**MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD**

**UNIVERSITY OF MALTA, MSIDA**

**MATRICULATION EXAMINATION**
**INTERMEDIATE LEVEL**
**MAY 2015**

| | |
|---|---|
| **SUBJECT:** | GEOGRAPHY |
| **DATE:** | 13th May 2015 |
| **TIME:** | 9.00 a.m. to 12.00 noon |

## Directions to Candidates

**Answer a total of FIVE questions: one question from each of the four Sections and a fifth question from any Section.**
**The use of non-programmable calculators is permitted.**
**All questions carry equal marks.**

## Section 1: Physical Geographical Processes

1. Figure 1 shows a synoptic chart. Use figure 1 to answer the following questions:
   (a) What pressure system is present over the central Mediterranean region? (1 marks)
   (b) Explain the origin of similar pressure systems influencing the Mediterranean region. (8 marks)
   (c) Describe the weather conditions over the central Mediterranean region as shown in figure 1. (8 marks)
   (d) Draw the symbols used on the map to show a warm front, a cold front and an occluded front. (3 marks)

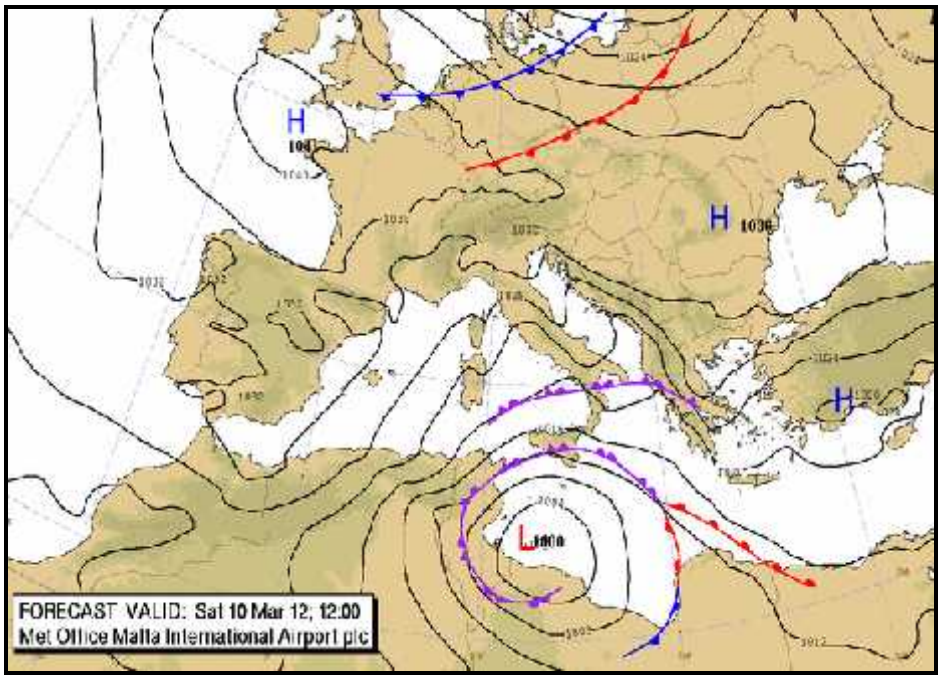


Figure 1: A synoptic chart
*(Source: http://www.maltairport.com)*

2. Figure 2 shows an idealised transect across coastal sand dunes.
   (a) Describe **two** physical factors that are necessary for the formation of sand dunes. (4 marks)
   (b) Describe the formation and characteristics of the different types of sand dunes that may develop across a beach. (12 marks)
   (c) Give **two** examples of where coastal sand dunes are found, providing **one** example from the Maltese Islands and another **one** from anywhere in the world. (4 marks)

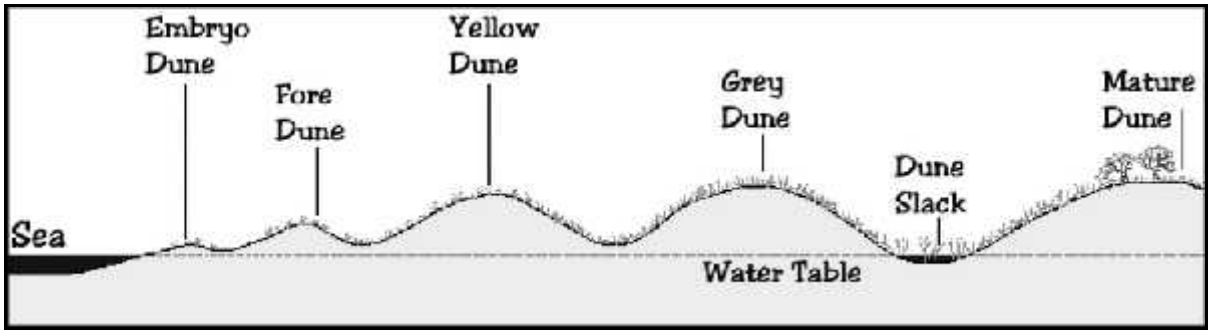


Figure 2: An idealised transect across coastal sand dunes
*(Source: http://thebritishgeographer.weebly.com)*

3. (a) What is a hydrograph? (2 marks)
   (b) Explain what the following features of a hydrograph show:
      (i) rising limb,
      (ii) recession or falling limb,
      (iii) peak discharge,
      (iv) lag time. (8 marks)
   (c) Figure 3 shows two hydrographs for two different streams. Assuming that both hydrographs were plotted for the same rainstorm, which one of the hydrographs in figure 3 has the longest lag time? (2 marks)
   (d) Describe and contrast **four** physical characteristics of the drainage basin that influenced the shape of each hydrograph shown in figure 3. (8 marks)

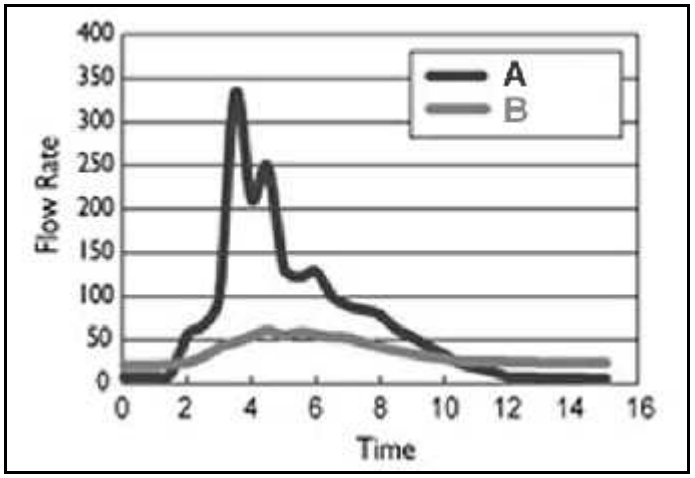


Figure 3: Two hydrographs
*(http://www.geogonline.org.uk)*

## Section 2: Human Geographical Processes

4. *"Malta has a population density of 1,325 people per square kilometre, making it one of the most congested countries in the world. Only Monaco, Singapore and Bahrain have higher population densities". (www.timesofmalta.com, March 13, 2014)*

   (a) Define the term 'population density'. (3 marks)
   (b) Explain **two** human factors that contribute to a high population density. Give **one** example for each factor. (4 marks)
   (c) Explain **two** physical factors that contribute to a low population density. Give **one** example for each factor. (4 marks)
   (d) Describe **three** consequences of having a high population density. (9 marks)

5. *'Ravenstein's migration research, especially his two papers on the "laws of migration" were very influential on later work dealing with the structure and process of migration. Although his work focused on current migrations and he was not an archaeologist; Ravenstein had a major impact on migration studies across many disciplines'. (http://www.seiselt.com)*

   (a) Why do people migrate? Explain by giving examples of **two** pull factors and **two** push factors. (8 marks)
   (b) State **three** migration claims made by Ravenstein. (6 marks)
   (c) Choose **two** of Ravenstein's laws of migration and explain how these apply to the current migration situation in the Mediterranean region. (6 marks)

6. *"Maltese fisherman and farmers in these islands (Maltese Islands) have preferred from an early time to live in nucleated settlements rather than live scattered across the land". (*Malta Mediterranean Bridge, Goodwin, 2002)

   (a) Describe a nucleated settlement and give **three** examples from the Maltese Islands. (6 marks)
   (b) State and explain **three** advantages of living in a nucleated settlement. (9 marks)
   (c) Why are some settlements dispersed? Explain by referring to **two** examples. (5 marks)

## Section 3: The Man-Environment Relationship

7. *Indonesia's province of Aceh was one of the worst hit areas by the 26 December 2004 tsunami. Memorial services for the victims were held in December 2014, on the tenth anniversary of this unfortunate event.*

   (a) Explain why tsunamis can lead to a great loss of life and cause widespread devastation to properties and infrastructure in affected areas. (10 marks)
   (b) Discuss what remedial actions can be taken to forecast and better control tsunami devastation in the future. (10 marks)

8. Waste generation data for the Maltese Islands between 2004 and 2009 is given in Figure 4.

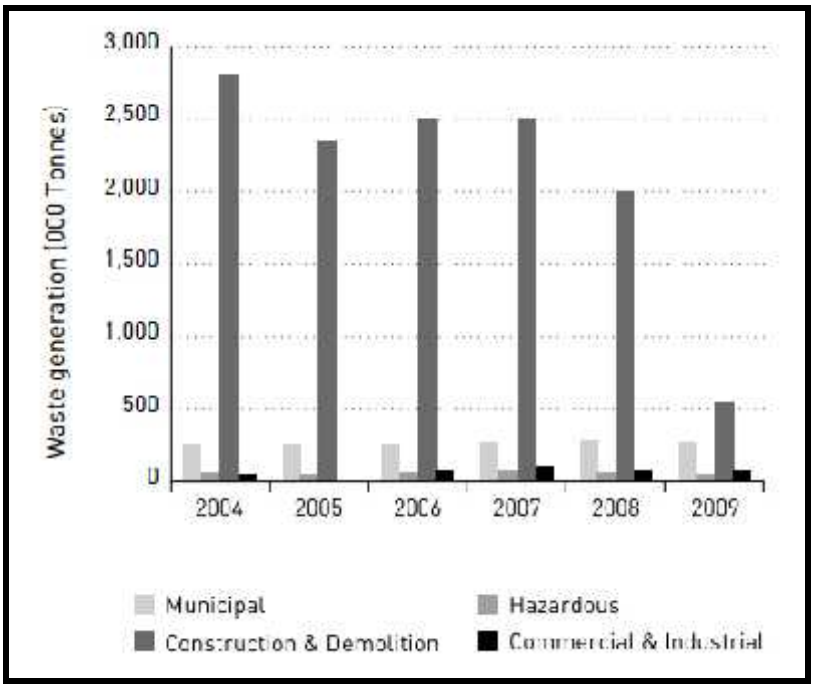


Figure 4: Waste generation data of Malta and Gozo.
*(Source: The Environment Report Indicators 2009: Tracking the Environment, Malta Environment and Planning Authority, 2011, 35.)*

(a) Briefly explain the meaning of the following terms: (i) municipal waste; (ii) hazardous waste. (4 marks)
(b) Through the use of examples, discuss how locally generated municipal and construction waste is presently being disposed of in Malta. (8 marks)
(c) Waste production and disposal often impacts negatively the natural environment of an area. Discuss how locally generated waste can negatively impact Malta's terrestrial and marine environments. (8 marks)

9. World carbon dioxide emissions are projected to increase by an average of 1.9% annually between 2001 and 2025. Figure 5 shows world carbon dioxide emissions by region.

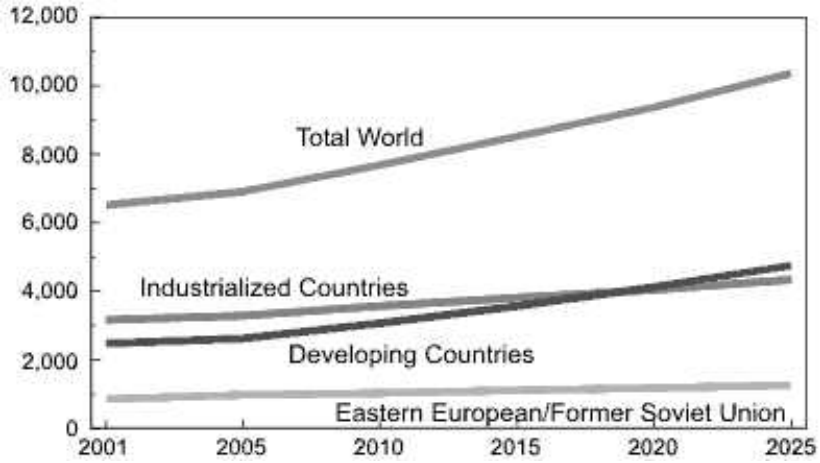


Figure 5: Estimated world carbon dioxide emissions by region, 2001-2025.
*(Source: http://www.cogeneration.net)*

(a) Explain why as from the year 2022 onwards, it is estimated that developing countries will produce higher carbon dioxide emissions than the more economically developed ones. (4 marks)
(b) Explain the relationship between carbon dioxide emissions and global warming. (4 marks)
(c) Describe **three** effects that global warming is expected to have on coastal areas. (6 marks)
(d) Explain **three** measures that are being taken in an attempt to reduce the effects of global warming. (6 marks)

## Section 4: Fieldwork and Mapwork Skills

10. Figure 6 shows migration movement into and within the European Union.
(a) Describe how figure 6 shows the number of people migrating from one country to another. (4 marks)
(b) What is this type of map called? (2 marks)
(c) Explain **two** advantages of showing migration movement using the map in figure 6. (6 marks)
(d) Explain **two** limitations of this map in giving information about migration trends. (6 marks)
(e) Explain **one** way how the information shown by figure 6 can be made more accurate. (2 marks)

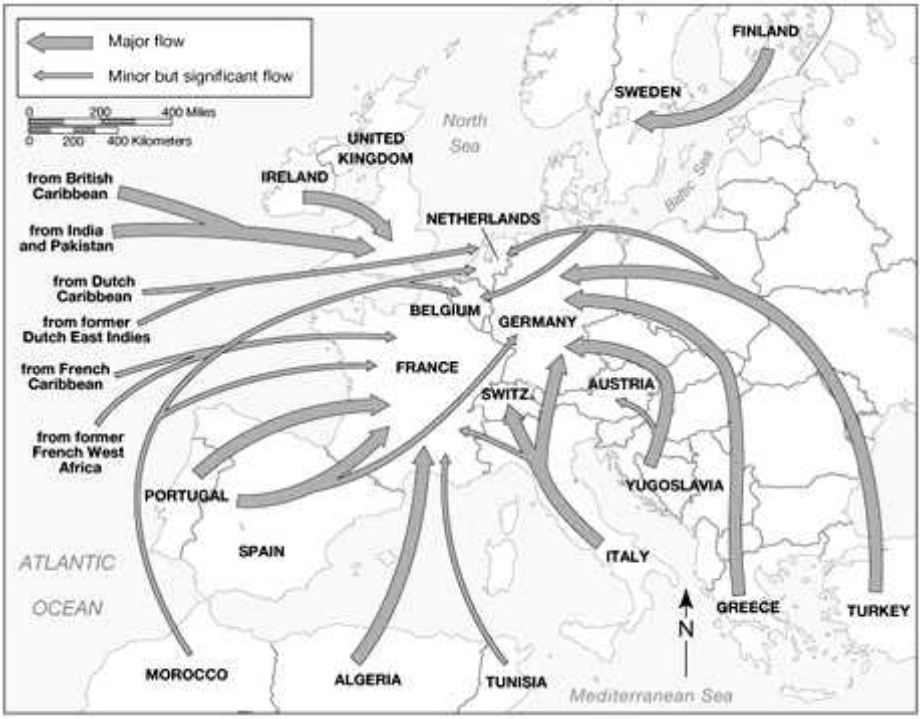


Figure 6: Migration in the European Union.
*(Source: http://wps.prenhall.com)*

11. (a) Explain the importance of the concept of (i) Scientific method and (ii) Hypothesis testing, when dealing with a geography field investigation. (6 marks)
(b) Data sampling is an important aspect of geographic field research. What are the main differences between random and systematic sampling? (6 marks)
(c) Give examples of a geographic investigation where either random or systematic sampling could be used. (8 marks)

***Please turn the page.***

12. The height of 100 plants was measured and recorded. The results are shown in Table A.

Table A

| **Height (cm)** | **4-5** | **5-6** | **6-7** | **7-8** | **8-9** | **9-10** | **10-11** | **11-12** |
|---|---|---|---|---|---|---|---|---|
| **Frequency** | 3 | 7 | 11 | 28 | 24 | 17 | 8 | 2 |

(a) Copy on your answering booklet and then complete Table B to give the cumulative frequency for the 100 plants. (4 marks)

Table B

| **Height (cm)** | **4-5** | **5-6** | **6-7** | **7-8** | **8-9** | **9-10** | **10-11** | **11-12** |
|---|---|---|---|---|---|---|---|---|
| **Frequency** | 3 | 7 | 11 | 28 | 24 | 17 | 8 | 2 |
| **Cumulative Frequency** | | | | | | | | |

(b) Draw the cumulative frequency curve for the completed data in Table B. (7 marks)
(c) Use your frequency curve to estimate how many plants are less than 9.5cm high. (3 marks)
(d) Use your cumulative frequency diagram to estimate the inter-quartile range of heights. (4 marks)
(e) State **one** advantage of using cumulative frequency diagrams. (2 marks)