

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

UNIVERSITY OF MALTA, MSIDA

MATRICULATION EXAMINATION
ADVANCED LEVEL
MAY 2015

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	I
DATE:	12 th May 2015
TIME:	9.00 a.m. to 11.00 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

- Name TWO valley systems present in the Maltese Islands. (2 marks)
- Why are valleys in the Maltese Islands considered to be 'dry valleys'? (10 marks)
- Describe the physical processes which were responsible for the formation of valleys in the Maltese Islands. (12 marks)

Question 2

- Define the term 'saline marshlands', and name ONE saline marshland found in the Maltese Islands. (8 marks)
- Describe the ecological system which occupies the saline marshlands in the Maltese Islands and discuss why they are considered to be specialised communities. (8 marks)
- In what way are saline marshlands different from 'transitional coastal wetlands'? (8 marks)

Question 3

- Define 'soil erosion' and distinguish between 'natural' and 'accelerated' soil erosion. (8 marks)
- With reference to the Maltese islands, provide examples of factors which are directly or indirectly contributing to soil erosion and discuss them in detail. (16 marks)

Section B: Human Geography of the Maltese Islands

Question 4

- a. Provide an alternative name to the term ‘aquaculture’ and give a definition of this term. (3 marks)
- b. List THREE areas where aquaculture is practised in Malta. (3 marks)
- c. ‘During 2013, the volume of fish sold through aquaculture amounted to 9,077 tonnes, an increase of 29.5 per cent over the preceding year. The average price of fresh fish sold declined by 1.7 per cent’ (National Statistics Office, 2014).
Discuss this statement in view of the effect that aquaculture has on the economic situation of Maltese fishermen. (6 marks)
- d. Discuss FOUR other disadvantages of aquaculture. (12 marks)

Question 5

Figure 1 shows an infographic of the percentage of inbound tourists (out of a total of 100 per cent for **each** season) who consider themselves as ‘sun seekers’.

Share of inbound tourists by quarter

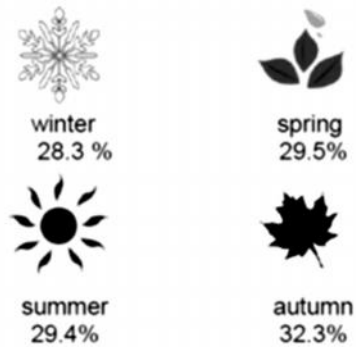


Figure 1: Infographic showing the share of inbound tourists by quarter (Malta Tourism Authority, 2013)

- a. List THREE characteristics that define a ‘sun seeker’ tourist. (6 marks)
- b. The infographic in Figure 2 shows the overall experience of sun seekers who visited Malta in 2013.



Figure 2: Overall experience of sun seekers who visited Malta in 2013
Source: Malta Tourism Authority (2013)

- i. Briefly describe the infographic in Figure 2. (2 marks)
 - ii. Identify TWO possible reasons why 7.5% of the tourists' overall experience was below expectations. (4 marks)
 - iii. Briefly discuss TWO ways that can help to improve the tourists' overall experience, in order to minimise the percentage of tourists who are dissatisfied with their experience. (4 marks)
- c. Keeping in mind the statistics provided in the infographics Figure 1 and 2, analyse and discuss how as a service industry, tourism contributes to the economic development of Malta. (8 marks)

Question 6

The Malta Freeport (Figure 3) is advertised as being “the only hub in the Mediterranean with two berths capable of handling 18,000 TEU vessels” (Source: <http://www.maltafreeport.com.mt/>). Note: TEU = Twenty-foot Equivalent Units



Figure 3: The Malta Freeport
Source: Times of Malta (2008)

- a. Describe the site and situation of the Freeport in Malta. (4 marks)
- b. Identify and discuss TWO geographic situations that put the Malta Freeport at an advantage. (10 marks)
- c. List and briefly discuss FIVE negative environmental impacts that result from the Malta Freeport. (10 marks)

Section C: Fieldwork and Statistical Techniques

Question 7

You are assigned to determine the velocity of a river, which is influenced by three main factors: the channel shape in cross section, the roughness of the channel's bed and banks and the channel slope.

- a. Define these THREE main factors and state how you would measure each of these factors. Use illustrations to help explain your answers where necessary. (12 marks)

- b. With the help of the following formula, state how you would calculate the three factors mentioned in the statement to determine the velocity of a river. (12 marks)

$$V = \frac{1.49(R^{2/3}S^{1/2})}{n}$$

Figure 4: Manning's Equation

Question 8

- a. 'Graphs can be used to show inequalities'. Explain how this statement is relevant to the Lorenz Curve. (8 marks)
- b. Table 1 shows the number of people employed in different sectors in a city. By showing all your workings, work out the rank, the total percentage and the cumulative percentage. (10 marks)

Occupations	Number of people employed
Office workers	450
Teachers	50
Retailers	145
CEOs	4
Unemployed	25
Doctors	30
Accountants	320

Table 1: The number of people employed in different sectors in a city.

- c. Using the result of the cumulative percentage, plot the Lorenz Curve on the graph paper provided and comment on the results. (6 marks)

Question 9

- a. Describe the following terms (with the help of diagrams where indicated). Give examples of how this can be applied:
- Histogram (include a diagram)
 - Confidence interval
 - Significance test. (14 marks)
- b. 'Graph techniques are very important to visually display results'. Justify this statement by explaining, with the help of diagrams, the following TWO graphs:
- Scatter graphs
 - Triangular graphs. (10 marks)

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UNIVERSITY OF MALTA, MSIDA**

**MATRICULATION EXAMINATION
ADVANCED LEVEL
MAY 2015**

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	II
DATE:	13 th May 2015
TIME:	9.00 a.m. to 11.00 a.m.

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

Section A: Atmospheric Processes

Question 1

- a. Define 'atmospheric stability'. (4 marks)
- b. With reference to atmospheric stability, explain how the different conditions between day and night cause differences in temperature lapse rates in the atmosphere. (20 marks)

Question 2

On November 7th 2014, a cyclone, termed as 'Medicane Qendresa 1', moved across the island of Malta producing sustained winds of 110 km/h, gusts up to 154 km/h, and a minimum barometric pressure of 979 mb (hPa). Farther west, the island of Lampedusa was reported as devastated, with dozens of ships capsized. (Adapted from P. Caridi 2014)

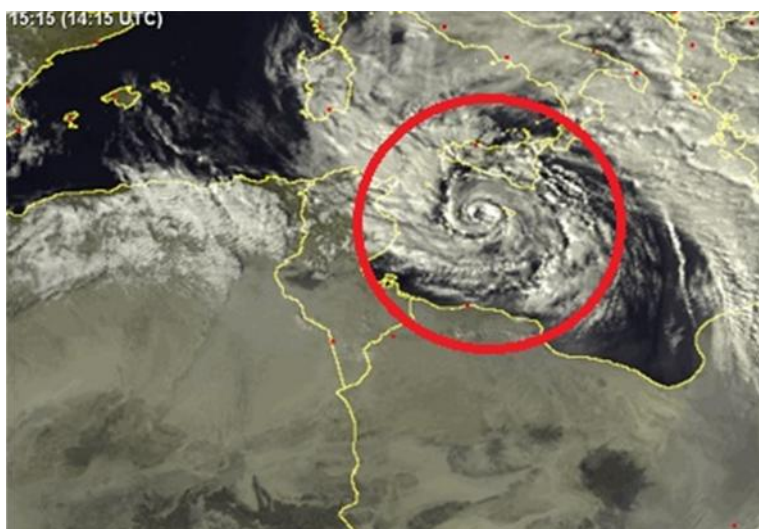


Figure 1: Satellite Imagery of Medicane Qendresa 1 on 7th November 2014.
Source: MeteoSAT.

- a. Mediterranean hurricanes are rare meteorological phenomena. Explain why such phenomena are rare in the Mediterranean region. (10 marks)
- b. What are the factors required for the formation of a hurricane in the Mediterranean such as that in Figure 1? (10 marks)
- c. List **FOUR** impacts on society normally associated with such occurrences. (4 marks)

Question 3

Figure 2 illustrates annual rainfall index from 1900-2000 for the Sahel region, whilst Figure 3 shows the atmospheric processes over the Sahel region during summer.

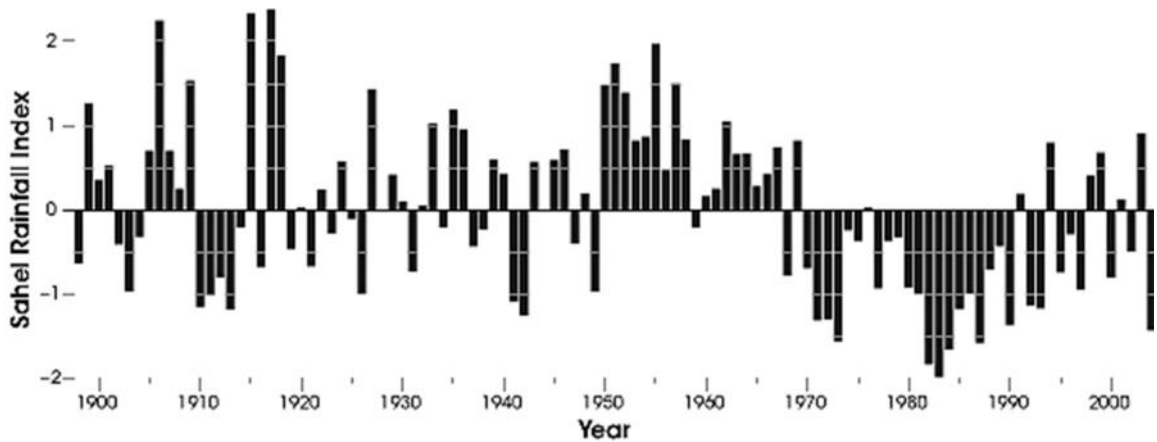


Figure 2: The Sahel Rainfall Index reflects an average rainfall figure against which annual variability can be observed. (Source: NASA Earth Observatory 2006)

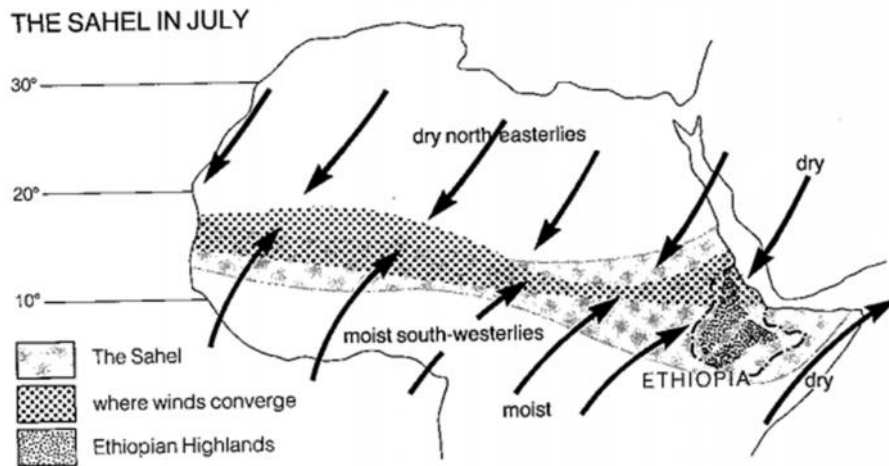


Figure 3: Prevailing atmospheric processes over Africa’s Sahel zone (Money, 1987)

- a. Describe the trends of annual rainfall for the Sahel region shown in Figure 2. (10 marks)
- b. The Sahel region receives most of its mean annual precipitation during the June-September period. With the help of Figure 3, explain the atmospheric processes that may account for the occurrence of rainfall periods in summer and for the changing trends displayed in Figure 2. (14 marks)

Section B: Geomorphology

Question 4

- a. Describe the TWO different processes which are responsible for wind erosion. (6 marks)
- b. Wind-eroded landforms are rarely preserved on the surface of the Earth, except in arid regions. With the help of annotated diagrams, explain the formation of the following THREE erosional landforms:
 - i. desert pavements (regs);
 - ii. rock pedestals; and
 - iii. yardangs. (18 marks)

Question 5

With reference to Figure 4, explain how cliff profiles 1 to 5 may be shaped as follows:

- a. Processes responsible for sediment supply and/or sediment removal for cliff profiles 1 and 2; and
- b. The type of geological structure, as shown in cliff profiles 3, 4 and 5. (24 marks)

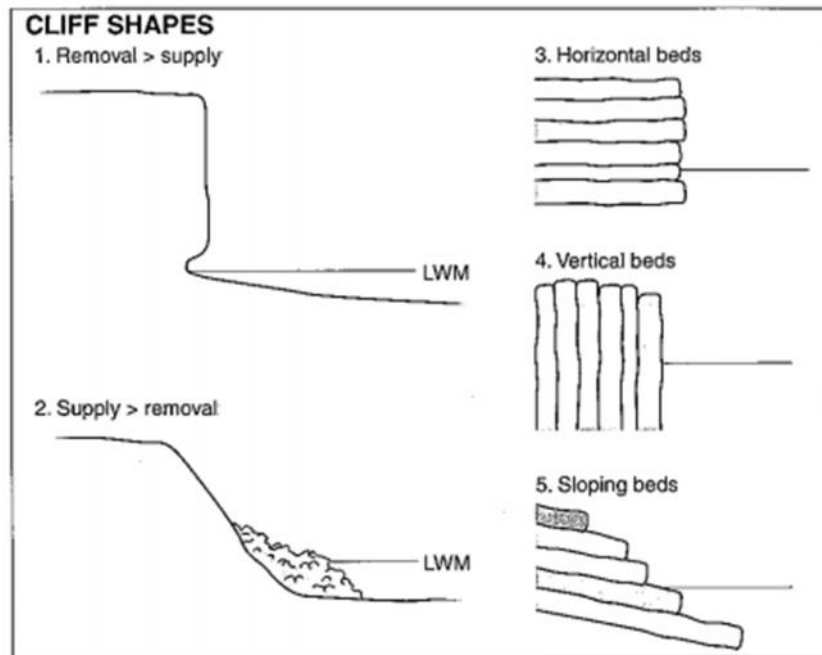


Figure 4: Formation of cliff profiles. (Source: Nagle and Spencer, 2001)

Please turn the page.

Question 6

Figure 5 displays the relationship between soil type and slope, known as ‘soil catena’.

- a. With reference to Figure 5, explain how topography affects the drainage characteristics across the soil catena. (10 marks)
- b. Discuss how the following soil profiles developed the indicated characteristics:
 - i. Soil profile 1 and 2 have uniform oxidised colours in the upper layers; and (5 marks)
 - ii. Soil profile 4 has developed into dark peat in its upper layers. (5 marks)
- c. Why is a soil catena considered as an ‘open system’? (4 marks)

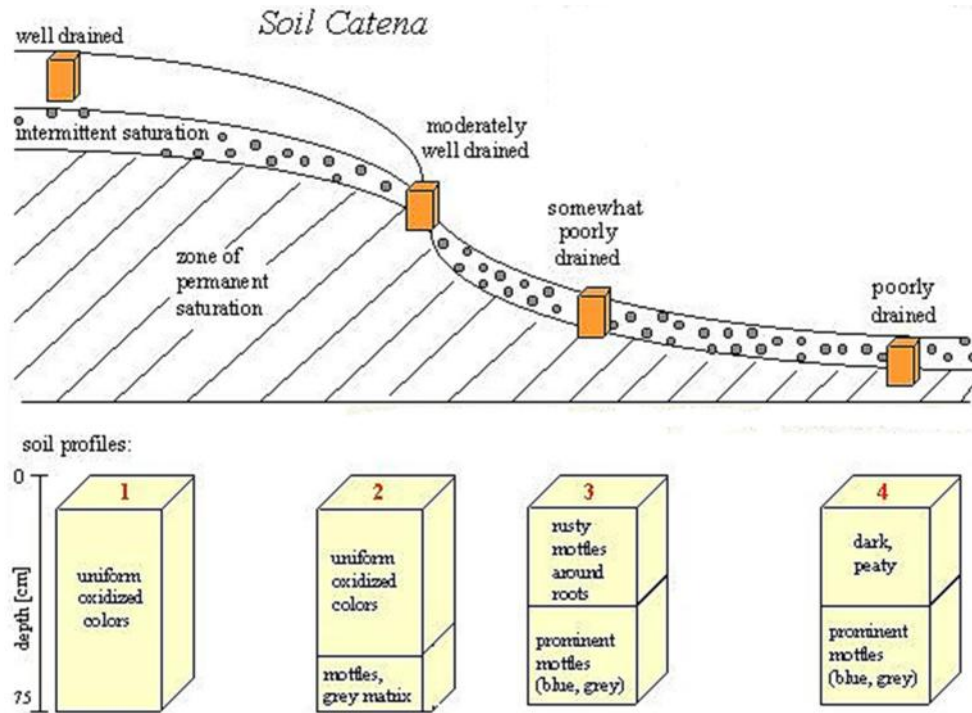


Figure 5: An example of soil catena. Mottles in soil profiles 2, 3 and 4 are gray spots which are an indication of the degree of soil wetness.

(Source: <https://www.swac.umn.edu>)

Section C: Biospheric Processes

Question 7

- a. Define the terms ‘food chain’ and ‘trophic levels’. (8 marks)
- b. With the help of a diagram and examples, explain in detail the four main stages of trophic levels. (16 marks)

Question 8

- a. Outline the role of pH in soils. (10 marks)
- b. Figure 6 displays two soil profiles which develop in different climate regimes. With reference to Figure 6, explain how the soil pH may vary between the two selected soil profiles and give reasons for your answer. (10 marks)
- c. List FOUR factors which may lead to an increase of acidity in soils. (4 marks)

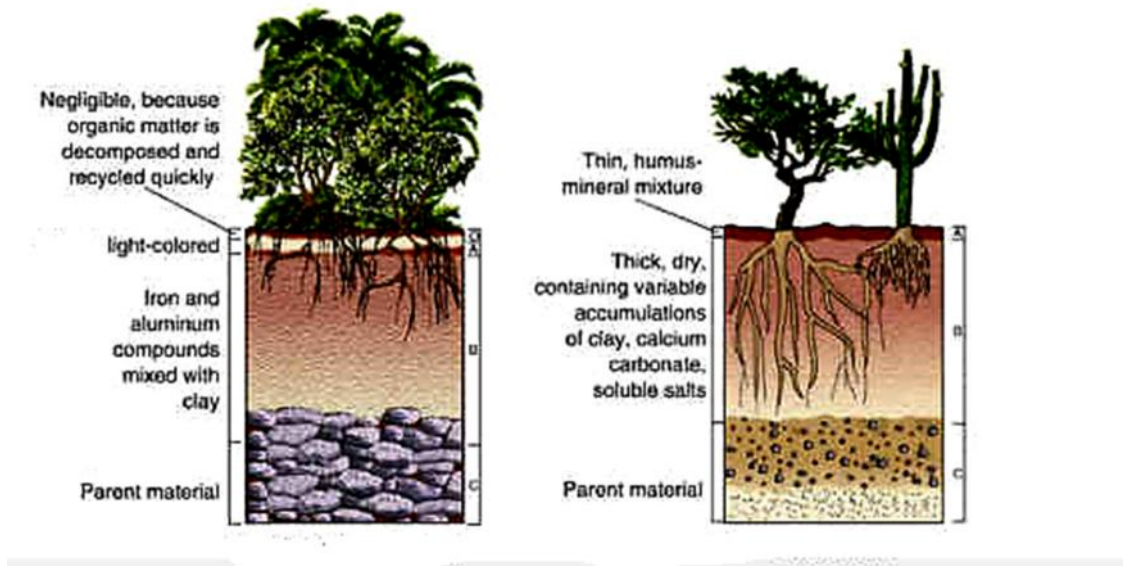


Figure 6: Selected soil profiles in two different climate regimes.

Question 9

- a. Describe and account for the climate and type of vegetation normally found in areas with a tropical rainforest biome. (14 marks)
- b. Using examples from ONE case-study, identify the major environmental threats to the natural vegetation of the tropical rainforest. (5 marks)
- c. Suggest how the diversity of this biome can be maintained while still allowing people who use it to continue their traditional ways of life. (5 marks)

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MATRICULATION EXAMINATION
ADVANCED LEVEL
MAY 2015

SUBJECT: GEOGRAPHY
PAPER NUMBER: III
DATE: 15th May 2015
TIME: 9.00 a.m. to 11.00 a.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 a map of the world and the distribution of the population densities.

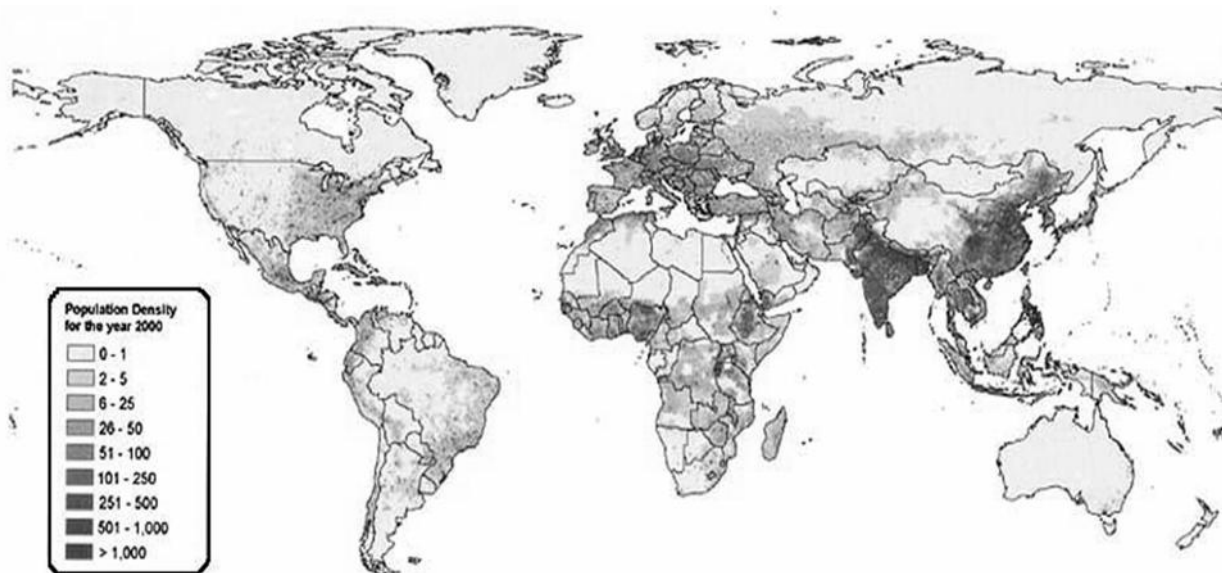


Figure 1: A map of the world and its population densities (2000).

Source: <http://www.fao.org>

- a. Interpret the map in Figure 1, by referring specifically to countries of the developing world. (8 marks)
- b. List FOUR major factors that affect densely populated areas. Briefly discuss each major factor and support your answers with examples from the developing world. (16 marks)

Question 2

Read the following extract well:

“The Mossi people of Burkina Faso developed stone bunding early this century. The bunds (lines of stones) built up over the years and reached a metre high, effectively terracing the slopes for relatively little labour input, most of it during the dry season). In later periods of political turmoil and land alienation, the bunds were abandoned.

However, after a series of droughts in the 1970s, the stone bunds were spontaneously revived and combined with "zay" or pits which conserve water and in which organic material is placed to increase soil fertility. At the same time, introduced systems were shunned.

Although annual rainfall in the area is low, when it does fall the rain is intense; it "runs off" sloping land and is frequently lost to crops. The intensity of the rain also causes soil erosion and long term damage to the land.

The bunds are semi-permeable, allowing some water to get through. The water that would have otherwise "runoff" the fields and caused erosion, is able to slowly sink into the ground and benefit the crops. Erosion is avoided, and the gradual seeping in of the water to the soil helps to build up soil fertility". (Warren & Rajasekaran, 1993).

- a. After reading the above paragraph, identify and discuss how the Mossi people of Burkina Faso have applied the concepts of ‘Sustainable Development’ to their indigenous agricultural practices. (10 marks)
- b. Identify and explain TWO additional conservation methods that can be applied to improve these agricultural practices. (8 marks)
- c. What are the major challenges being faced today by indigenous farmers? (6 marks)

Question 3

“Rapidly growing numbers of people create social and economic burdens which cannot be ignored. However, evidence suggests that population problems include not only births and deaths, but also demographic change as it affects national and international politics.” (Choucri, 1983)

- a. List and briefly describe ONE additional factor that contributes to population increase. Support your answer with an example. (6 marks)
- b. As the statement by Choucri (1983) suggests, population increase creates social and economic burdens.
 - i. Name ONE other burden that is created by population increase. (2 marks)
 - ii. Identify and describe FOUR effects of the burden mentioned in the above answer (b.i) (16 marks)

Section B: Issues in Resource Management

Question 4

'A resource can be defined as any feature of the environment which can be used to meet human needs'.
(Skinner et al, 2003)

- a. With reference to the above statement, and with the help of a flow chart, briefly outline the classification of resources. (6 marks)
- b. Ecocentrism and technocentrism were two different views about resource use and development. Explain in detail these two approaches. (18 marks)

Question 5

- a. 'During the past 20 years, there was an increase in the use of energy resources by the less economically developed countries, which created tension between them and the developed countries.' Explain this statement and discuss the reasons for this tension. (14 marks)
- b. Mention TWO renewable resources of your choice and explain their main advantages and disadvantages. (10 marks)

Question 6

"The changes in tropical forest cover are a matter of global concern due to its role in the carbon cycle. This renewable resource continues to decrease at an accelerated rate". (Source: Roy et al, 2002)

- a. Define the terms 'Natural Forest' and 'Forest Plantations'. (8 marks)
- b. With reference to the above statement, discuss the importance of tropical forest resources. (8 marks)
- c. What can be done to conserve tropical rainforests? Make reference to both natural forest and managed plantations. (8 marks)

Please turn the page.

Section C: The Geography of Tourism and Recreation

Question 7

“China is planning to build a high speed train route that links it to Europe across Asia and the Middle East” (Gracie, 2014). Figure 2 illustrates the intended transport route.

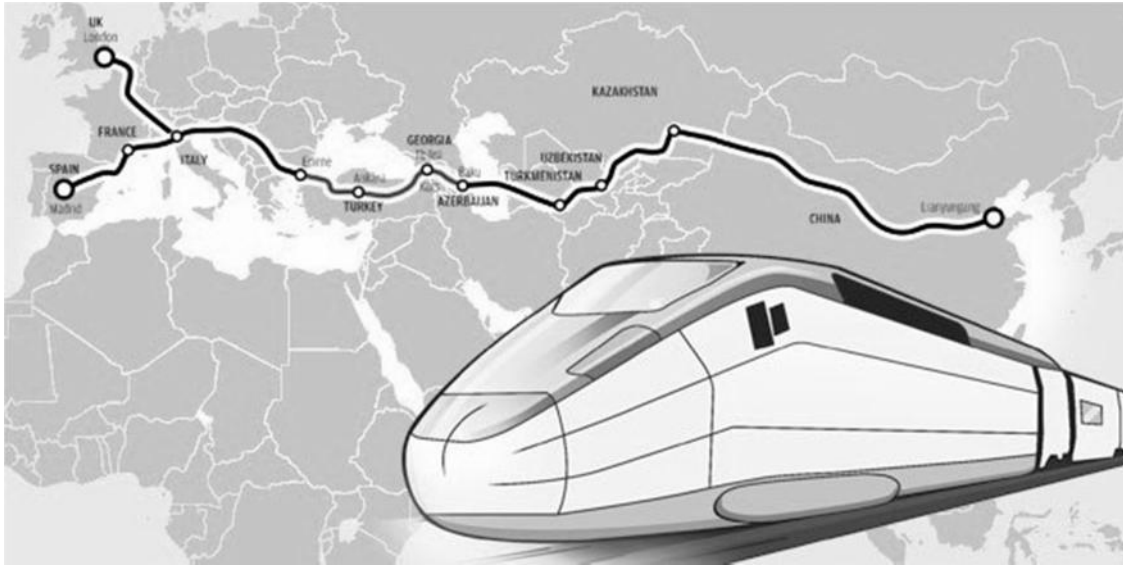


Figure 2: The train route from China to Europe. Source: <http://blogtruth.net>

- a. Discuss FOUR positive and FOUR negative impacts that this train route might have on the tourism industry. (16 marks)
- b. Using this case-study of the China-to-Europe high speed train, evaluate the role that transport technology has on tourist networks. (8 marks)

Question 8

The Swedish economist Gunnar Myrdal believed that ‘success breeds success’.

- a. Explain this statement in view of the tourism industry and use examples to support your answer. (14 marks)
- b. With the use of examples from the tourism industry, mention and explain TWO patterns that are defined by Myrdal’s model. (10 marks)

Question 9

In 2013, the journalist Jessica Hatcher reported in 'The Guardian' – *“The Masai Mara: It will not be long before it's gone. As lodges and shanty towns proliferate in Kenya's Masai Mara, drastic and urgent steps are needed to save this beautiful game reserve from becoming an environmental disaster”*. Figure 3 shows giraffes in Kenya's Masai Mara game reserve.



Figure 3: Giraffes in Kenya's Masai Mara game reserve.
Photograph: Guillaume Bonn (The Guardian, 2013)

- a. List and discuss FOUR environmental impacts on Kenya's Masai Mara game reserve arising from the tourism industry. (16 marks)
- b. Identify TWO key interest groups (except tourism) in this specific area, and discuss how they are contributing to wildlife conservation. (8 marks)