

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

UNIVERSITY OF MALTA, MSIDA

MATRICULATION EXAMINATION

ADVANCED LEVEL

MAY 2016

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	I
DATE:	16 th May 2016
TIME:	9.00 a.m. to 11.05 a.m.

Answer THREE (3) questions in total, one from each section. Questions carry equal marks.

Section A: Physical Geography of the Maltese Islands

Question 1

The rate of global mean sea level rise has accelerated during the last two centuries, with a rate of around 1.7 mm/year over the 20th century (European Environment Agency, 2015).

- a. Which parts of the Maltese Islands will be most vulnerable to accelerated sea level rise? Explain the reason/s for your answer making reference to the physical geography of the Maltese Islands. (15 marks)

- b. In what way may the following physical landscapes of the Maltese Islands be affected by sea-level rise:
 - i. Coastal landforms;
 - ii. Ecological communities; and
 - iii. Freshwater storage. (9 marks)

Question 2

In Malta, the spatial pattern of soil types is very intricate, both in semi-natural and agricultural areas, and different soil types often occur within a single field or within a distance of few metres (State of the Environment Report, 2005).

- a. Describe the main soil types found in Malta and explain how their formation is related to local geology and climate. (12 marks)

- b. Soil is under increasing threat from a wide range of human activities, which are undermining its long-term availability and viability. With reference to the Maltese Islands, discuss the main activities threatening Maltese soils. (12 marks)

Question 3

'The geology of the Maltese Islands plays a crucial function in the formation of the fresh water supply on the islands.' With the help of an annotated diagram/s, discuss this statement in detail. (24 marks)

Section B: Human Geography of the Maltese Islands

Question 4

Malta has a high population density, and limited land area. This situation leads to issues in land use planning, particularly regarding the provision of land for further development. One possible solution for this problem is re-using vacant dwellings.

- a. Figure 1 shows the dwelling stock by occupancy status and district in Malta and Gozo. Provide a detailed analysis of the diagram in Figure 1. (10 marks)

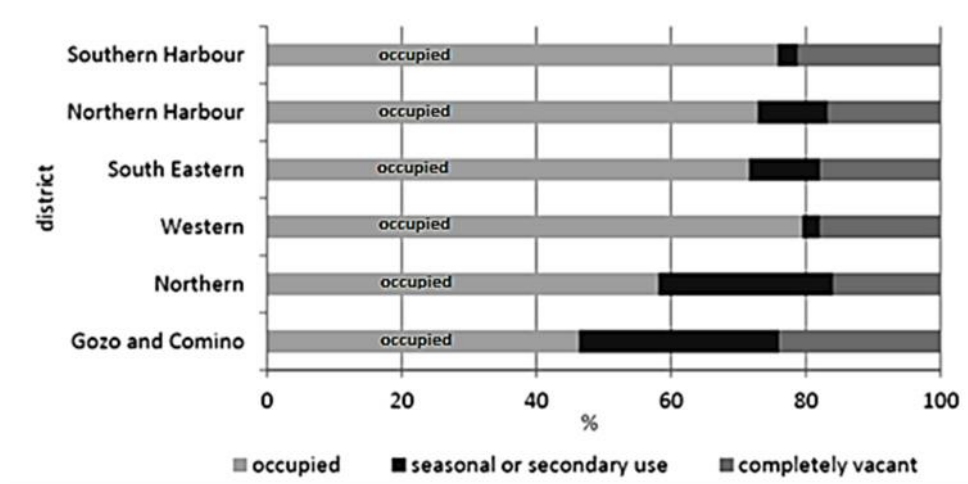


Figure 1: Dwelling stock by occupancy status and district (NSO 2011)

- b. With reference to Figure 1, state possible reasons for the patterns of occupancy status for each district. (12 marks)
- c. List, and briefly describe TWO possible issues that may arise in the process of re-using vacant dwellings. (2 marks)

Question 5

Figure 2 is an aerial image of the salt pans in Salina. The rehabilitation of Salina, including the salt pans, cost the Maltese Government €7 million.

- a. To which industrial sector does the salt-panning industry belong? (2 marks)
- b. List another two places in Malta and/or Gozo that have salt pans (these could be used or unused). (2 marks)
- c. Identify, and explain in detail, TWO physical features that are important for the availability of this industrial activity. (10 marks)

- d. Discuss the importance of this industrial activity for the Maltese economy. (10 marks)



Figure 2: Aerial image of the Salina salt pans (Times of Malta 2013)

Question 6

Figure 3 shows a graph of the electricity demand and generation in Malta, over a period of nine years.

- a. Provide a detailed analysis of Figure 3. (10 marks)
- b. List, and briefly describe TWO reasons why a country could have a high energy demand. (10 marks)
- c. Mention, and briefly describe TWO methods of power generation in Malta. (4 marks)

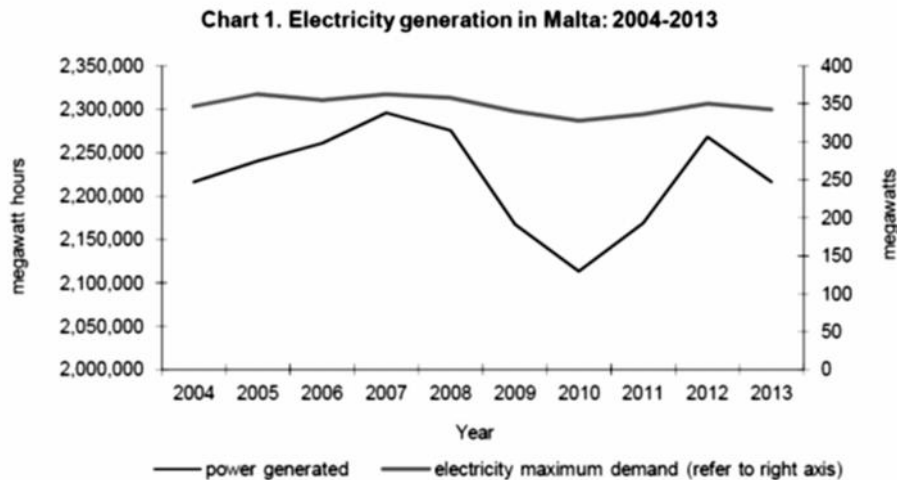


Figure 3: Electricity generation in Malta (2004 – 2013)

Section C: Fieldwork and Statistical Techniques**Question 7**

“The results of sieving and sedimentation are usually plotted either as a pie chart or as a triangular graph” (Waugh, 2002:264).

- a. Define the term ‘triangular graph’. (4 marks)
- b. Plot a triangular graph on the graph paper provided in the booklet. (4 marks)
- c. Table 1 displays soil texture data for three sites. Plot the data in Table 1 on the triangular graph produced in (b). (16 marks)

Site	% clay	% silt	% sand
A	65	18	17
B	35	59	6
C	27	17	56

Table 1: Soil texture percentages for Sites A, B and C

Question 8

Measures of dispersion can be calculated using the three statistical techniques.

- a. Explain the following:
 - i. Range;
 - ii. Interquartile range;
 - iii. Standard deviation. (9 marks)
- b. Table 2 shows the average temperatures of Malta over 12 months. Calculate the standard deviation using the given formula. (15 marks)

Month	Average temperature in °C
1	13
2	13
3	14
4	16
5	20
6	23
7	27
8	27
9	25
10	21
11	17
12	14

Table 2: Average temperature in Malta

Standard Deviation Formula:

$$\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}$$

σ = standard deviation

\sum = sum of

x = each value in the data set

\bar{x} = mean of all values in the data set

n = number of value in the data set

Question 9

With the help of diagrams, compare in detail the use and application of the following two instruments:

- a. Pantometers (12 marks)
- b. Clinometers (12 marks)

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	II
DATE:	17 th May 2016
TIME:	9.00 a.m. to 11.05 a.m.

Answer **THREE (3)** questions in total, one from each section. Questions carry equal marks.

Section A: Atmospheric Processes

Question 1

Figure 1 displays ocean surface currents circulating across the Earth.

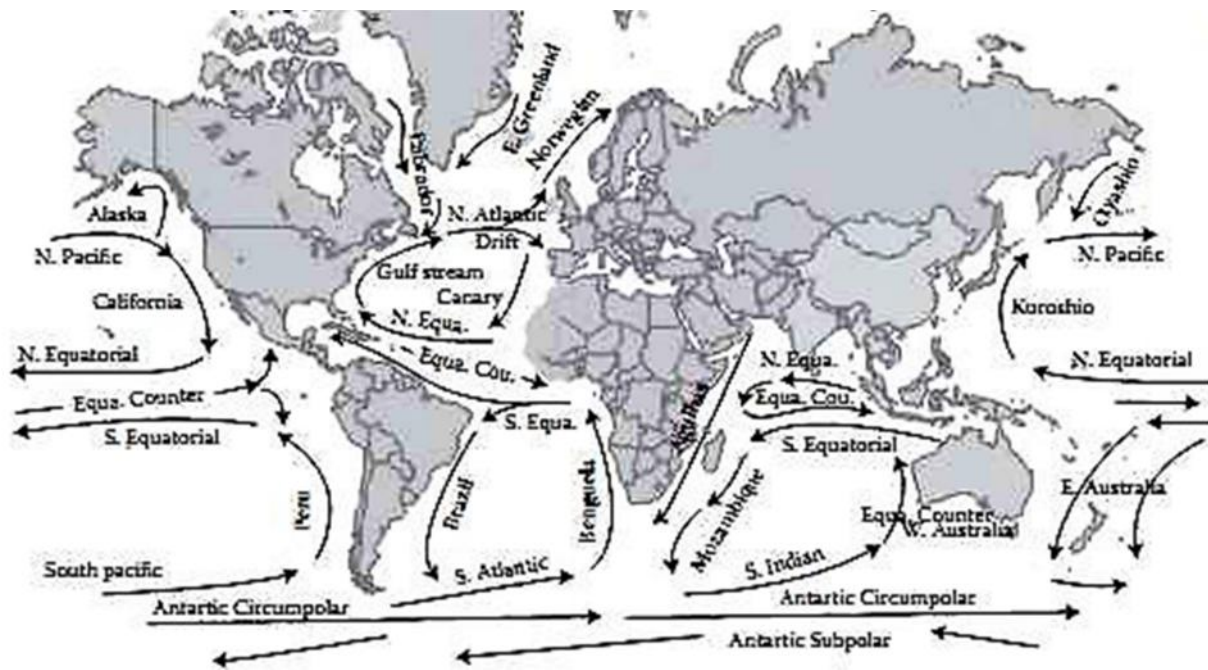


Figure 1: Ocean surface currents circulation

- Define the term 'ocean surface currents'. (4 marks)
- Describe the physical mechanisms which trigger the circulation of global oceanic surface currents as displayed in Figure 1. (10 marks)
- In what way do deep ocean currents differ from ocean surface currents in their formation and characteristics? (10 marks)

Question 2

Land and sea water have different heating capacities, which regulate atmospheric processes at various spatial scales.

- a. Outline the main reasons why land and sea water warm up and cool down at different rates. (10 marks)
- b. With reference to the reasons explained in (a), account for the formation of:
 - i. Oceanic and continental climate; and
 - ii. Land and sea breezes. (7 marks x 2)

Question 3

Fog occurrence impacts a wide variety of human activities worldwide (Figure 2). These impacts range from inconvenience to annoyance and from high costs to deadly consequences (Croft, 2003).



Figure 2: Fog occurrence in Dubai

- a. Describe the physical processes responsible for the formation of fog. (12 marks)
- b. What are the hazards mostly associated with the occurrence of fog, especially in large cities such as Dubai? (12 marks)

Section B: Geomorphology

Question 4

It is estimated that 20 volcanic eruptions occur each year along earth's mid-ocean ridges and that every year 2.5 km² of new seafloor is formed by this process. (NOAA, 2014). Figure 3 shows a map of Iceland with related tectonic activity.

- a. With reference to Figure 3 and with the help of annotated diagram/s, explain how the physical landscape of Iceland has been formed by tectonic activity. (15 marks)

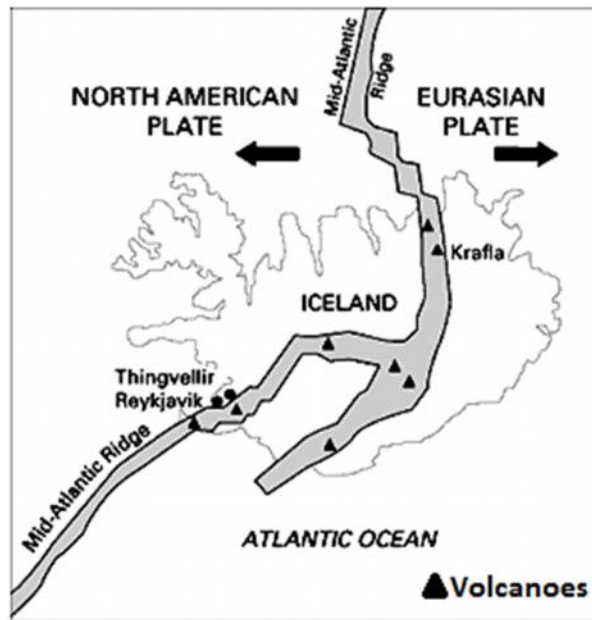


Figure 3: Tectonic landscape of Iceland

- b. Discuss how the discovery of mid-ocean ridges helped to explain the theory of sea-floor spreading. (9 marks)

Question 5

- a. With the help of annotated diagram/s, define and describe the following FOUR different types of coastal zonation:

- i. Offshore;
- ii. Nearshore;
- iii. Foreshore;
- iv. Backshore.

(4 x 4 marks)

- b. In which of the coastal zonations mentioned in (a), would sand dunes be located? Give reasons for your answer. (8 marks)

Question 6

Figure 4 shows two hydrographs for river basins with different characteristics.

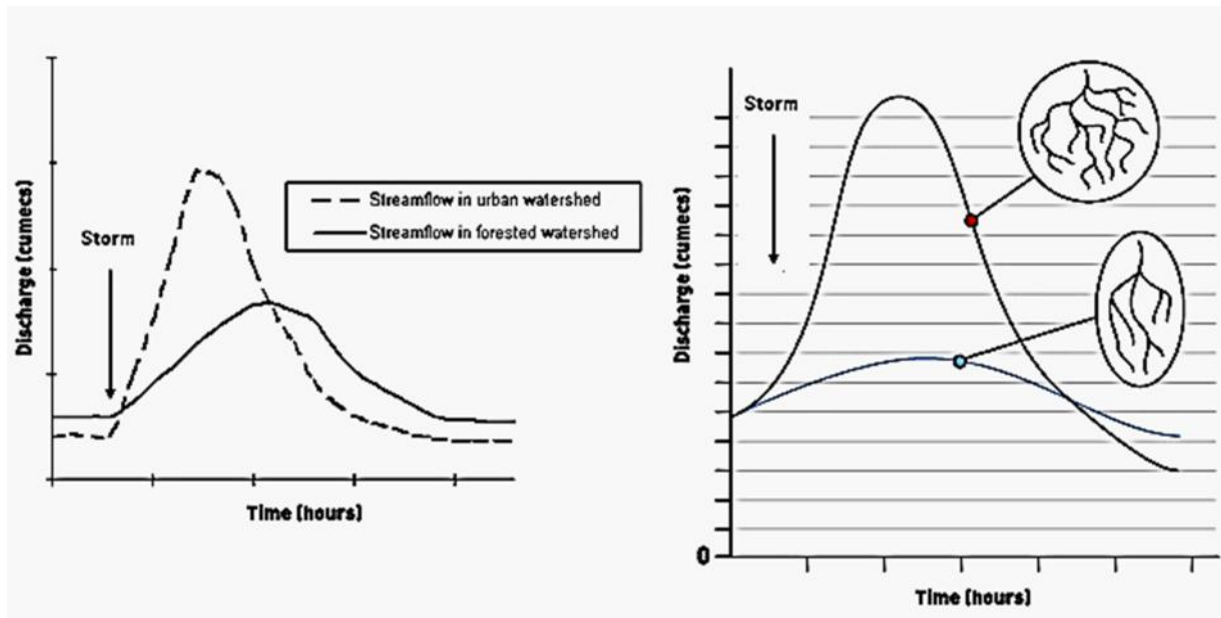


Figure 4: Two hydrographs for river basins with different characteristics

- a. Sketch a more detailed annotated diagram of a standard hydrograph and provide a description of a hydrograph and its main components. (12 marks)
- b. With reference to Figure 4, discuss how river discharge is influenced by land use and basin shape. (12 marks)

Section C: Biospheric Processes

Question 7

With the help of diagram/s, describe the nutrient cycle of the tropical rainforest. (24 marks)

Question 8

Soil is composed of water, air, minerals and organic material. Together they produce a series of soil properties, which are very important in order to better understand and manage the soil. Define and explain in detail the following four properties:

- i. Soil nutrients;
- ii. Acidity;
- iii. Soil moisture;
- iv. Soil texture.

(24 marks)

Question 9

- a. Define the term 'soil fertility'. (6 marks)
- b. Discuss the concept of soil fertility in relation to human and physical factors. (12 marks)
- c. Identify possible measures that can be taken to avoid soil degradation. (6 marks)

SUBJECT: GEOGRAPHY
PAPER NUMBER: III
DATE: 17th May 2016
TIME: 4.00 p.m. to 6.05 p.m.

Answer **THREE (3)** questions in total, one from each section. Questions carry equal marks.

Section A: Human Geography and the Developing World

Question 1

Figure 1 shows an infographic of the European Migrant Crisis in 2015.

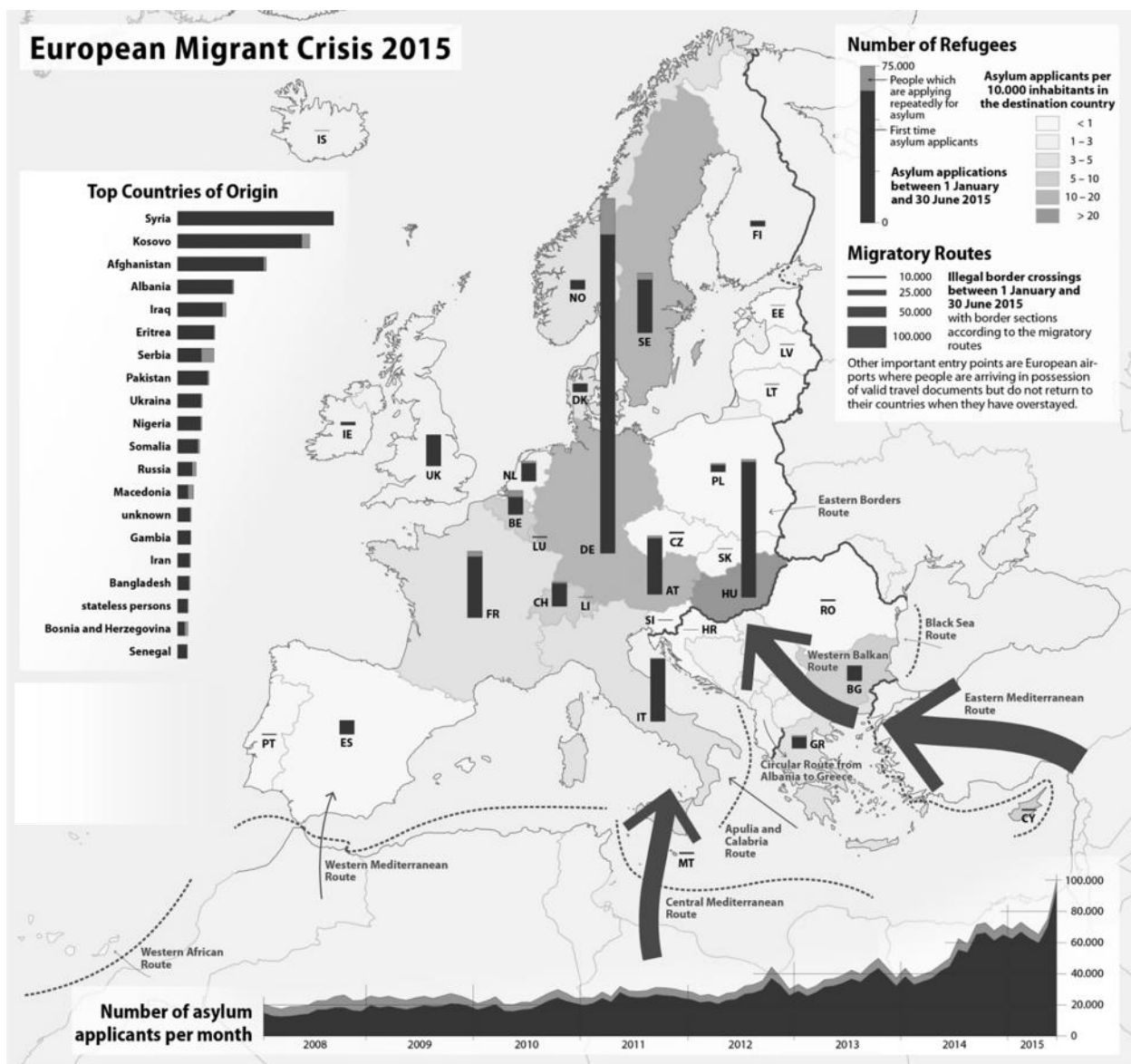


Figure 1: An infographic of the European Migrant Crisis in 2015 (Source: Eurostat 2015)

- a. Describe briefly the infograph in Figure 1. (4 marks)
- b. i. People from Syria, Kosovo and Afghanistan are fleeing their country. What is this type of migration called? (2 marks)
ii. List and describe FOUR reasons why people flee their countries. (12 marks)
- c. List and describe THREE reasons that act as barriers for migrants to return to their country of origin. (6 marks)

Question 2

Figure 2 shows Valparaiso, Chile. Valparaiso is a shanty town that is also a tourist attraction.



Figure 2: Valparaiso, Chile (<https://pixabay.com>)

- a. List and describe FOUR causes of shanty towns. (8 marks)
- b. i. List and describe THREE characteristics of shanty towns. (6 marks)
ii. Provide ONE reason why tourists are attracted to such sites. (2 marks)
- c. List and briefly describe TWO approaches to improve shanty towns. (8 marks)

Question 3

Figure 3 is a map of the world with an inset of Europe, showing the list of countries by credit rating. Credit rating is an evaluation of the credit worthiness of a debtor (e.g. a government) predicting the debtor's ability to pay back the debt (Kronwald, 2009). The scale is from AAA (excellent) to CC (poor).

- Name TWO countries in Europe which are listed as 'C' ratings (i.e CCC or CC). Suggest ONE reason why this is the case. (5 marks)
- Identify and discuss TWO criteria used for measuring development. (12 marks)
- The world is often described as it is divided between the developed and the developing countries. Discuss this statement with reference to Figure 3. (7 marks)

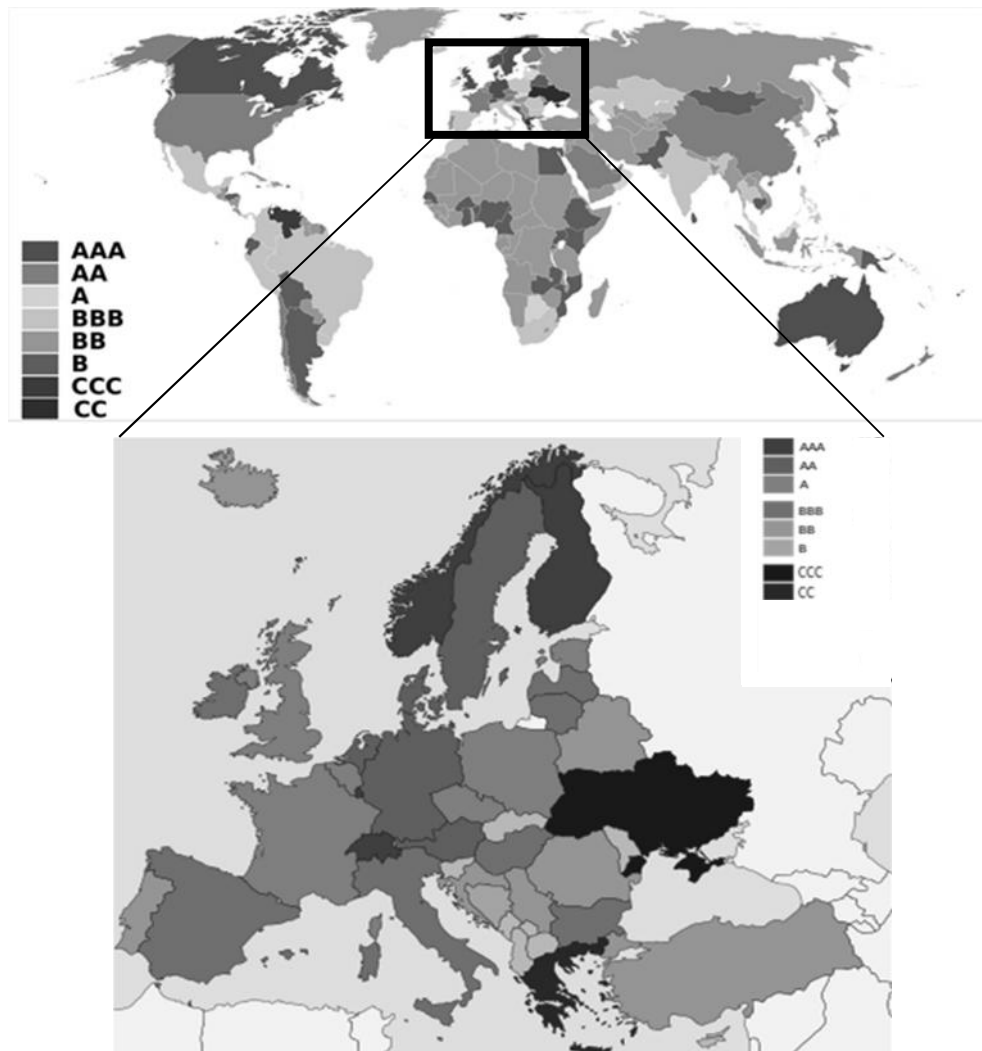


Figure 3: Credit ratings by country (Source: Standard & Poor 2011, 2014)

Section B: Issues in Resource Management

Question 4

In January 2016, the Danish authorities agreed to change their laws including restricting the sales of whale meat (WDC, 2016).

- a. With reference to the above statement, explain in detail the whaling issue. (16 marks)
- b. Identify possible measures that can be taken to reduce and manage this problem. (8 marks)

Question 5

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was established in 1972 and it is an agreement to control dumping at sea.

- a. With reference to the above statement, discuss the problems of waste in oceans and seas. (14 marks)
- b. Identify measures that can be taken in order to reduce the waste disposal problem. (10 marks)

Question 6

- a. Since 1990, the forests in Europe have increased, but they are facing various growing pressures (EEA, 2016). Discuss this statement. (12 marks)
- b. “In 1919, with less than 4% of the UK covered in trees, the Forestry Commission was set up to begin a controlled replanting scheme. Since then the policy has been to look towards an economic profit over the long term and to try to protect the environment” (Waugh, 2002:518). In relation to this statement, consider the advantages and disadvantages of forestry. (12 marks)

Section C: The Geography of Tourism and Recreation

Question 7

Tourism is a source of income and job creation in host countries.

- a. Briefly explain why Butler’s Model is commonly used in the tourism industry. (4 marks)
- b. Sketch a graph illustrating the stages of Butler’s Model, and describe each stage. (20 marks)

Question 8

Figure 4 shows the nights spent in tourist accommodation establishments across the European Union.

- a. Provide a detailed description of Figure 4, including examples of consumer tastes that might be the reasons behind tourists’ travel to particular countries. (8 marks)
- b. Identify FOUR possible reasons why countries like Italy, Spain, France and the United Kingdom, have different data for different areas within their national borders. (8 marks)

- c. i. With reference to Malta discuss briefly TWO negative effects of seasonal tourism. (4 marks)
- ii. List and briefly discuss TWO activities that Malta is advertising to attract tourists during off-peak seasons. (4 marks)

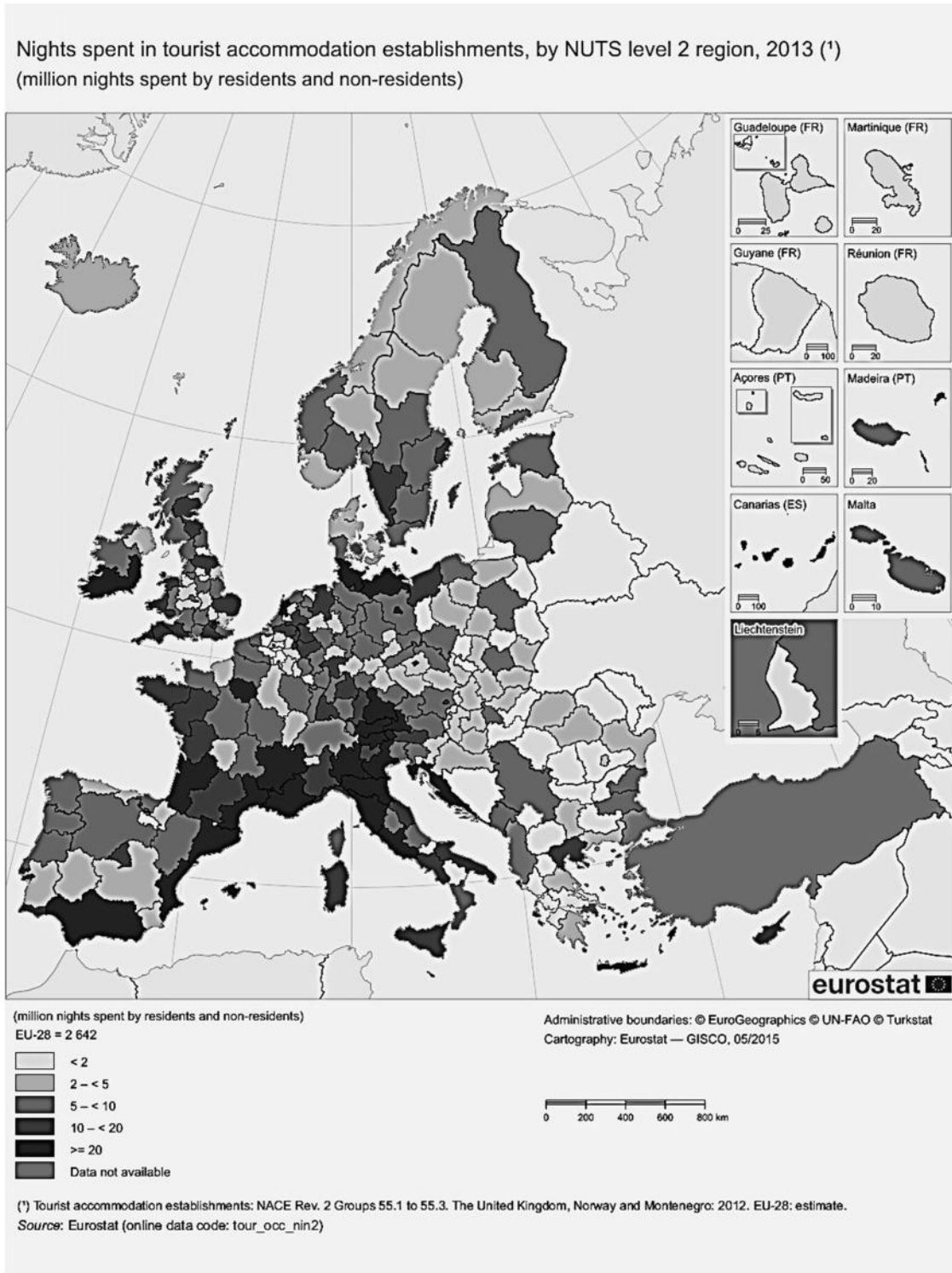


Figure 4: Nights spent in tourist accommodation establishment across the European Union countries (Source: Eurostat 2015)

Question 9

Figure 5 shows tourists following a lion in Kruger National Park in South Africa.



Figure 5: Safari in Kruger National Park, South Africa (Source: travelnation.co.za)

- a. Discuss FOUR possible impacts that such tourist activities have on the nature of these areas. (16 marks)
- b. List and discuss TWO ways that can help with the conservation of Safari Parks in Africa. (8 marks)