

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA
MATRICULATION EXAMINATION
ADVANCED LEVEL
MAY 2013

SUBJECT: GEOGRAPHY
PAPER NUMBER: I
DATE: 9th May 2013
TIME: 4.00 p.m. to 6.00 p.m.

Answer **THREE** questions in total, one from each section. Questions carry equal marks.

SECTION A: Physical Geography of the Maltese Islands

Question 1

Table 1 gives the minimum and maximum monthly values of selected climatic parameters for the Maltese Islands.

| Month | Sunshine Hours | Rainfall (mm) | Temp ° C Min ~ Max | | Sea ° C |
|-----------|----------------|---------------|-----------------------|------|---------|
| January | 5.46 | 90.1 | 15.1 | 9.5 | 14.5 |
| February | 6.36 | 60.8 | 15.3 | 9.3 | 14.5 |
| March | 7.33 | 44.7 | 16.5 | 10.2 | 14.5 |
| April | 8.46 | 24 | 18.8 | 11.9 | 16.1 |
| May | 9.99 | 8.9 | 23.1 | 15.1 | 18.4 |
| June | 11.23 | 3.8 | 27.4 | 18.6 | 21.1 |
| July | 12.15 | 0.9 | 30.2 | 21.2 | 24.5 |
| August | 11.36 | 8.8 | 30.6 | 21.8 | 25.6 |
| September | 9.00 | 40.4 | 27.8 | 20.4 | 25.0 |
| October | 7.22 | 123.6 | 23.8 | 17.2 | 22.2 |
| November | 6.5 | 76.8 | 20.0 | 13.9 | 19.5 |
| December | 5.2 | 100.2 | 16.6 | 11.1 | 16.7 |

Source: Malta Government website, 2002

Table 1

- a. With reference to the data displayed in the above table, explain how the Maltese Islands are characterised by a Mediterranean type of climate. (10 marks)
- b. Explain each of the climatic characteristics stated hereunder:
 - i. The land temperatures in the Maltese Islands are affected by sea temperatures. (7 marks)
 - ii. The summer months in the Maltese Islands are not completely dry; small amounts of rainfall may occur. (7 marks)

Question 2

The physical environment of the Maltese Islands is mainly responsible for the formation of local water resources. Yet, the Malta Water Association points out that Malta is among the 10 poorest countries globally in terms of water resources per inhabitant. (The Sunday Times, 1-04-2012)

- a. With reference to the above statement, discuss the physical characteristics which contribute to the formation of water supply on the Maltese Islands. (12 marks)
- b. With regards to water supply, what are the major concerns expressed by the local authorities and associations? (12 marks)

Question 3

‘Over the course of this century, Malta and the rest of southern Europe, can expect the effects of climate change on sea levels, coastal flooding, draught and storm intensity to increase at a quicker rate and with a harsher intensity than had previously been thought. (Lindsay D., The Malta Independent, 02-04-2009)

With reference to the above statement, describe the potential effects that rising sea levels could have on the Maltese coastal environment. (24 marks)

SECTION B: Human Geography of the Maltese Islands

Question 4

Figure 1 shows the intercensal change in population density by locality: 2005 - 2011

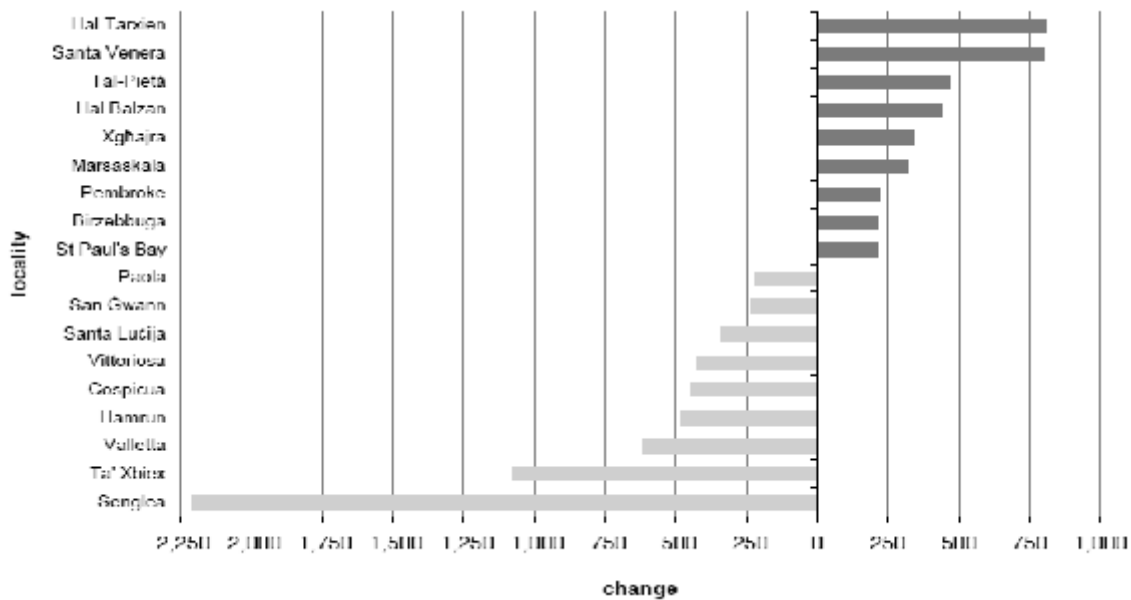


Figure 1: Intercensal change in population density by locality: 2005 – 2011
Source: NSO, 2012.

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- a. Define population density. (4 marks)
- b. Describe and discuss Figure 1. (10 marks)
- c. State and explain **TWO** factors affecting population density increase and **TWO** factors affecting population density decrease in the localities identified in Figure 1. (10 marks)

Question 5

“Valletta is an ideal departure port for a Mediterranean cruise being an excellent gateway to the eastern and western Mediterranean.” (Valletta Waterfront online, 2012)

- a. List and define **THREE** geographic features that make Valletta an ideal departure port. (3 marks)
- b. Another industry that takes place in the Grand Harbour is ship repairing. List and discuss **THREE** conflicts that may arise between the tertiary industry and the secondary industry. Mention also **THREE** possible solutions to such conflicts. (9 marks)
- c. There are both pros and cons when discussing the cruise liner industry. The Grand Harbour being a main hub benefits and suffers from this industry. Mention and discuss **TWO** advantages and **TWO** disadvantages that can be attributed to the cruise liner industry in the context of the Grand Harbour. (12 marks)

Question 6

One of the proposed strategy points outlined in the Strategic Growth Scenarios Paper issued by MEPA stated: *“Promoting the regeneration of historic cities, towns and villages on the basis of a holistic and incentives-based approach that considers both buildings and communities.”* (MEPA, 2004).

- a. Explain the reason behind urban sprawl. (4 marks)
- b. State and discuss **TWO** possible issues that arise as a result of urban sprawl. (10 marks)
- c. Define the term regeneration. Discuss **TWO** ways in which regeneration can improve issues arising from urban sprawl. (10 marks)

SECTION C: Fieldwork and Statistical Techniques

Question 7

- a. Define each of the following maps and state why they are used:
 - i. Choropleth maps
 - ii. Dot maps
 - iii. Isoline maps (12 marks)

- b. Name and explain in detail the **FOUR** different weather characteristics (labeled 1 to 4) on the map in Figure 2 and where possible illustrate with diagrams. (12 marks)

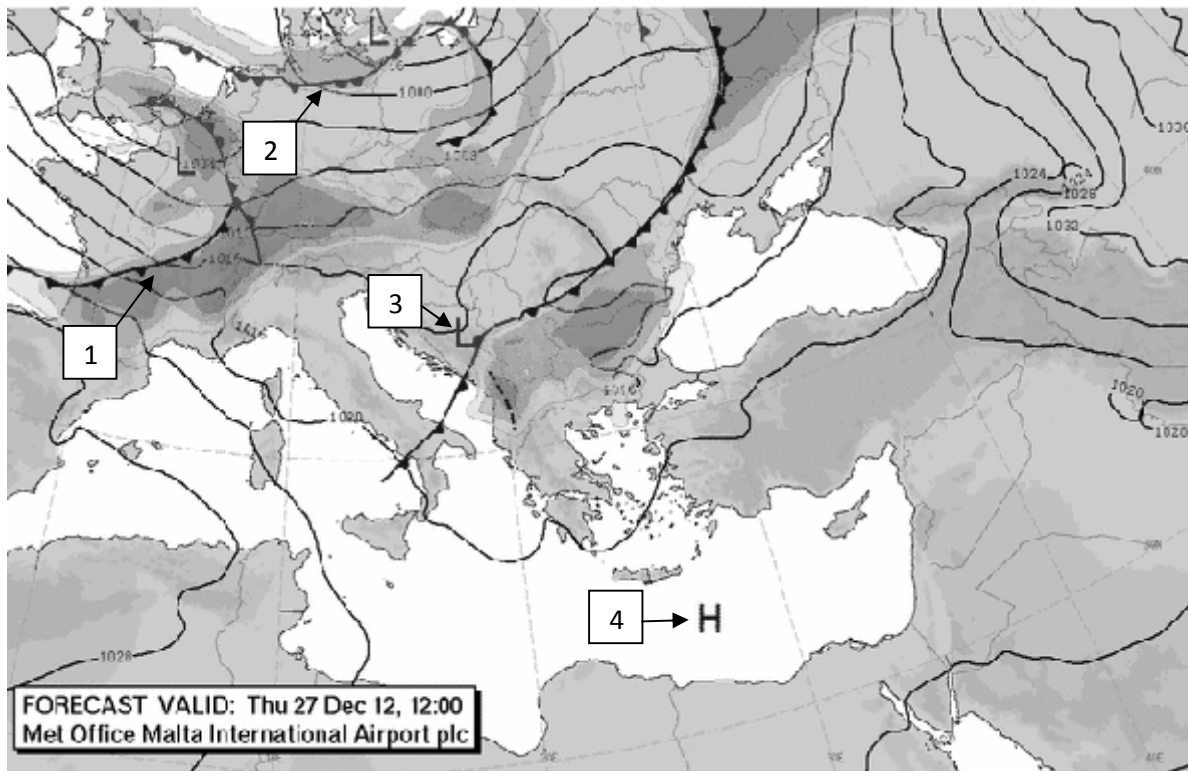


Figure 2: Weather forecast.
Source: MET Office MIA.

Question 8

- a. Explain briefly the term “scatter graph”. (2 marks)
- b. Explain ‘Spearman Rank Correlation’ and state when this is used. (2 marks)
- c. A study was carried out using quadrats in order to see if there is a relationship between the distance from the river and the number of different plant species. The data is given in Table 2 below.

| Area | Distance from the river (metres) | Number of different plant species |
|------|----------------------------------|-----------------------------------|
| 1 | 66 | 7 |
| 2 | 85 | 8 |
| 3 | 55 | 5 |
| 4 | 82 | 6 |
| 5 | 72 | 7 |
| 6 | 74 | 6 |
| 7 | 68 | 6 |
| 8 | 81 | 10 |
| 9 | 86 | 11 |
| 10 | 71 | 4 |
| 11 | 20 | 0 |
| 12 | 42 | 3 |
| 13 | 35 | 2 |
| 14 | 40 | 9 |
| 15 | 83 | 15 |

Table 2: Results obtained from the 15 quadrats

- i. State the null and alternative hypothesis (2 marks)
- ii. Using the Spearman’s rank formula below, work out the correlation between the two data sets. Show all your workings. (15 marks)

$$r_s = 1 - \frac{6\sum d^2}{n^3 - n}$$

where: d = the difference between each rank of corresponding values, and

n = the number of pairs of values.

d. Compare the calculated r_s with the critical values in Table 3. Draw your conclusions on this test using a 5 % level of significance. (3 marks)

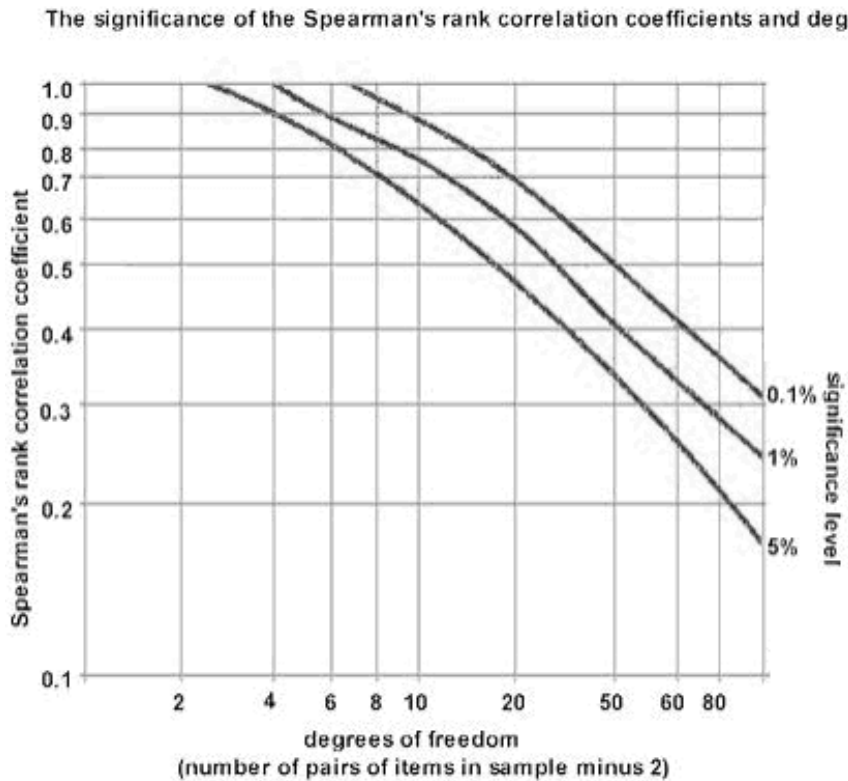


Table 3: Spearman's rank critical values of significance

Question 9

Explain and where possible illustrate **ALL** of the following terms:

- Flow diagram
- Pictograms
- Rose diagram
- Desire Lines
- Annotated Photographs
- Field Sketches

(24 marks)

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| | |
|----------------------|---------------------------|
| SUBJECT: | GEOGRAPHY |
| PAPER NUMBER: | II |
| DATE: | 10 th May 2013 |
| TIME: | 4.00 p.m. to 6.00 p.m. |

Answer **THREE** questions in total, one from each section. Questions carry equal marks.

SECTION A: Atmospheric Processes and Patterns

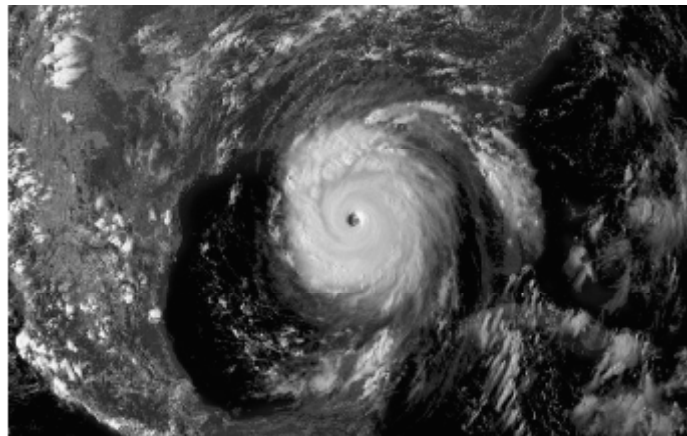
Question 1

“The term jet stream was officially coined in 1939 by a German meteorologist named H. Seilkopf.”
(A.Briney, 2013)

- Define the term ‘jet stream’ using diagrams to illustrate your answer. (8 marks)
- Sketch an annotated diagram describing and explaining the ‘coriolis effect’. (12 marks)
- Explain how jet streams affect the airline industry. (4 marks)

Question 2

Hurricane Katrina (2005) is a prime example of the damage and devastation that can be caused by a storm surge. At least 1500 persons lost their lives during Katrina and many of those deaths occurred directly, or indirectly, as a result of a storm surge. (National Hurricane Center, NOAA)



A satellite photo of Hurricane Katrina on August 28th, 2005.

(Source: www.katrina.noaa.gov)

- a. Explain the physical processes that are mainly responsible for the formation of a storm surge. (12 marks)
- b. The damage created by a storm surge can escalate to high costs. Describe the negative impacts which can result from a storm surge. (12 marks)

Question 3

- a. Explain the differences in environmental conditions which contribute to the formation of 'fog' compared to those of 'smog'. (14 marks)
- b. Smog is a serious problem in many cities and continues to harm human health. Describe and discuss in detail **TWO** negative effects produced by smog on human health. (10 marks)

SECTION B: Geomorphology

Question 4

'The extent to which volcanic processes represent hazards depends on where they occur and the type of eruption.'

- a. Define the term 'hazards' and explain the difference between 'primary hazards' and 'secondary hazards' produced by a volcanic eruption. (10 marks)
- b. With the help of diagrams, discuss how plate tectonics determine volcanic processes, with particular reference to types of volcanic eruptions. (14 marks)

Question 5

Describe in detail, using at least one example, how the following physical characteristics are responsible for the formation of a salt lake:

- i. shape of the drainage basin catchment
- ii. presence of salts and dissolved minerals
- iii. climate fluctuations. (24 marks)

Question 6

Figure 1 shows a hill slope profile.

- a. With the help of Figure 1 describe the three slope units and how these slope units may be the result of the predominant processes acting on it. (10 marks)

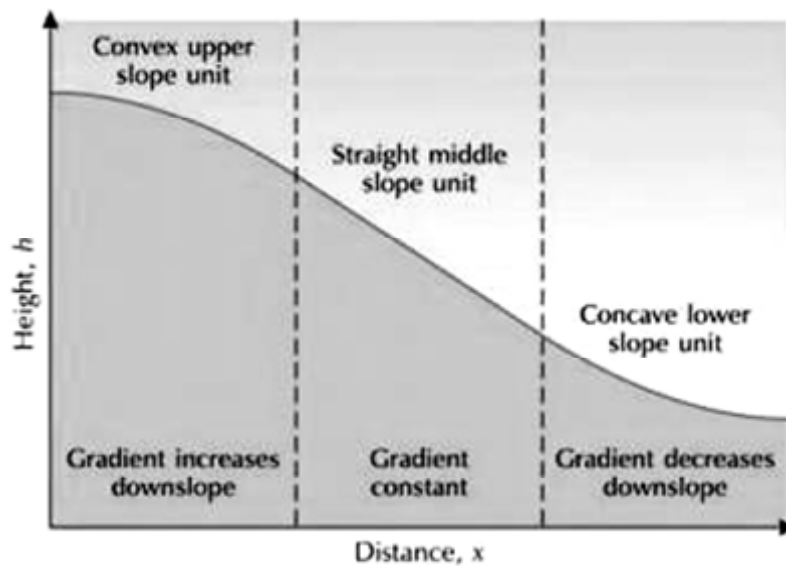


Figure 1: Hill slope profile.

- b. Discuss and give reasons on how the following fluvial physical properties or features may vary along the hill slope profile:
- River flow velocity
 - River channel shape. (14 marks)

SECTION C: Biospheric Processes and Patterns

Question 7

“A biome is a large global ecosystem...[and] gets its name from the dominant type of vegetation found within it” (Waugh, 2002).

Describe the **FOUR** main factors that interrelate to produce and control each biome and give examples where relevant. (24 marks)

Question 8

- a. Define a 'soil catena' (4 marks)
- b. With the help of a detailed annotated soil catena diagram, describe in detail the different processes that can occur in the **FOUR** relevant zones. (20 marks)

Question 9

- a. Describe the ecosystem that is found in a tropical rainforest. (16 marks)
- b. With the help of **ONE** case study, describe the environmental consequences of the destruction of the tropical rainforest and mention **TWO** conservation measures that can help manage the tropical rainforest. (8 marks)

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SUBJECT: GEOGRAPHY
PAPER NUMBER: III
DATE: 16th May 2013
TIME: 9.00 a.m. to 11.00 a.m.

Answer **THREE** questions in total, one from each section. Questions carry equal marks.

SECTION A: Human Geography and the Developing World

Question 1

Figure 1 shows the Daily Calorie Intake Per Capita around the globe.

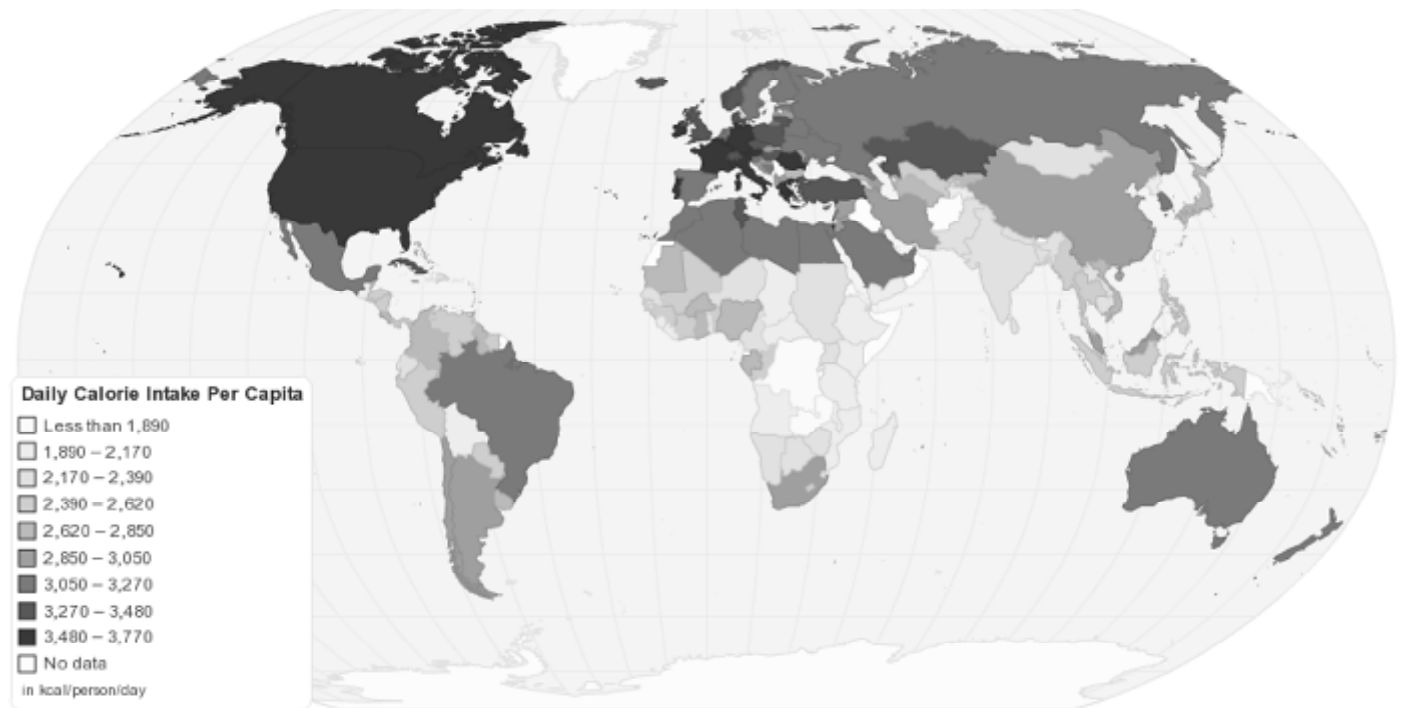


Figure 1: Daily Calorie Intake Per Capita

Source: <http://chartsbin.com/view/1150>

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- a.
 - i. Identify **FOUR** areas around the world that have the lowest daily calorie intake per capita. (4 marks)
 - ii. Explain why there is a significant disparity in food consumption between the developed and developing regions of the world. (10 marks)
- b. Discuss what can be done to improve food supplies in developing countries. (10 marks)

Question 2

- a. Define 'squatter settlements' and give **TWO** examples of cities in the developing world where these can be found. (4 marks)
- b. Explain the **THREE** causes and **THREE** consequences of squatter settlements. (9 marks)
- c. Discuss **THREE** examples of what can be done to improve such areas. (11 marks)

Question 3

- a. Define the 'New International Division of Labour' (NIDL). (4 marks)
- b. Mention and explain **TWO** causes and **TWO** consequences of NIDL. (20 marks)

SECTION B: Issues in Resource Management

Question 4

- a. Explain what gave rise to the term 'Sustainable Development'. (12 marks)
- b. Discuss, supporting your arguments with examples, why the term 'sustainability' is being overused and misused. (12 marks)

Question 5

THREE factors that influence a country's decision regarding the suitable sources of energy to use are: physical, economic, political.

Discuss these factors in the context of a country of your choice, and give **TWO** relevant examples of both renewable and non-renewable resources to enhance your answer (24 marks).

Question 6

In 1968, Hardin referred to the overexploitation of shared resources by individuals for their own benefit despite the fact that they will not continue to benefit in the long term as the Tragedy of the Commons.

Taking into account the above statement, describe in detail the whaling issue and state what is being done in order to try and manage this problem. (24 marks)

SECTION C: The Geography of Tourism and Recreation

Question 7

- a. Define the following classification of tourism: 'Theme parks and purpose-built resorts'. (4 marks)
- b. List and explain **FIVE** pressures that 'theme parks and purpose-built resorts' exert on the natural and human environment. (10 marks)
- c. List and discuss **FIVE** advantages of 'Theme parks and purpose-built resorts'. (10 marks)

Question 8

The Dolomites in Italy are an example of an Alpine region that hosts thousands of tourists.

- a. Describe their site and situation. (10 marks)
- b. Explain the economic impact that tourism has on the Alpine region. (14 marks)

Question 9

- a. List and discuss **THREE** environmental problems that result from tourism activity in EU countries. (12 marks)
- b. One of the main policy areas of the EU tourism policy is 'Promoting tourism sustainability'. Explain, using examples, the aim of this policy area in terms of the EU management of environmental problems. (12 marks)