

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL
MAY 2012

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	I
DATE:	10 th May 2012
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: Physical Geography of the Maltese Islands.

Question 1

- a. **Figure 1** displays a relief map of the Northern part of Malta. With reference to this part of the Maltese Islands, explain why this area is characterised by the following:
- a series of ridges and valleys of NE-SW orientation (8 marks)
 - the presence of deep embayments on both sides of the island. (8 marks)
- b. A second set of faults are present on mainland Malta. Give a description of the location and formation of these faults. (8 marks)

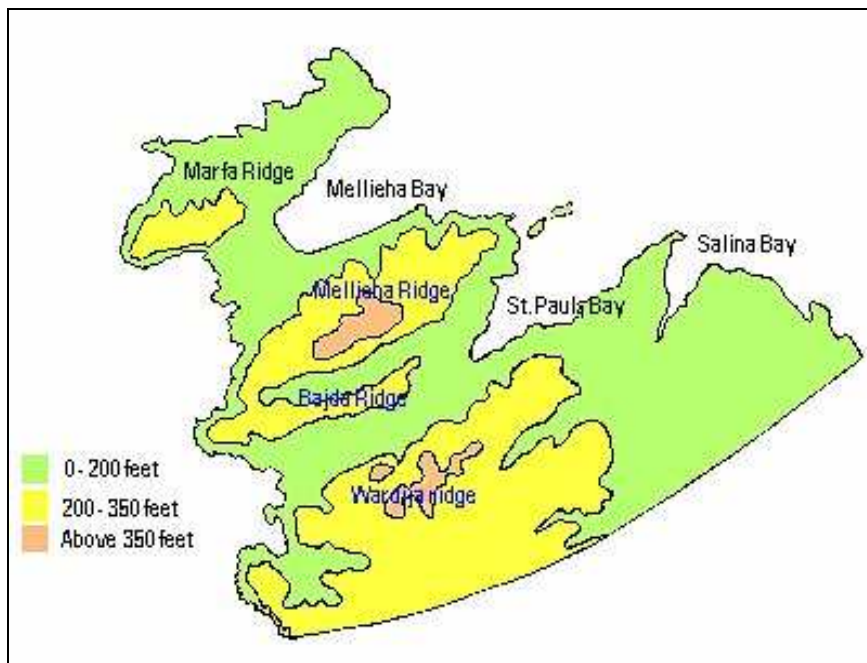


Figure 1: A relief map of the Northern Part of Malta

(Source: Stanfield J., 2006)

Question 2

'Malta's water crisis is imminent within a few years and there is little time to act to avert it'.
(Knox, 2010)

- Discuss the characteristics of geological catchments which lead to the formation of water resources on the Maltese Islands. (8 marks)
- What type of physical constraints and human activities may be threatening the availability of water resources in the Maltese Islands? (10 marks)
- What type of water management and conservation options are recommended on a national scale in order to mitigate the effect of this anticipated crisis? (6 marks)

Question 3

The Maltese Islands' rocky landscape comes to life in winter with a myriad of temporary freshwater pools. **Figure 2** displays an example of a temporary freshwater pool at *Baħar iċ-Ċagħaq*.



Figure 2: A rock pool drying at *Baħar iċ-Ċagħaq*, with soil deposits at the bottom.

(Source: Bioclix, 2012)

- Explain the physical processes responsible for the formation of temporary freshwater pools. (8 marks)
- Describe the ecological properties of a temporary pool environment and give reasons for its low species richness. (8 marks)
- What types of threat are causing the most significant disturbances of the pool environment?

(8 marks)

SECTION B: Human Geography of the Maltese Islands**Question 4**

“Land transport in Malta is principally dependent on privately-owned vehicles. The large number of vehicles relative to the population has a negative impact...” (Source: MEPA, 2009. *The Environment Report Indicators 2009*).

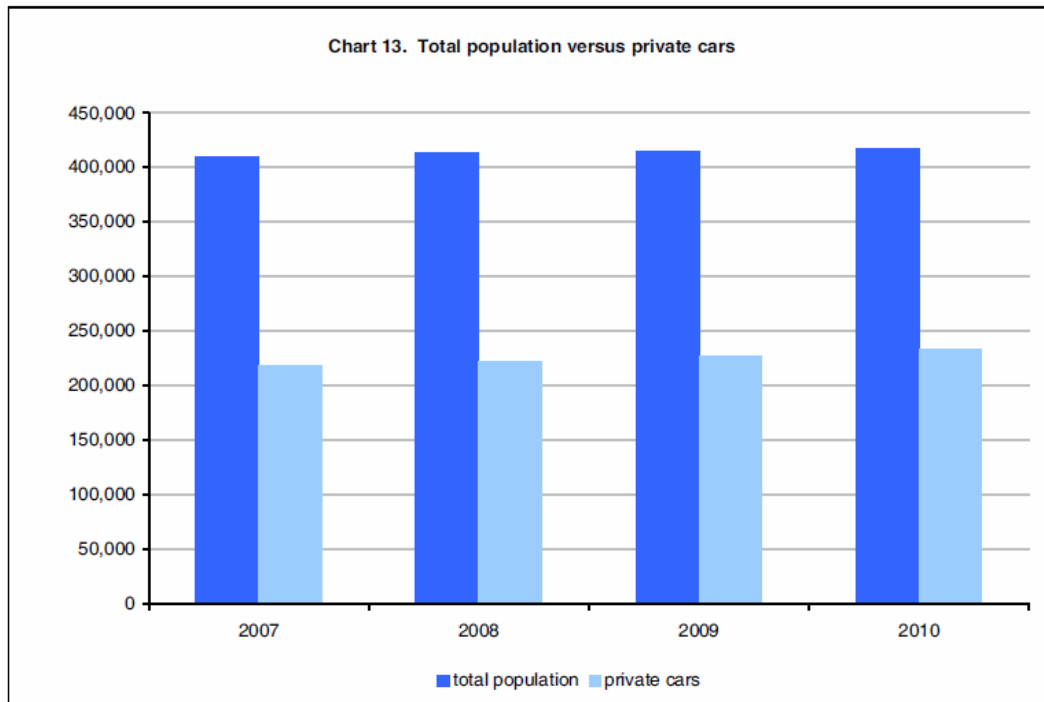


Figure 3: Total Population Versus Private Cars (2007 – 2010)

Source: NSO, 2011. *Malta at a Glance 2011*.

- a. Identify and elaborate on **THREE** negative impacts that a population that is dependent on privately-owned vehicles might have on the natural and human environment. (9 marks)
- b. State and elaborate on possible ways in which vehicle ownership in Malta can be reduced. Sustain your arguments with examples. (15 marks)

Question 5

Figure 4 shows changes in population between census years 1995 and 2005 within the different localities around mainland Malta.

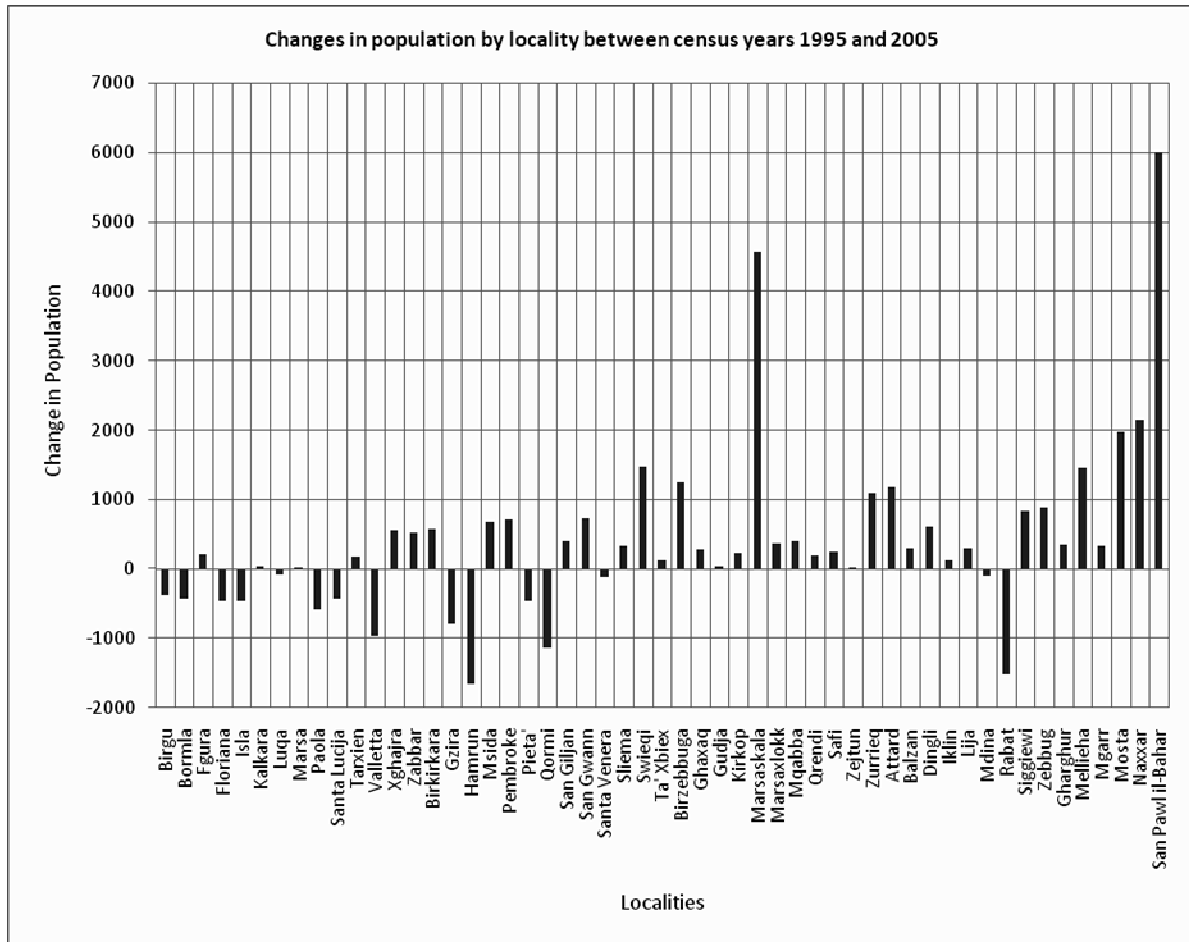


Figure 4: Changes in population by locality between census years 1995 and 2005
 Source: Adapted from NSO, 2005. *Census 2005 Volume 1: Population*.

- a. Refer to **Figure 4** and state **FOUR** reasons why there could be particular demographic fluctuations within the country. Support your answers with examples. (12 marks)
- b. Explain how data about demographic trends could help in planning the development of settlements. (12 marks).

Question 6

During the past few years, at the international level there has been financial instability. This has led to instability at the regional level within countries surrounding the Mediterranean and also European Union member states.

- a. Discuss whether there exist or may be repercussions which influence Malta. (15 marks)
- b. State possible national measures that could be applied in order to alleviate financial difficulties that have an impact on the spatial environment around us. (9 marks)

SECTION C: Fieldwork and Statistical Techniques

Question 7

- a. What is sampling and why is it useful? (6 marks)
- b. Comment on **THREE** different sampling methods. Illustrate your answers with suitable diagrams. (18 marks)

Question 8

A garrigue area was sampled using two **EQUAL** sized quadrants in order to investigate whether two plant species (A and B) grow independently from one another. **Table 1** shows the data for both species A and B.

Species A		Species B		Total
Observed	Expected	Observed	Expected	
198	?	202	?	400

Table 1: Data collected for species A and B.

For the following questions candidates are advised to show all the working leading up to the answer.

- a. State both hypotheses and find the expected results (shown as “?” in **Table 1**). (8 marks)

- b. Use the Chi-Squared test to determine whether species A and B grow independently of one another or not, using the following formula. Show all your workings. (12 marks)

$$X^2 = \sum \frac{(o-e)^2}{e}$$

Where:

X² = Chi-Squared

Σ = Summation

o = The observed values

e = The expected values

- c. Calculate the degree of freedom using the formula: (2 marks)

$$df = n - 1$$

- d. By using the critical value at the 0.05 level (**Table 2**), state which hypothesis should be accepted, giving appropriate reasons for your answer. (2 marks)

Degrees of freedom	Significance level				
	0.1	0.05	0.01	0.005	0.001
1	2.71	3.84	6.64	7.88	10.83
2	4.60	5.99	9.21	10.60	13.82
3	6.25	7.82	11.34	12.84	16.27
4	7.78	9.49	13.28	14.86	18.46
5	9.24	11.07	15.09	16.75	20.52
6	10.64	12.59	16.81	18.55	22.46
7	12.02	14.07	18.48	20.28	24.32
8	13.36	15.51	20.09	21.96	26.12
9	14.68	16.92	21.67	23.59	27.88
10	15.99	18.31	23.21	25.19	29.59
11	17.28	19.68	24.72	26.76	31.26
12	18.55	21.03	26.22	28.30	32.91
13	19.81	22.36	27.69	30.82	34.53
14	21.06	23.68	29.14	31.32	36.12
15	22.31	25.00	30.58	32.80	37.70
16	23.54	26.30	32.00	34.27	39.29
17	24.77	27.59	33.41	35.72	40.75
18	25.99	28.87	34.80	37.16	42.31
19	27.20	30.14	36.19	38.58	43.82
20	28.41	31.41	37.57	40.00	45.32
21	29.62	32.67	38.93	41.40	46.80
22	30.81	33.92	40.29	42.80	48.27
23	32.01	35.17	41.64	44.18	49.73
24	33.20	36.42	42.98	45.56	51.18
25	34.38	37.65	44.31	46.93	52.62
26	35.56	38.88	45.64	48.29	54.05
27	36.74	40.11	46.96	49.65	55.48
28	37.92	41.34	48.28	50.99	56.89
29	39.09	42.56	49.59	52.34	58.30
30	40.26	43.77	50.89	53.67	59.70
40	51.81	55.76	63.69	66.77	73.40
50	63.17	67.51	76.15	79.49	86.66
60	74.40	79.08	88.38	91.95	99.61
70	85.53	90.53	100.43	104.22	112.32
80	96.58	101.88	112.33	116.32	124.84
90	107.57	113.15	124.12	128.30	137.21
100	118.50	124.34	135.81	140.17	149.45

Table 2: Critical values of the Chi-Square distribution

Question 9

Comment in detail on the appearance and function of the following four types of maps:

- i. Choropleth,
- ii. Dot,
- iii. Isoline,
- iv. Weather maps (synoptic charts).

Illustrate your answers with diagrams.

(24 marks)

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL
MAY 2012

SUBJECT: GEOGRAPHY
PAPER NUMBER: II
DATE: 11th May 2012
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: Atmospheric Processes

Question 1

Figure 1 displays **ONE** of the three global atmospheric circulation cells, located between the Equator and 30°N/S of the Equator.

- a. Name this atmospheric circulation cell and describe the processes operating within this cell. (12 marks)

- b. In what ways is this cell responsible for the formation of the following:
 - i. The Intertropical Convergence Zone (ITCZ)
 - ii. Desert areas along specific latitudes. (12 marks)

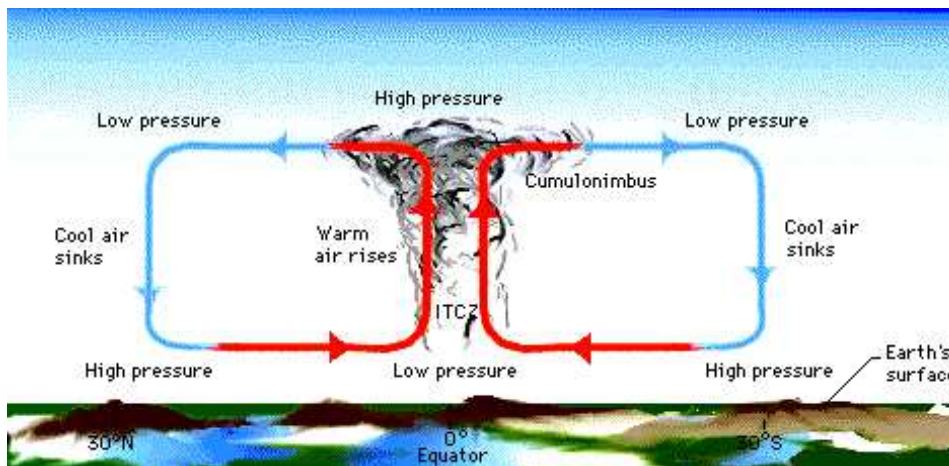


Figure 1: An illustration of one of the three global atmospheric circulation cells (Source: MSN Encarta)

Question 2

The amount of incoming solar radiation received by Earth (insolation) is affected by long term and short term factors.

Choose **THREE** factors and discuss in detail how they account for variations in Earth's insolation. (24 marks)

Question 3

With regards to drought, the continent that has witnessed a high frequency of occurrence and severity of drought is shown in **Figure 2** below. Drought is one of the most important climate-related disasters in Africa.

(Extract from: *Africa Review Report on Drought and Desertification*, 2008, Pg 7)

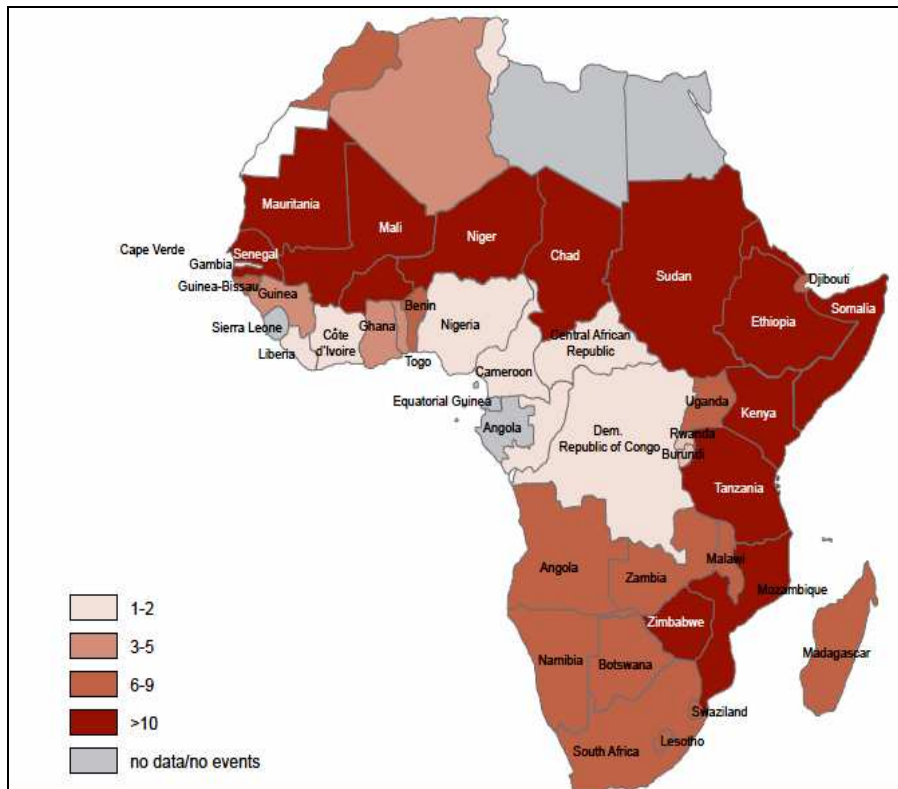


Figure 2: Drought events per country from 1970 to 2004 within Sub-Saharan Africa (Source: Adapted from Noojin, Leah 2006).

- Explain the factors that make these semi-arid regions so vulnerable to drought. (12 marks)
- What measures are being taken in these regions in order to mitigate and reduce the life-threatening effects of drought. (12 marks)

SECTION B: Geomorphology

Question 4

Study **Figure 3**, which shows rates for types of mass movements

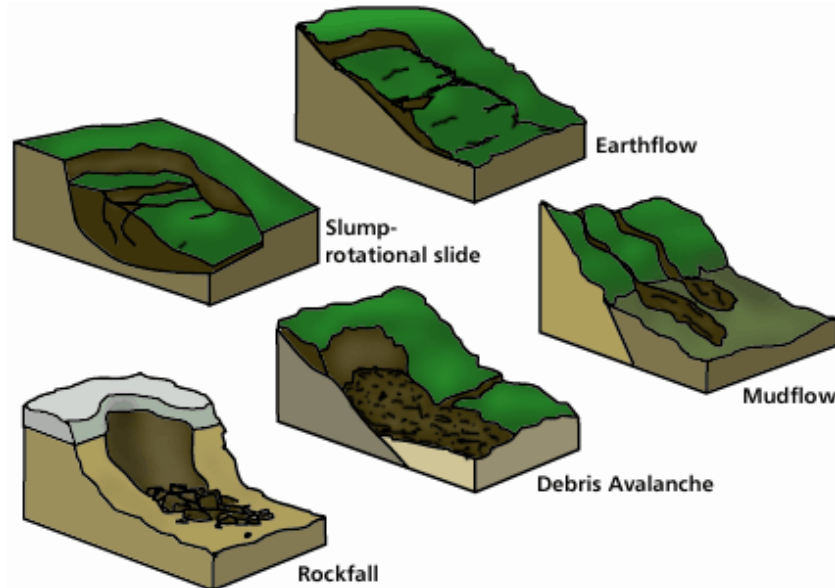


Figure 3: Types of Mass Movement
(Source: Batterson M. *et al.*, 1999)

- a. With reference to **Figure 3**, describe the following types of mass movement:
 - i. Rockfall
 - ii. Rotational slide
 - iii. Mudflow
 - iv. Earthflow (12 marks).

- b. Comment on how water is an important control factor on the rate of mass movement. (6 marks)

- c. Mass movement events can sometimes be avoided by employing slope management techniques to make the slope more stable. Provide and explain **THREE** examples of such techniques. (6 marks)

Question 5

Figure 4 shows a transect across an area of coastal sand dunes.

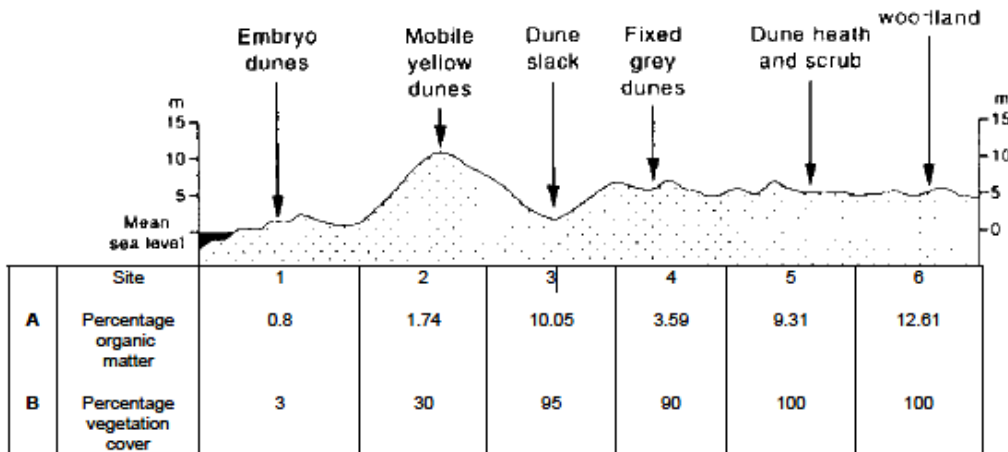


Figure 4: A transect across an area of coastal sand dunes

With reference to **Figure 4**, define the following terms:

- i. Embryo dune
- ii. Dune slack. (8 marks)

Explain and give **TWO** reasons for the following characteristics as displayed in **Figure 4**:

- i. The high accumulation of sand on the yellow dune (also known as foredunes).
- ii. The high percentage of vegetation cover in the dune slack. (16 marks)

Question 6

a. Define the following hydrological characteristics:

- i. interception
- ii. evapo-transpiration
- iii. infiltration (12 marks)

b. Discuss the significance of **EACH** of the above hydrological characteristics to the production of:

- i. surface run-off in a drainage basin
- ii. through-flow in a drainage basin. (12 marks)

SECTION C: Biospheric Processes

Question 7

“The four major components of soil; water, air, mineral and organic matter are all closely interlinked. The resultant interrelationships produce a series of properties” (Waugh, 2002).

Describe the different properties of soil. Sustain your answers with diagrams where necessary.
(24 marks)

Question 8

- a. Describe in detail the **FIVE** main stages of soil formation. (10 marks)
- b. Briefly explain the different layers of a soil profile. Sustain your answer with a diagram.
(14 marks)

Question 9

- a. Define the term ‘biome’ (4 marks)
- b. Choose **ONE** from the following biomes: **EITHER** Mediterranean **OR** Tropical (Savanna) grasslands and discuss the relationship between the **climate** and the **vegetation** cover.
(20 marks)

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL
MAY 2012

SUBJECT: GEOGRAPHY
PAPER NUMBER: III
DATE: 16th May 2012
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

- a. Explain in detail the meaning of ‘external’ and ‘internal’ migration. Sustain your answers with examples. (10 marks)
- b. **Figure 1** illustrates some of the world’s important migration routes.

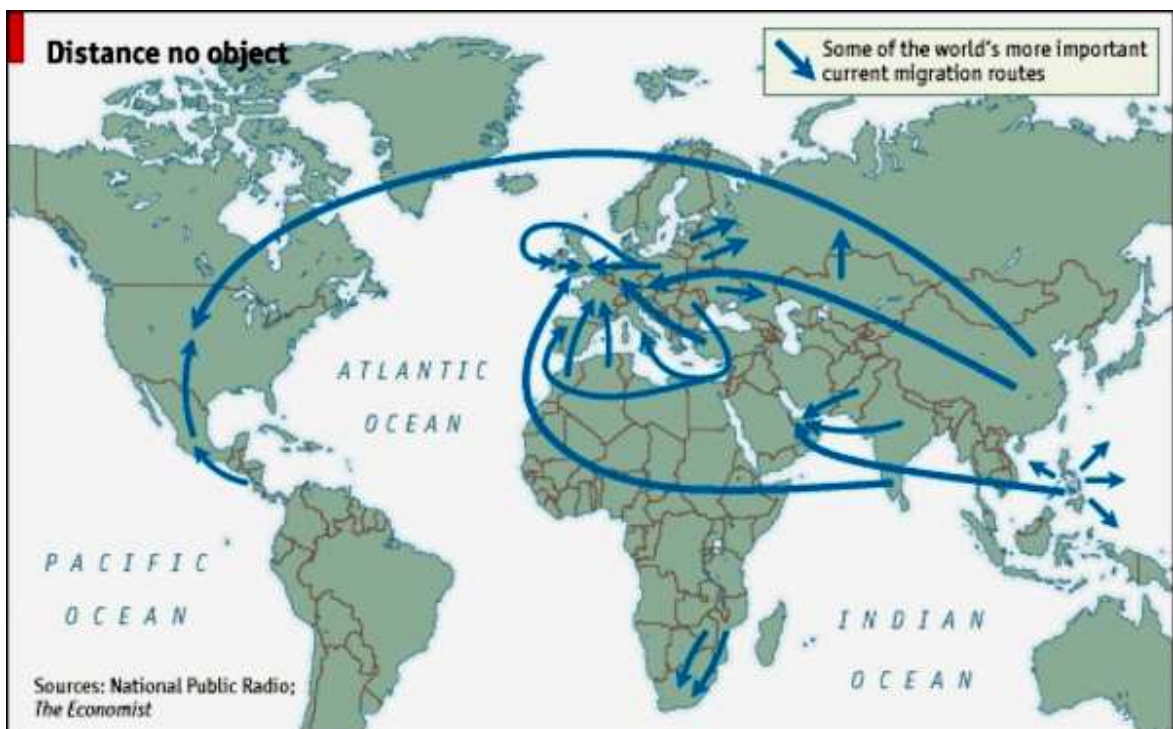


Figure 1: Important migration routes

Source: BSShumangeography, 2012. Available online:

<http://bsshg.wikispaces.com/1.+Population+and+Migration>

With the help of examples suggest reasons why such migratory patterns may take place. By giving **TWO** examples of host countries, discuss any possible benefits and problems that may result from these population movements. (14 marks)

Question 2

Figure 2 shows the components of the Human Development Index.

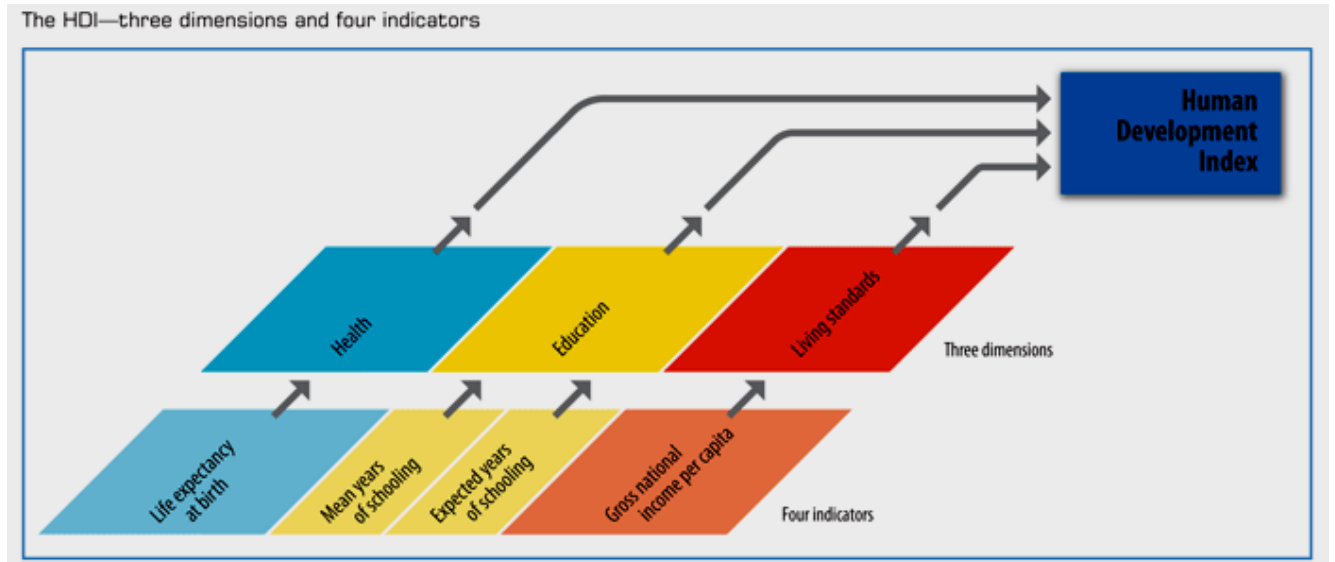


Figure 2: The Human Development Index

Source: UNDP, 2011. Available online: <http://hdr.undp.org/en/statistics/hdi/>

- Define the Human Development Index (HDI). (4 marks)
- With reference to developing countries, discuss the role of the **FOUR** indicators (as per **Figure 2**) in relation to the HDI. (10 marks)
- How can the HDI help improve the standard of living of developing populations? (10 marks)

Question 3

Figure 3 shows the areas of concern for soil degradation on a global scale.

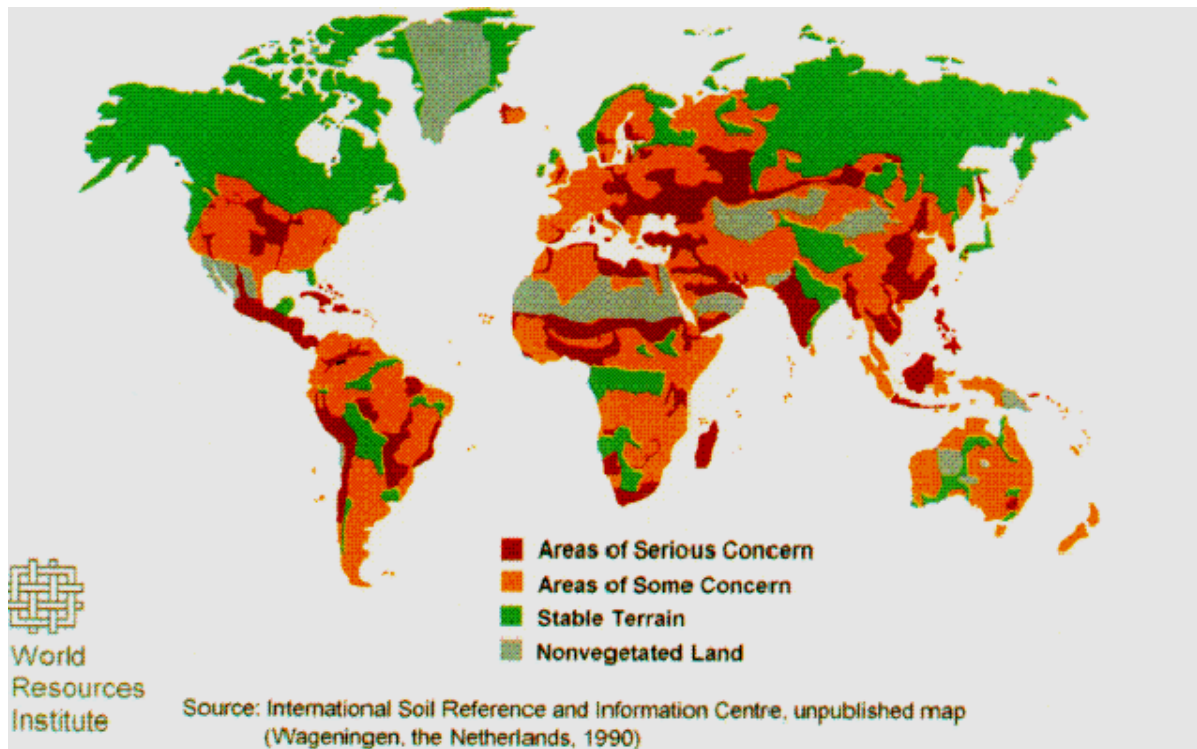


Figure 3: Areas of concern for soil degradation

Source: University of Michigan, 2012. Available online:

http://www.globalchange.umich.edu/globalchange2/current/lectures/land_deg/land_deg.html

- a. State **FIVE** anthropogenic related causes of soil degradation and explain how they take place. Sustain your answers with examples (10 marks)

- b. With reference to **Figure 3** identify which areas are mostly at risk. Select an area of your own choice and state and explain what types of management practices can take place to improve the situation. (14 marks)

SECTION B: Issues in Resource Management

Question 4

- a. Define the terms 'potential resource' and 'resource base'. (4 marks)
- b. Explain and discuss in detail the main different views about resource use and development. (20 marks)

Question 5

- a. Choose **ONE** of the following issues:
 - i) Overfishing
 - ii) Waste disposal in oceans and seas

Discuss the source of the problem and what the issue involves (14 marks)

- b. Mention conservation measures (both national and international measures) that were taken or can be taken to reduce both overfishing and waste disposal at sea. (10 marks)

Question 6

- a. Define the terms:
 - i) 'renewable resources',
 - ii) 'non-renewable resources' (4 marks)
- b. Mention **TWO** renewable resources of your choice and explain the main advantages and disadvantages of these renewable resources. (10 marks)
- c. With reference to the **TWO** renewable resources mentioned in (b), list and discuss the main factors that influence their location. (10 marks)

SECTION C: The Geography of Tourism and Recreation

Question 7

Since taking off in the mid-1990s, Europe's budget airlines have soared to account for a third of all air travel in the region. But their growth is slowing. Having introduced holidaymakers to once obscure places like Tallinn and Sharm el-Sheikh, the low-cost carriers are left with few new places to explore. (The Economist, 2011).

- a. State the pros and cons that transport networks have at the international level on the tourism industry. (12 marks)
- b. Explain how, in the current situation of the global economic crises, budget airlines play a role in boosting the economy. (12 marks)

Question 8

In the 1950s the Swedish economist Gunnar Myrdal proposed the cumulative causation model. His theory was that 'success breeds success'. This model can also be applied to tourism as an industry.

- a. Identify how Myrdal's cumulative causation model can be applied to tourism. Develop your answer with examples from contemporary issues. (12 marks)
- b. With the help of a case study of your choice, identify how management practices can help improve the tourist industry of a country. (12 marks)

Question 9

- a. Define the term tourist honeypots and sustain your answer with **TWO** examples. (5 marks)
- b. Identify, discuss and provide examples of **THREE** environmental impacts from which such touristic sites may suffer. (9 marks)
- c. State possible ways in which conservation of touristic sites can be carried out while still attracting tourists. (10 marks)