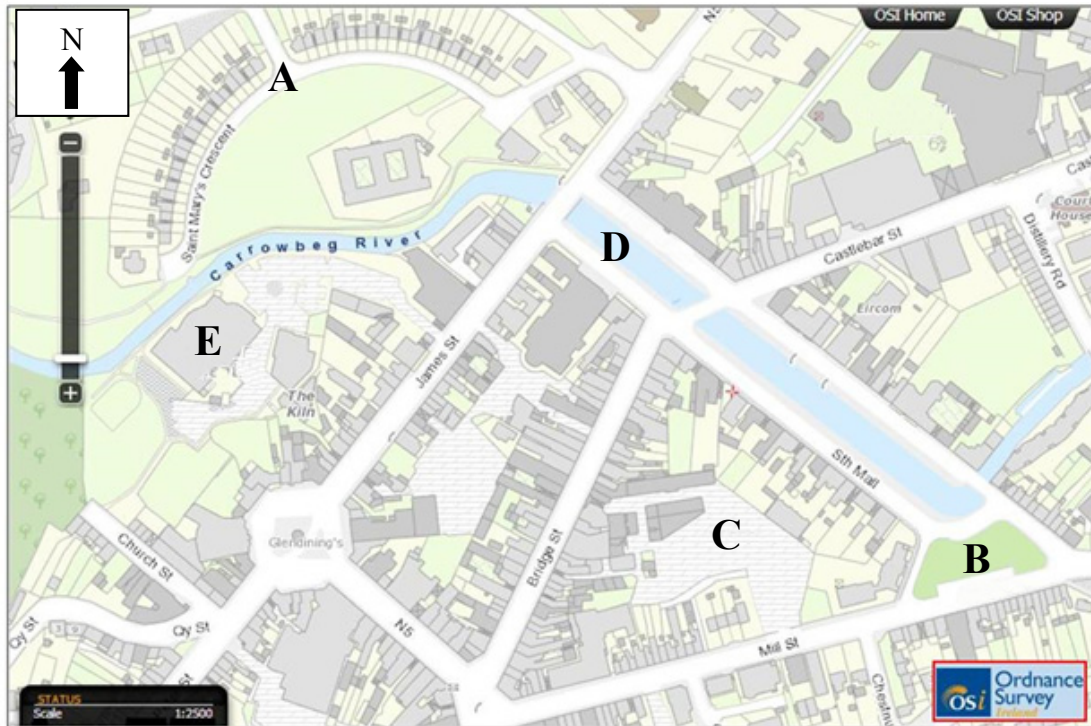
8. Aerial Photograph – Location

Examine the street map of Westport below and the aerial photograph accompanying this paper.

N.B. The orientation of the aerial photograph accompanying this paper is different from the orientation of the street map below.

The aerial photograph was taken from a point just north of the area shown on the street map, looking southwards across the town.

Street Map



Locate each of the features **A**, **B**, **C**, **D** and **E** labelled above, on the aerial photograph accompanying this paper.

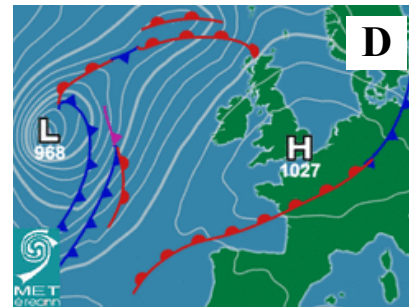
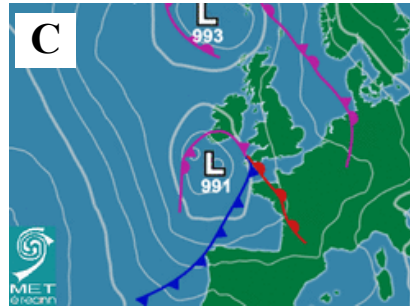
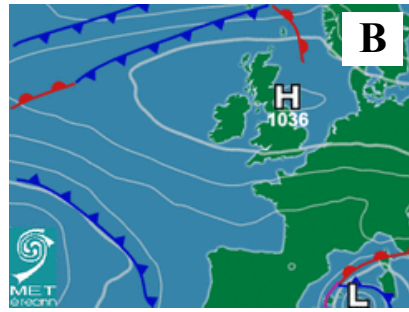
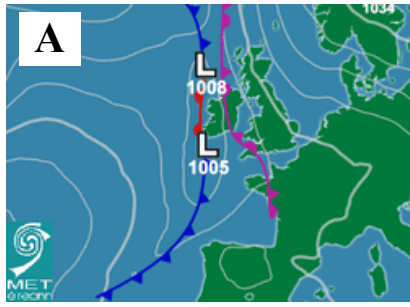
Using accepted notation, give the location of each of these features on the aerial photograph in the table below.

One has been completed for you.

Feature on Street Map	Location on Aerial Photograph
A Centre of Saint Mary's Crescent	Right foreground
B Fairgreen	
C Car Park	
D North Mall	
E Leisure Centre	

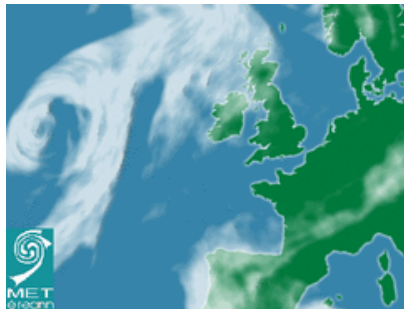
[8m]

9. Weather Charts



Examine the weather charts above and the cloud charts below.

Match each of the weather charts **A**, **B**, **C** and **D** with the cloud chart most associated with it, by writing the correct letter in the space provided in each case.



(i) Letter _____



(ii) Letter _____



(iii) Letter _____

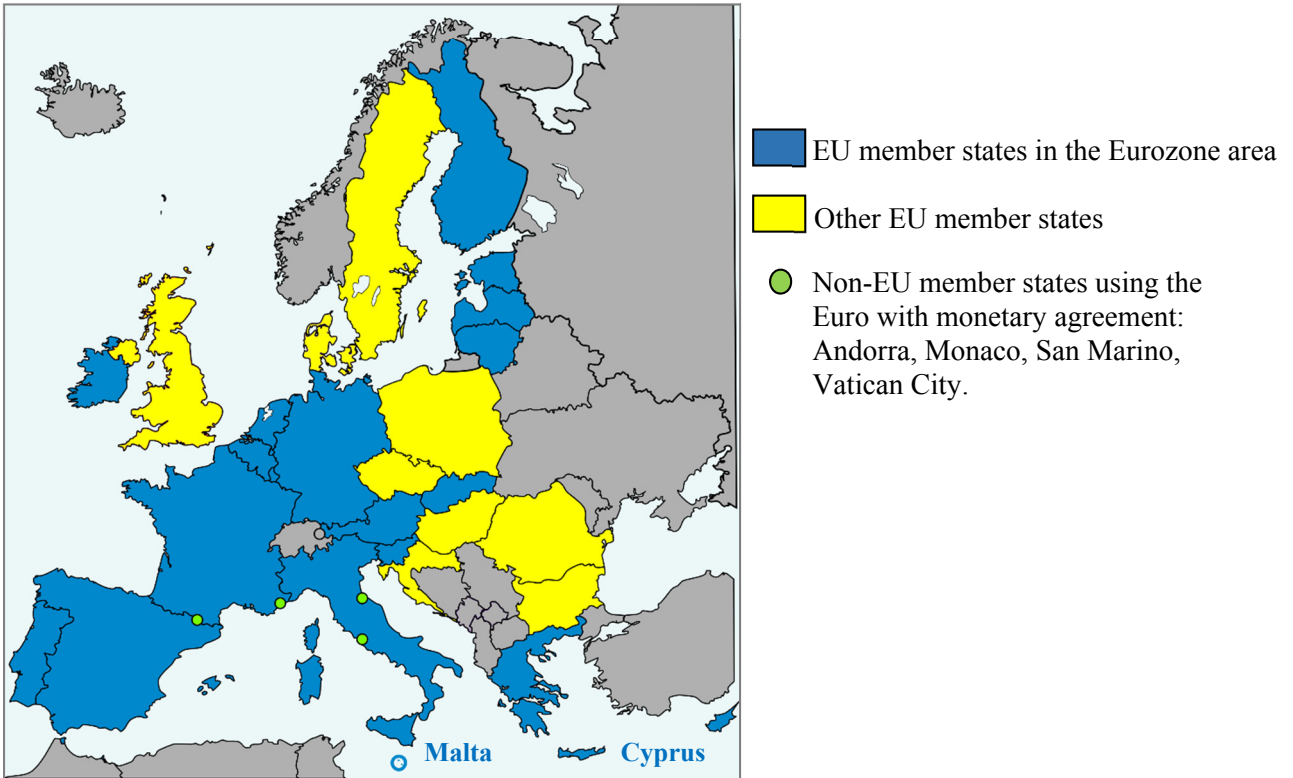


(iv) Letter _____

[8m]

10. The European Union

The Eurozone Area, 2015



Amended from www.wikimedia.org

Examine the map above showing the Eurozone area in 2015 and answer each of the following questions.

- (i) Name the most northerly European Union (EU) member state in the Eurozone area in 2015.

- (ii) Indicate the total number of European Union member states in the Eurozone area in 2015, by ticking the correct box.

12 19 28

- (iii) Name **two** European Union member states not in the Eurozone area in 2015.

1. _____

2. _____

- (iv) Name **two** non-European Union member states using the Euro in 2015.

1. _____

2. _____

[8m]

11. Statistical Interpretation

Irish Born Population Living Abroad				
Region	1990	2000	2010	2013
Australia	54,318	55,410	71,826	77,513
Canada	28,321	26,194	24,957	25,985
France	6,702	7,135	9,349	9,664
New Zealand	6,344	6,597	8,019	8,869
Poland	101	74	8,409	8,136
UK	596,129	531,341	398,184	412,658
USA	195,453	168,625	138,549	143,571

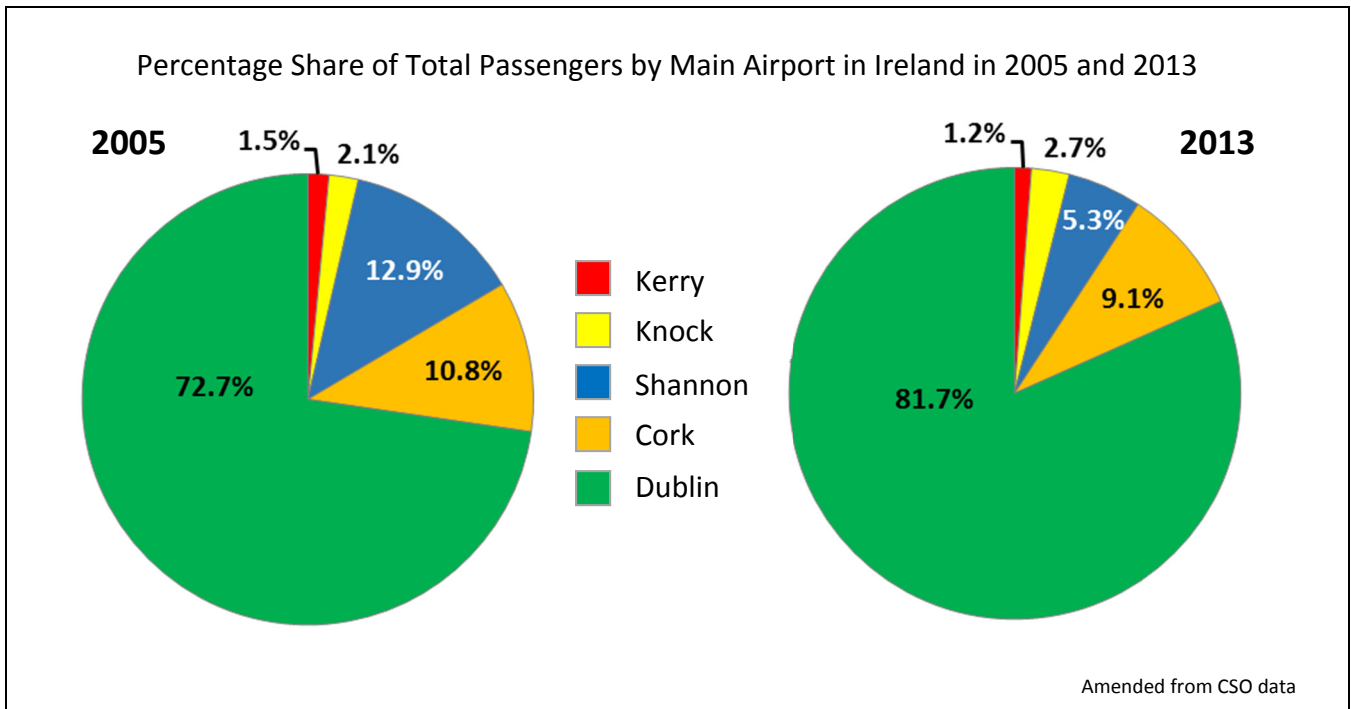
Amended from United Nations Statistics, 2013

Examine the table above which shows the number of Irish born people living abroad in selected regions and answer each of the following questions.

- (i) Which region in the table above had the largest number of Irish born residents in 2013?
- _____
- (ii) How many Irish born people were living in New Zealand in 2000?
- _____
- (iii) Calculate the increase in the number of Irish born people living in Poland between 2000 and 2013.
- _____
- (iv) Explain briefly **one** reason for the increase in the number of Irish born people living in Poland between 2000 and 2013.
- _____
- _____

[8m]

12. Graphical Interpretation



Examine the charts above showing the percentage share of total passengers by main airport in Ireland in 2005 and 2013, and answer each of the following questions.

- (i) Which airport had the largest percentage share of total passengers in 2013?

- (ii) Which airport had the second largest percentage share of total passengers in 2005?

- (iii) Calculate the decrease in Shannon Airport's percentage share of total passengers between 2005 and 2013.

- (iv) Explain briefly **one** economic effect of a decrease in passenger numbers at Shannon Airport on the Shannon Region.

[8m]

PART TWO – STRUCTURED and ESSAY QUESTIONS – 320 MARKS

You must attempt **FOUR** questions, as follows:

- **TWO** questions from **Section 1 – Core**:
 - **One** question from Questions 1, 2 and 3 **(80 marks)**
 - AND**
 - **One** question from Questions 4, 5 and 6 **(80 marks)**
- **ONE** question from **Section 2 – Electives (80 marks)**
- **ONE** question from **Section 3 – Options (80 marks)**

THESE QUESTIONS ARE TO BE ANSWERED IN THE ANSWER BOOK

SECTION 1 – CORE

Questions 1 to 6

You **MUST** attempt **TWO** questions:

ONE from **Patterns and Processes in the Physical Environment**

AND

ONE from **Regional Geography**

PATTERNS AND PROCESSES IN THE PHYSICAL ENVIRONMENT

Questions 1 to 3

Attempt **ONE** question

Question 1

A. Ordnance Survey Map

Examine the 1:50 000 Ordnance Survey map and legend accompanying this paper.

Draw a sketch map of the area shown to half scale.

On it, correctly show and label each of the following:

- Westport Bay
- The entire course of the Owenwee River
- The entire area of Kinlooeey Lough at M 03 81
- The entire area of land above 200 metres in the south-west of the map.

[20m]

B. Rocks

Explain the formation of **one** igneous rock and **one** metamorphic rock, with reference to Irish examples.

[30m]

C. Weathering

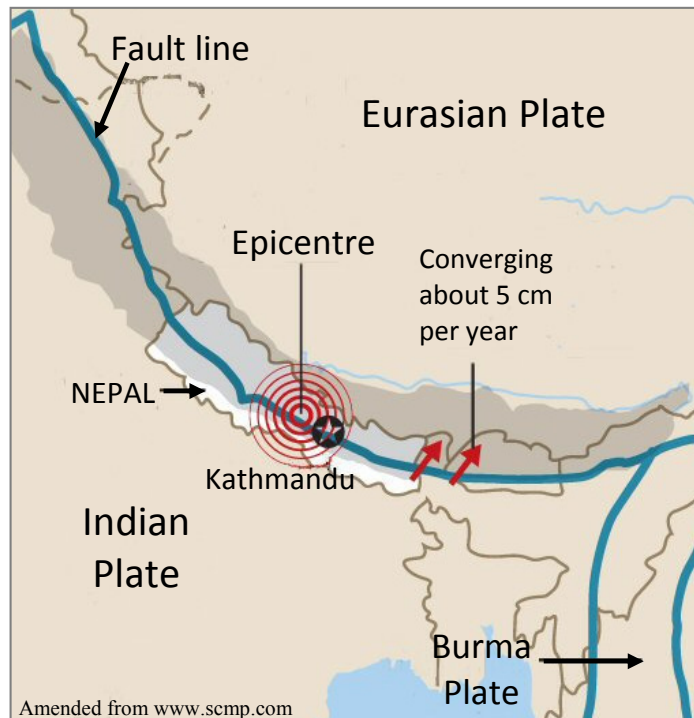
Explain **one** process of physical weathering and **one** process of chemical weathering.

[30m]

Question 2

A. Earthquakes

Nepal Earthquake, 25 April 2015, Magnitude 7.8



Examine the diagram above and answer each of the following questions.

- (i) What was the magnitude of the earthquake in Nepal in 2015?
- (ii) The movement of which **two** plates resulted in the earthquake in Nepal?
- (iii) What type of plate boundary is shown above?
- (iv) Name **two** other types of plate boundaries.
- (v) Explain briefly what is meant by the term *epicentre*.
- (vi) Explain briefly **one** way of reducing the impact of earthquakes.

[20m]

B. Landform Development

Answer (i) or (ii).

- (i) Examine the role of the **processes of deposition** on the formation of any **one** landform that you have studied.

Or

- (ii) Describe and explain the **factors governing the operation** of any **one** mass movement process that you have studied.

[30m]

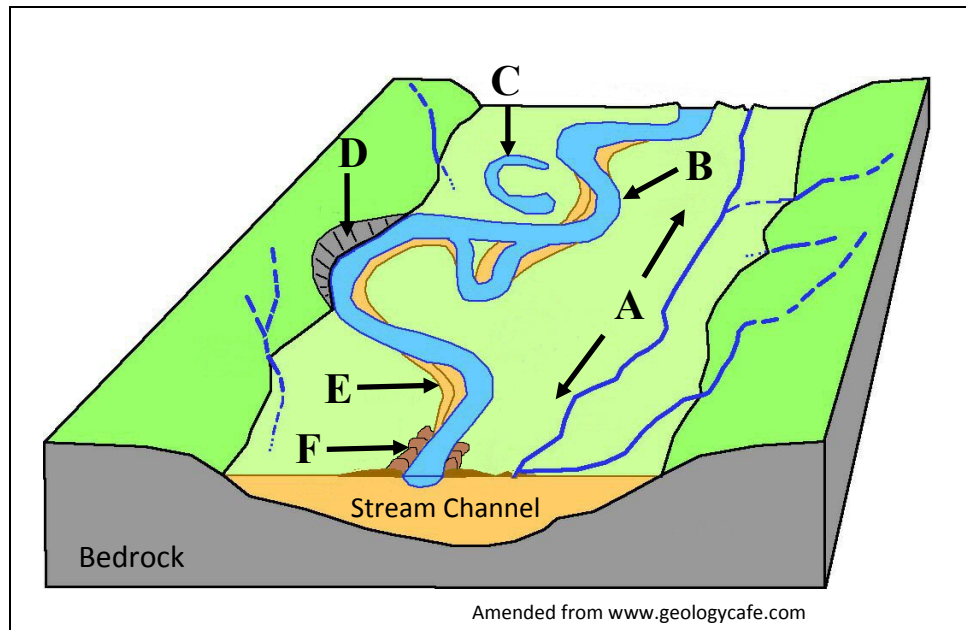
C. Fluvial Adjustment

Examine how changes in base level impact on geomorphic processes and landforms in a fluvial environment.

[30m]

Question 3

A. Fluvial landforms



Examine the diagram above and answer each of the following questions.

- (i) Name each of the fluvial landforms **A**, **B**, **C**, **D**, **E** and **F**.
- (ii) Explain briefly what is meant by the term *bedrock*.
- (iii) Explain briefly what is meant by the term *alluvium*.

[20m]

B. Landscape Development

Examine how different rock types produce distinctive landscapes, with reference to examples that you have studied.

[30m]

C. Constructive Plate Boundaries

Discuss the geographical distribution and the impacts of constructive plate boundaries.

[30m]

REGIONAL GEOGRAPHY

Questions 4 to 6

Attempt **ONE** question

Question 4

A. Map Skills

Draw an outline map of a **Continental / Sub-Continental** region (not in Europe) that you have studied.

On it, show and name each of the following:

- The outline of a named feature of relief (upland or lowland)
- A named urban centre
- The outline of a named agricultural **or** industrial region
- The course of a named river.

[20m]

B. European Union

Examine the impact of the expansion of the European Union on member states, with reference to both economic and social impacts.

[30m]

C. Secondary Economic Activity

Examine the development of secondary economic activity in an **Irish** region that you have studied, with reference to any **two** of the following factors:

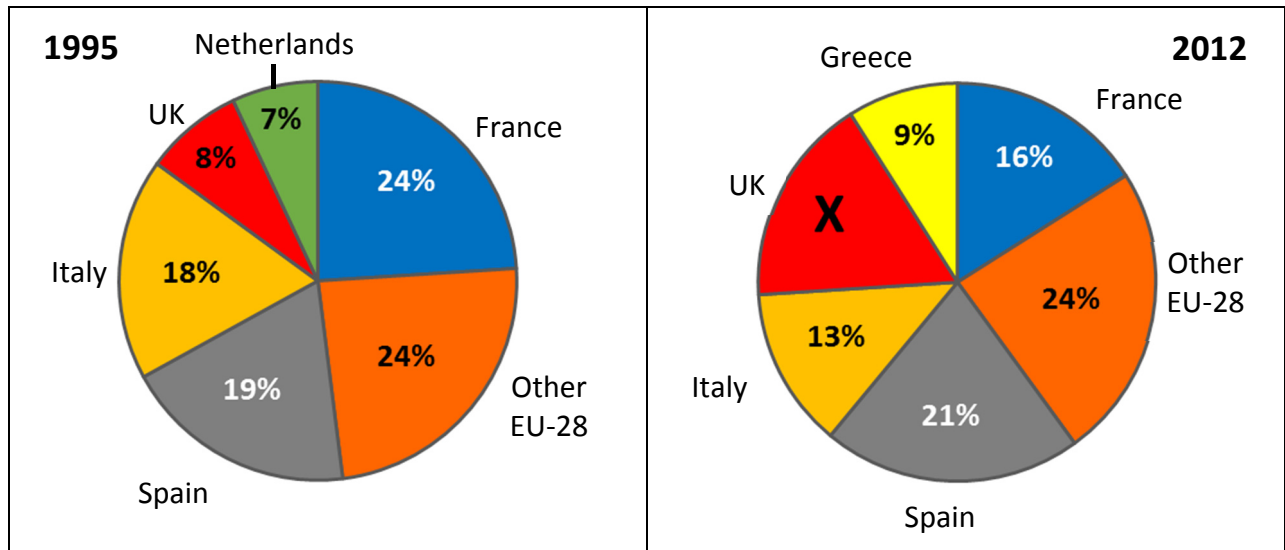
- Raw materials
- Transport
- Labour
- Markets.

[30m]

Question 5

A. Economic Activity

Main Aquaculture Producers in the European Union (EU-28) in 1995 and 2012



Amended from Eurostat 2015

Examine the charts above showing the main aquaculture producers in the European Union (EU-28) in 1995 and 2012 and answer each of the following questions.

- Calculate **X**, the percentage of EU-28 aquaculture produced by the UK in 2012.
- Which single country produced over one-fifth of EU-28 aquaculture production in 2012 **and** what percentage did that country produce in 1995?
- With reference to the charts above, which country was no longer one of the main EU-28 aquaculture producers in 2012 **and** which country replaced it?
- Explain briefly **one** positive impact of European Union policy on the fishing industry.
- Explain briefly **one** negative impact of European Union policy on the fishing industry.

[20m]

B. Agriculture in a Continental / Sub-Continental Region

Account for the development of agriculture in a **Continental / Sub-Continental** region (not in Europe), that you have studied, with reference to any **two** of the following factors:

- Soil
- Relief
- Climate.

[30m]

C. Concept of a Region

Examine how culture **or** the physical landscape can be used to define regions, with reference to examples that you have studied.

[30m]

Question 6

A. Unemployment

Unemployment Statistics in Selected Countries

Country	Unemployment as % of Total Population		Youth Unemployment as % of Active Population (15 to 24 years)			
	2008	2014	2008	2012	2013	2014
Germany	7.4	5.3	10.4	8.0	7.8	7.7
Ireland	6.4	11.3	13.3	30.4	26.8	23.9
Greece	7.8	26.5	21.9	55.3	58.3	52.4
France	7.4	10.3	19.0	24.4	24.8	24.0

Amended from Eurostat

Examine the table above showing unemployment as a percentage of total population and youth unemployment as a percentage of active population, in selected countries, and answer each of the following questions.

- (i) Which **two** countries had the same percentage of total population unemployed in 2008?
- (ii) What was the trend in the percentage of total population unemployed in Ireland between 2008 and 2014?
- (iii) Explain briefly **one** reason for this trend.
- (iv) Which country's youth unemployment, as a percentage of active population, decreased between 2008 and 2014?
- (v) Which country had the greatest increase in its youth unemployment, as a percentage of active population, between 2008 and 2014?
- (vi) What has been the trend in Ireland's youth unemployment, as a percentage of active population, from 2012 to 2014 inclusive? State **one** reason for this trend.

[20m]

B. Dynamics of Regions - Climate

Examine the importance of climate to the economic development of any **two** contrasting **European** regions (not in Ireland), that you have studied.

[30m]

C. Urban Development

Examine how **two** of the following factors have influenced the development of any urban area that you have studied:

- Transport
- Location
- Primary economic activity.

[30m]

SECTION 2 – ELECTIVES

Questions 7 to 12

You **MUST** attempt **ONE** question from:

Patterns and Processes in Economic Activities

OR

Patterns and Processes in the Human Environment

PATTERNS AND PROCESSES IN ECONOMIC ACTIVITIES

Questions 7 to 9

Question 7

A. Ordnance Survey Map

Examine the 1:50 000 Ordnance Survey map and legend accompanying this paper.

Draw a sketch map of the area shown to half scale.

On it, correctly show and label each of the following:

- A railway line
- The N59
- The R335
- The built up area of Westport.

[20m]

B. Multinational Company

Explain the factors that influence the operations of any **one** multinational company that you have studied.

[30m]

C. Economic Activity - Conflict

Examine how conflict may arise between the exploitation of natural resources and the need to protect the environment, with reference to example(s) that you have studied.

[30m]

Question 8

A. Human Development Index

Human Development Index (HDI) Data for Selected Regions

Region	HDI 1990	HDI 2014	Gross National Income 2014	Life expectancy at birth (years) 2014	Mean years of schooling 2014
Norway	0.849	0.944	\$64,992	81.6	12.6
Ireland	0.770	0.916	\$39,568	80.9	12.2
USA	0.859	0.915	\$52,947	79.1	12.9
Brazil	0.608	0.755	\$15,175	74.5	7.7
Haiti	0.417	0.483	\$1,669	62.8	4.9
Mali	0.233	0.419	\$1,583	58.0	2.0

Amended from www.undp.org

Examine the table above showing Human Development Index data for selected regions and answer each of the following questions.

- (i) Which region had the highest Human Development Index in 1990 **and** which region had the highest Human Development Index in 2014?
- (ii) Calculate the difference (in dollars) between the gross national income in Norway and the gross national income in Mali in 2014.
- (iii) Which region had the highest mean years of schooling in 2014?
- (iv) Explain briefly **one** reason why the mean years of schooling are higher in countries such as Norway and Ireland.
- (v) Name **one** indicator used to calculate the Human Development Index.
- (vi) Explain briefly **one** advantage of using the Human Development Index as a measure of economic development.

[20m]

B. Renewable Energy

Examine how the development of renewable energy is crucial for Ireland's environment and economy.

[30m]

C. Tertiary Economic Activity

Using evidence from the 1:50 000 Ordnance Survey map accompanying this paper, discuss the potential for the development of tourism in the area shown on the map, with reference to each of the following:

- Accessibility
- Attractions
- Services (excluding transport).

[30m]

Question 9

A. Irish Trade

Ireland's Top Export Partners, 2014

Export Partner	% of Total Exports
USA	22.2%
UK	15.1%
Belgium	13.2%
Germany	6.6%
Switzerland	5.9%
France	5.2%

Amended from www.wikipedia.org

Examine the data above showing Ireland's top export partners in 2014 and answer each of the following questions.

- (i) Using graph paper, draw a suitable graph to illustrate this data.
- (ii) Explain briefly **one** advantage for a country of having a large number of export partners.

[20m]

B. Economic Development

Examine how **two** of the following factors influence the level of economic development in any developing economy that you have studied:

- Physical factors
- Social factors
- Cultural factors
- Political factors.

[30m]

C. European Union Policy

Examine how European Union Policy influences economic activity in Ireland.

[30m]

PATTERNS AND PROCESSES IN THE HUMAN ENVIRONMENT

Questions 10 to 12

Question 10

A. Population - Ireland

Predicted Irish Population by Broad Age Group and Sex in 2040

Age Group (years)	Males (%)	Female (%)
0 – 14	17%	16%
15 – 64	64%	62%
65+	19%	22%

Amended from US Census Bureau

Examine the data above showing the predicted Irish population, by broad age group and sex in 2040 and answer each of the following questions.

- (i) Using graph paper, draw a suitable graph to illustrate this data.
- (ii) Explain briefly **one** advantage of predicting future population characteristics.

[20m]

B. Urban Functions

Name, locate (using accepted notation) and explain **three** different urban functions evident on the aerial photograph of Westport accompanying this paper.

[30m]

C. Population

Examine how levels of development are influenced by population characteristics such as population structure, density and growth etc., with reference to examples that you have studied.

[30m]

Question 11

A. Aerial Photograph

Examine the aerial photograph of Westport accompanying this paper.

Draw a sketch map of the aerial photograph, half the length and half the breadth.

On it, correctly show and label each of the following:

- The river
- A bridge
- A large car park in the background
- The main road running from the centre foreground to the right background.

[20m]

B. Irish Migration

Describe and explain changes in patterns of migration to and from Ireland over time.

[30m]

C. Urban Growth – Developing World City

Problems can develop from the growth and expansion of urban centres.

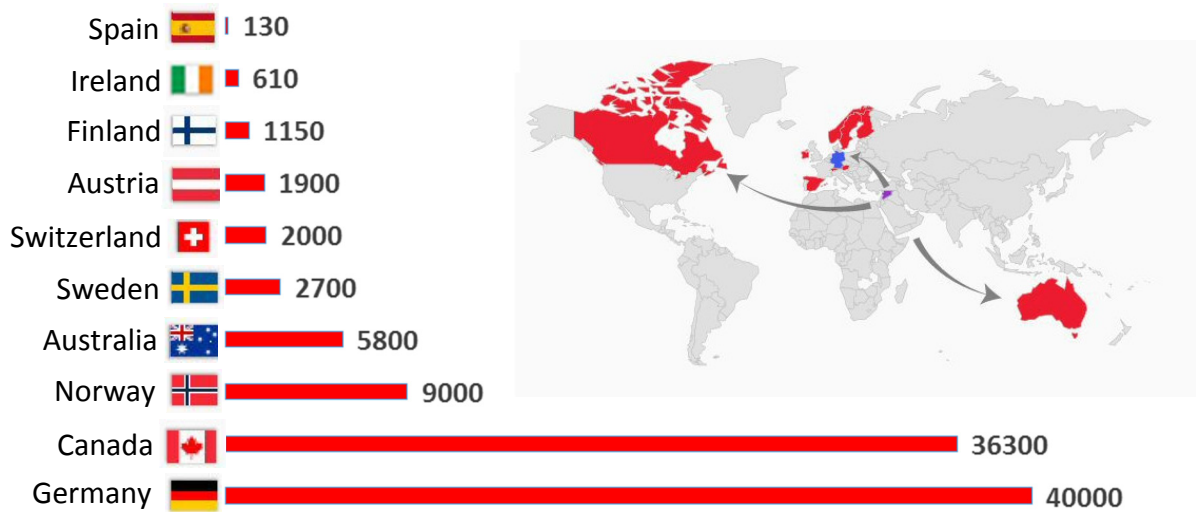
Discuss this statement with reference to **one** developing world city that you have studied.

[30m]

Question 12

A. Migration

Confirmed Numbers of Places Pledged by Selected Countries to Syrian Refugees
as of 11 December, 2015



Note: Figures relate to both resettlement of Syrian refugees and other forms of legal admission.

Amended from UNHCR and *The Independent*

Examine the chart above showing the confirmed number of places pledged by selected countries to Syrian refugees as of the 11 December, 2015 and answer each of the following questions.

- (i) How many places did Ireland pledge to Syrian refugees as of the 11 December, 2015?
- (ii) Which country, that is not a member of the European Union, pledged the most number of places?
- (iii) Calculate the total number of places pledged by the European Union member states listed above.
- (iv) List **two** push factors that result in people migrating.
- (v) Explain briefly **one** challenge faced by countries receiving large numbers of migrants.
- (vi) Explain briefly **one** positive impact of immigration for the receiving country.

[20m]

B. Central Place Theory

Describe and explain Central Place Theory with reference to example(s) that you have studied.

[30m]

C. Urban Development

Examine how urban centres change over time with reference to example(s) that you have studied.

[30m]

SECTION 3 – OPTIONS

Questions 13 to 24

Attempt **ONE** question

Note: It is better to discuss **three** or **four** aspects of the theme in some detail, rather than to give a superficial treatment of a large number of points.

Global Interdependence

Note: It is better to discuss **three** or **four** aspects of the theme in some detail, rather than to give a superficial treatment of a large number of points.

13. Views of development and underdevelopment involve contrasting models and approaches to development.
Discuss. [80m]
14. Examine sustainable development as a model for future development. [80m]
15. Discuss the human and natural causes of desertification and of deforestation. [80m]

Geoecology

Note: It is better to discuss **three** or **four** aspects of the theme in some detail, rather than to give a superficial treatment of a large number of points.

16. Examine the general composition and characteristics of any **one** soil type. [80m]
17. Various soil patterns have developed in different regions of the world because of the action of different soil forming processes.
Discuss. [80m]
18. Examine the characteristics of **one** biome that you have studied, with reference to any **three** of the following: [80m]
- Climate
 - Soils
 - Flora
 - Fauna.

Culture and Identity

Note: It is better to discuss **three** or **four** aspects of the theme in some detail, rather than to give a superficial treatment of a large number of points.

19. Examine the importance of religion as an indicator of culture. [80m]
20. Many states have different cultural groups within their borders. Discuss. [80m]
21. Identity as a concept entails a variety of cultural factors. Discuss this statement with reference to a case study of a European region that you have studied. [80m]

The Atmosphere - Ocean Environment

Note: It is better to discuss **three** or **four** aspects of the theme in some detail, rather than to give a superficial treatment of a large number of points.

22. Circulation in both the atmosphere and the oceans gives rise to different weather patterns. Discuss. [80m]
23. Climate characteristics change over time and space. Discuss. [80m]
24. Examine how climate characteristics influence economic development. [80m]

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