

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

---

**SUBJECT:** GEOGRAPHY  
**DATE:** 10<sup>th</sup> May 2013  
**TIME:** 4.00 p.m. to 7.00 p.m.

---

**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 the aquifers of the Maltese Islands.

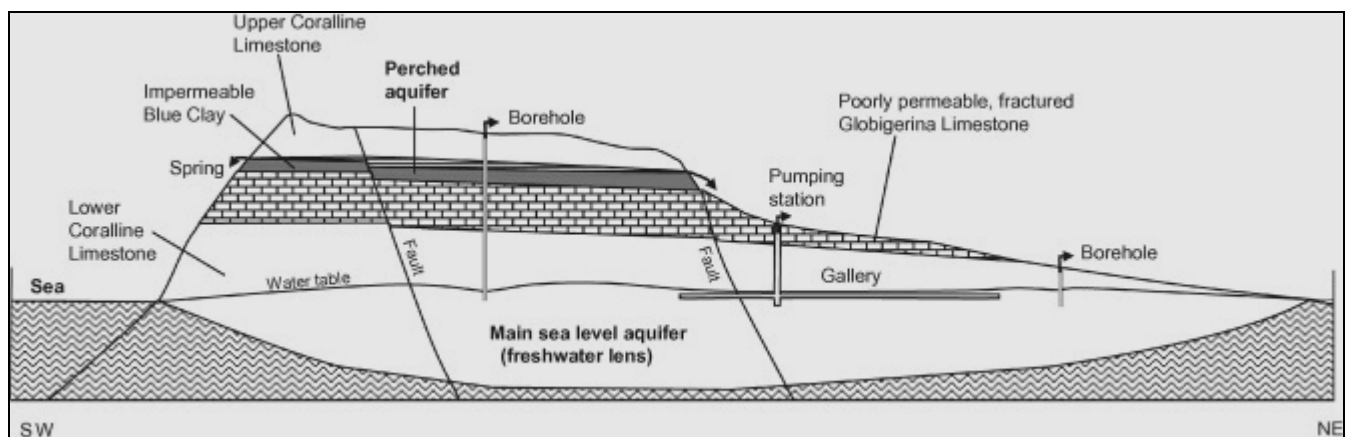


Figure 1: The aquifers of the Maltese Islands  
 (Source: <http://www.sciencedirect.com>)

- (a) Explain the difference between the terms *aquifer* and *water table*. (4 marks)
- (b) Explain the hydrological processes and geological characteristics that lead to the formation of (i) the perched aquifer and (ii) the main sea level aquifer in the Maltese Islands. (16 marks)

- 2. The Maltese Islands experience two types of rainfall, namely frontal rain and convection rain.
  - (a) Account for the occurrence of convection rainfall in the Maltese Islands towards the beginning of autumn. (8 marks)
  - (b) With the help of a well-labelled diagram, account for and explain the occurrence of frontal rain in the Mediterranean region during winter. (12 marks)
  
- 3. Figure 2 shows the East African Rift Valley and the surrounding plates.

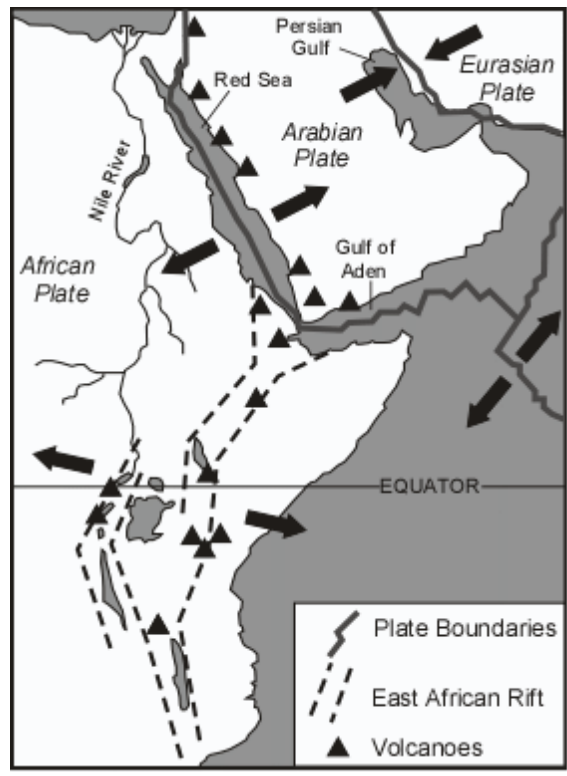


Figure 2: Geographic location of the East African Rift Valley  
(Source: <http://www.tulane.edu/~sanelson/eens1110/pltect.htm>)

- (a) With the help of labelled diagrams, describe and explain the processes resulting in the formation of the East African Rift Valley. (14 marks)
- (b) Describe the volcanic activity normally found along plate boundaries such as the East African Rift Valley. (6 marks)

**Section 2: Human Geographical Processes**

4. (a) With the assistance of a diagram, explain the Von Thunen Model. (14 marks)  
 (b) Can the Von Thunen Model be applied to a small island like Malta? Give **two** reasons to support your answer. (6 marks)
  
5. (a) Briefly explain what the Demographic Transition Model is. (2 marks)  
 (b) Draw a well-labelled diagram of the Demographic Transition Model and explain the characteristics of each stage. (12 marks)

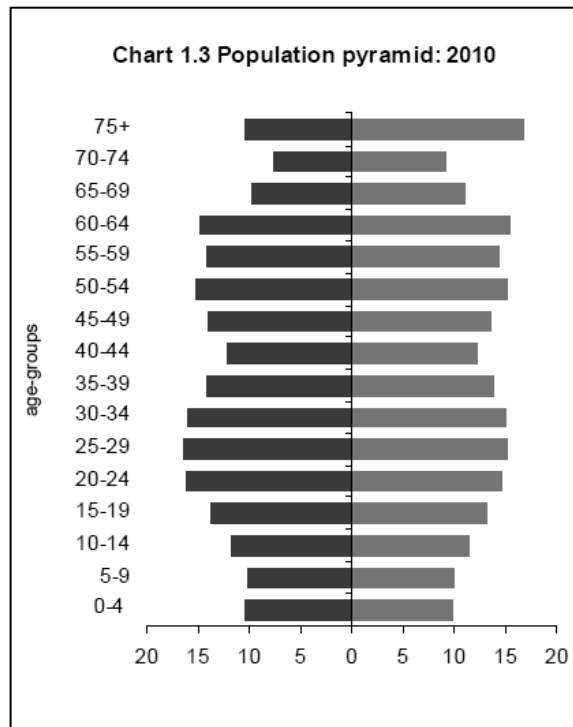


Figure 3: Population Pyramids for Malta 2010, 2025 and 2060.  
 (Source: National Statistics Office, 2012)

- (c) Figure 3 shows the population structure of Malta in 2010. In which stage of the Demographic Transition Model is the Maltese population placed? Give **two** reasons to support your answer. (6 marks)

*Please turn the page.*

6. Figure 4 shows part of the Southern Harbour Region of Malta and Figure 5 shows the situation (location) of the Southern Harbour Region on a map of Malta.



Figure 4: Southern Harbour Region in Malta.  
(Source: <http://www.openstreetmap.org>)



Figure 5: Situation of the Southern Harbour Region of Malta  
(Source: <http://images-mediawiki-sites.thefullwiki.org>)

- What is meant by the site and situation of a settlement? With the help of Figures 4 and 5 explain the site and situation of Senglea (enclosed in circle). (8 marks)
- Discuss **four** factors that influence the site of a settlement. Refer to a specific example of a settlement for each factor. (12 marks)

**Section 3: The Man-Environment Relationship**

7. The population in the Mediterranean region was 350 million in 1985 and is expected to reach 550 million by 2025 as shown in Figure 6.

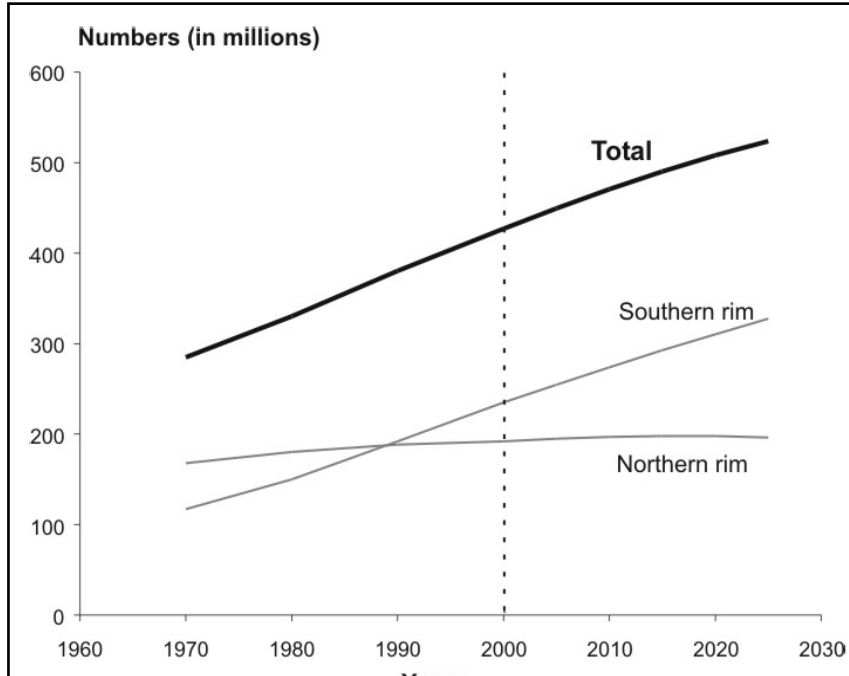


Figure 6. Population growth in Mediterranean countries 1970-2025.  
(Source: <http://www.planbleu.org>)

- (a) Explain **two** development problems that Mediterranean countries would have to face as a result of this demographic situation. Refer to specific examples for each problem. (8 marks)
  - (b) Identify and describe **three** effects of this population growth on the marine environment. Refer to specific examples for each effect. (12 marks)
8. (a) With reference to specific examples, describe the hazards associated with rapid mass movements. (10 marks)
- (b) Describe **three** responses adopted by people to deal with the hazards described in part (a). (10 marks)
9. (a) Briefly define the term *deforestation*. (2 marks)
- (b) With the help of diagrams, explain how deforestation may lead to soil erosion. (12 marks)
- (c) With reference to specific examples, explain **two** measures that can be taken to combat deforestation. (6 marks)

**Section 4: Fieldwork and Mapwork Skills**

- 10. Figure 7 is a scattergraph.
  - (a) Briefly explain the main uses of a scattergraph. (6 marks)
  - (b) Write a statement to explain the information revealed in Figure 7. (4 marks)
  - (c) Describe **three** strengths of this type of graph. (6 marks)
  - (d) Mention and explain **one** aspect of the graph that can be improved to convey more accurate information. (4 marks)

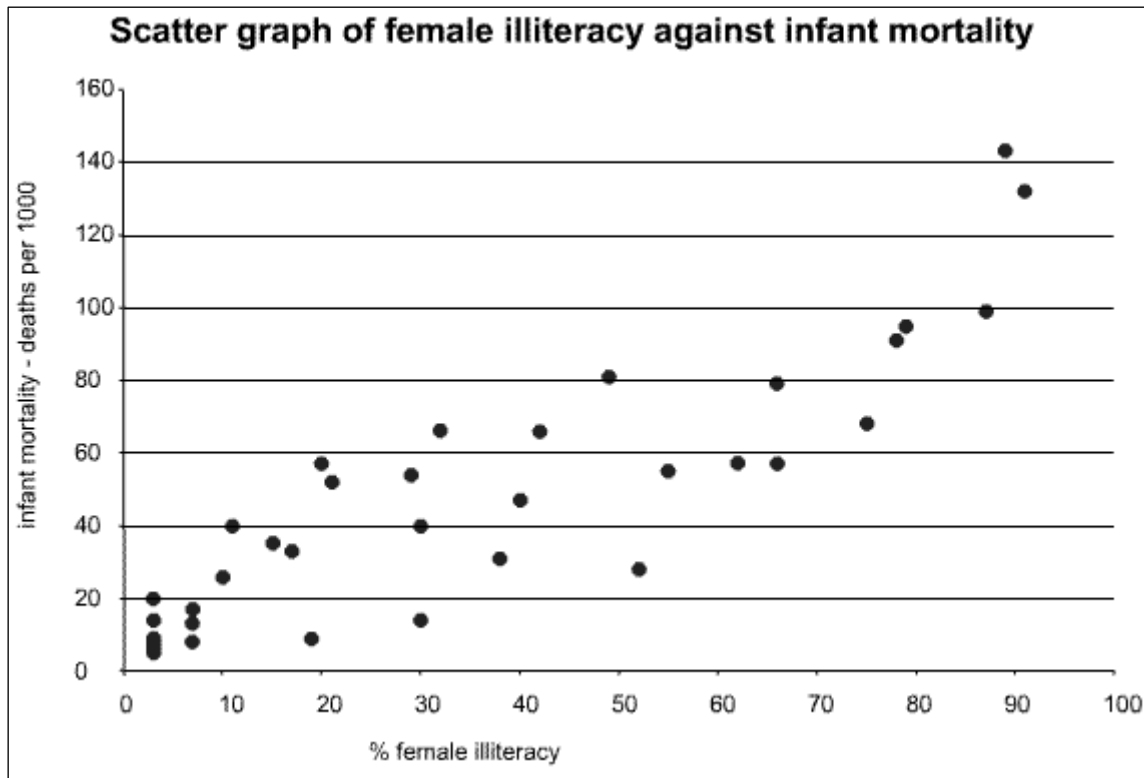


Figure 7: Scattergraph of female illiteracy against infant mortality  
(Source: <http://www.taw.org.uk>)

- 11. (a) Figure 8 is a choropleth map showing the number of deaths attributable to urban air pollution. How does the choropleth map in Figure 8 show this information? (4 marks)
- (b) Discuss (i) **two** advantages and (ii) **two** disadvantages of using a choropleth map to show the number of deaths attributable to urban air pollution. (12 marks)
- (c) Briefly describe the distribution of countries with the highest number of deaths attributable to urban air pollution as shown in Figure 8. (4 marks)

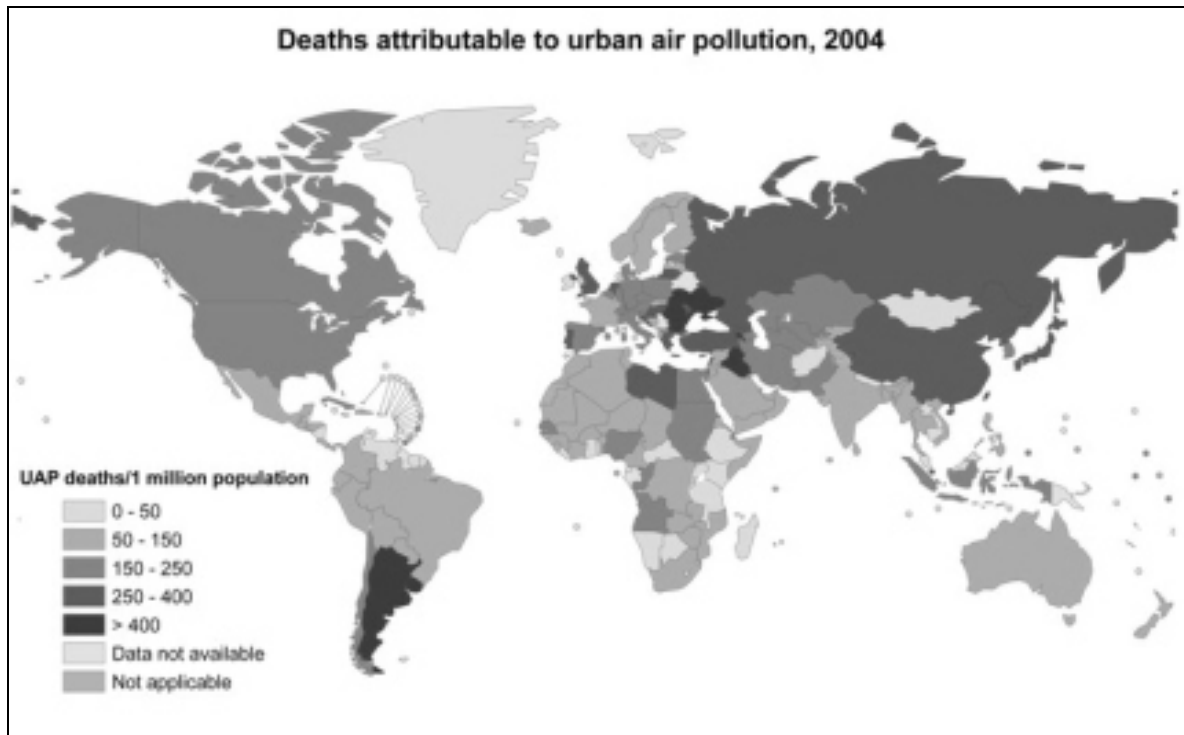


Figure 8: Deaths attributable to urban air pollution (2004)  
(Source: <http://democracyreform.blogspot.com>)

*Please turn the page.*

12. A student is investigating the distribution of accommodation facilities close to a historical site. The student intends to use the Nearest Neighbour Analysis during the investigation.
- (a) What **two** types of maps does the student need for this investigation? (4 marks)
- (b) Table 1 shows the data collected by the student. A total of 11 accommodation facilities were found in the investigation. Use the data in Table 1 and the formula provided below to calculate the Nearest Neighbour Index for these accommodation facilities given that the total area under study is 220km<sup>2</sup>. (8 marks)

$$R_n = 2\bar{d}\sqrt{\frac{n}{a}}$$

where:  $R_n$  = Nearest Neighbour index (NNI)  
 $n$  = number of services  
 $a$  = area (in km<sup>2</sup>)  
 $\bar{d}$  = average distance between shops (km)

Point	Distance from nearest neighbour (in km)
1	1.5
2	2.0
3	2.5
4	3.0
5	3.5
6	1.5
7	1.0
8	1.5
9	1.0
10	2.0
11	2.5

Table 1

- (c) Briefly explain the findings of the investigation based on the results obtained by the Nearest Neighbour Analysis in part (b). (4 marks)
- (d) Discuss **two** problems associated with the use of the Nearest Neighbour Analysis as a means of measuring dispersion. (4 marks)