

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

UNIVERSITY OF MALTA, MSIDA

MATRICULATION EXAMINATION

ADVANCED LEVEL

MAY 2017

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	I
DATE:	22 nd May 2017
TIME:	9.00 a.m. to 11.05 a.m.

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

SECTION A: PHYSICAL GEOGRAPHY OF THE MALTESE ISLANDS

Choose **ONE** question from this section.

1. The layered rocks to be seen on the surface of the Maltese Islands were originally all sheets of unconsolidated sediments laid down on the sea bed in a time span of some 24 million years during the age intervals known as the Oligocene and Miocene epochs in the Tertiary period of the Earth's history. (Pedley et al., 2002:18)
 - (a) Explain the processes and materials involved in the formation of the sedimentary rocks that characterize the Maltese Islands. (9 marks)
 - (b) Describe and account for the salient characteristics and uses of the five layers of rocks that make up the stratigraphy of the Maltese Islands. (15 marks)
2. The Mediterranean Sclerophyll Forest is a major ecological community considered as being the climax vegetation of the Mediterranean and the Maltese Islands.
 - (a) Describe the main attributes of this ecological community in Malta, making reference to specific examples and accounting for its distribution. (12 marks)
 - (b) Why has this habitat been virtually exterminated in Malta along the millennia? What efforts are being made to offset the long history of degradation of this unique habitat? (12 marks)

3. Figure 1 presents the mean monthly precipitation values in the Maltese Islands for the period 1961-1990.

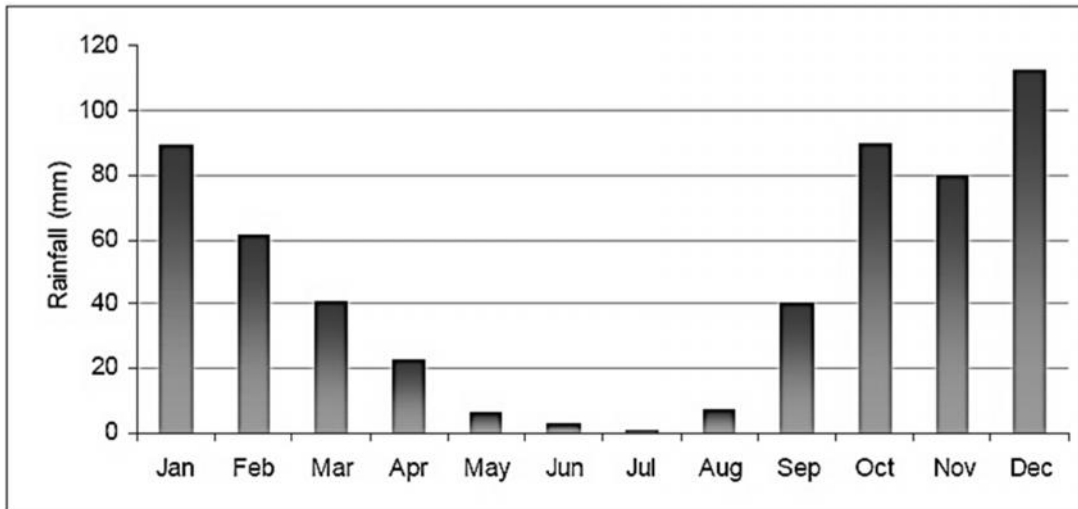


Figure 1: Mean monthly precipitation for the period 1961-1990 (Galdies, 2011)

- (a) Give an overview of the distribution of precipitation for the period shown in Figure 1. (5 marks)
- (b) Discuss, with reference to Figure 1, how the type of rainfall experienced in the Maltese Islands varies according to the seasons. (8 marks)
- (c) The monthly means and variability of the relative humidity (RH) for the Maltese Islands for the period 1961-1990 are shown in Figure 2. Discuss the mean monthly values for relative humidity in the Maltese Islands and give plausible reasons for these variations. (6 marks)

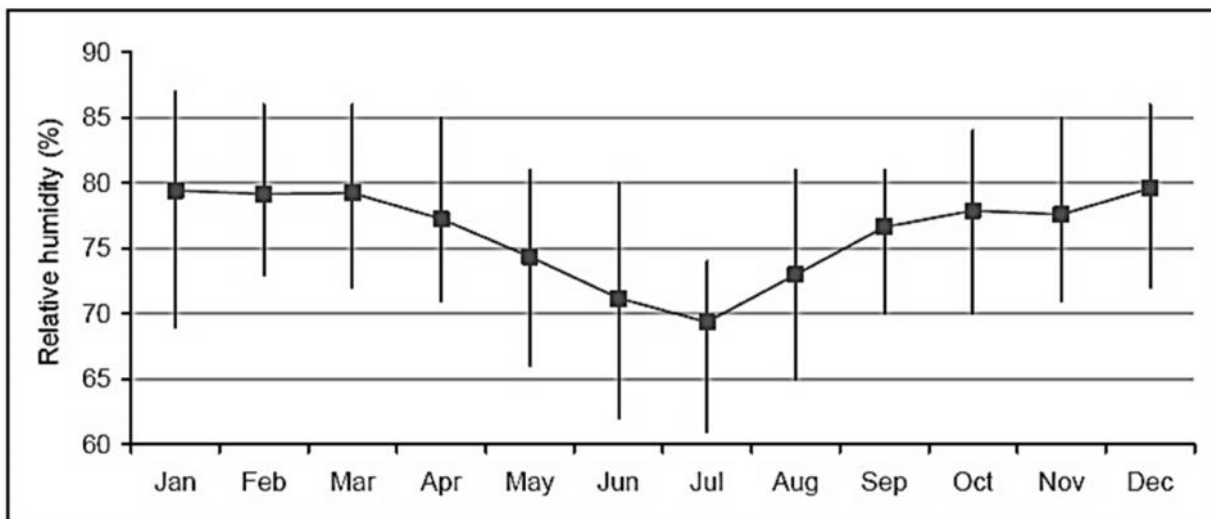


Figure 2: Monthly means and variability of relative humidity for the period 1961-1990 (Galdies, 2011)

- (d) The annual average number of days during which fog events were registered in Malta was 9.2. March had the highest average, followed by February (Galdies, 2011). Briefly explain **ONE** process leading to the formation of fog in Malta and give **ONE** reason why the incidence of fog is more common in February and March. (5 marks)

SECTION B: HUMAN GEOGRAPHY OF THE MALTESE ISLANDS

Choose ONE question from this section.

4. Figure 3 illustrates total population statistics for three districts in Malta (the Southern Harbour, Northern Harbour and Gozo and Comino) between 2006 and 2014.

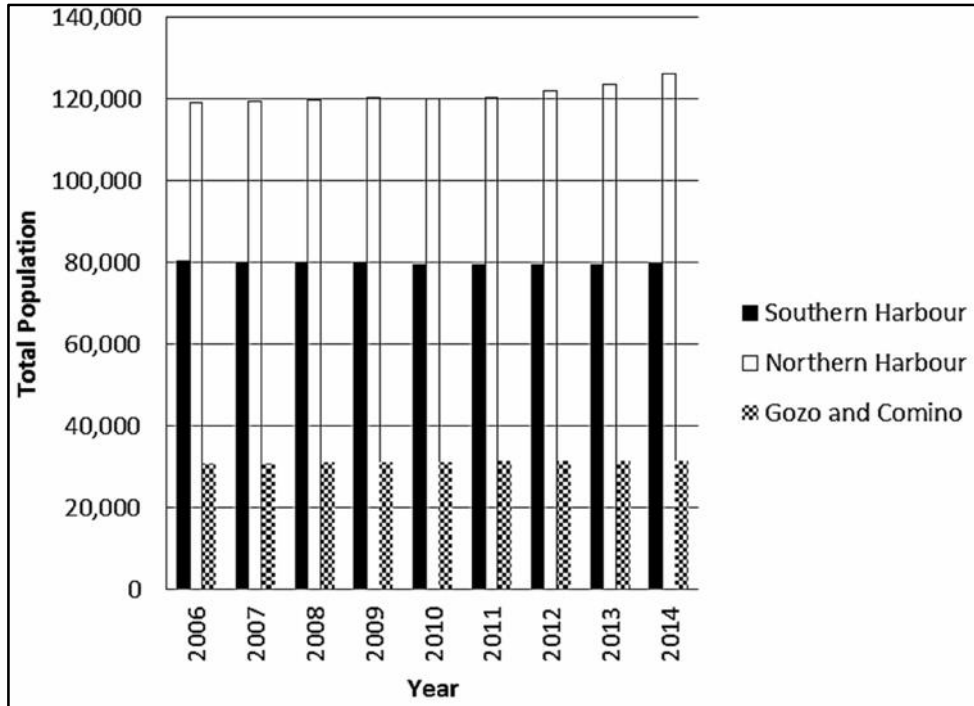


Figure 3: Total population for the Southern Harbour District, Northern Harbour District and Gozo and Comino between 2006 and 2014 (NSO, 2016).

- (a) Describe Figure 3 in detail. Focus on explaining the total population for the three districts between 2006 and 2014. (8 marks)
- (b) List and explain possible reasons why there are population differences between the three districts. (8 marks)
- (c) Identify and briefly explain **TWO** possible negative human-related impacts in the Northern Harbour District. (8 marks)
5. The construction industry has many downsides, mostly of an environmental and social nature (Briguglio, 2015).
- (a) With reference to the above statement discuss the negative impacts of the construction industry on the environment and the community. (14 marks)
- (b) List and briefly explain **FIVE** economic benefits of the construction industry for Malta. (10 marks)

6. Shipbuilding is one type of marine-related industries.
- (a) In view of the geo-political situation of Malta, list and explain **TWO** reasons why shipbuilding is important for Malta. (14 marks)
 - (b) Discuss how through the years the shipbuilding industry has influenced the environmental, social, and economic aspects of Malta. (10 marks)

SECTION C: FIELDWORK AND STATISTICAL TECHNIQUES

Choose ONE question from this section.

7. The mean, mode, and median are descriptive statistics.
- (a) Provide a detailed explanation of each. (6 marks)
 - (b) (i) Find the mean of: 6, 8, 11, 5, 2, 9, 7, 8.
 (ii) Find the median of: 1, 3, 0.5, 0.6, 2, 2.5, 3.1, 2.9.
 (iii) Find the mode for: 2, 6, 3, 9, 5, 6, 2, 6 (6 marks)

Note: please show all working in your answer.

- (c) Explain the use of a ‘Location Quotient’. (6 marks)
- (d) Table 1 shows the number of non-Maltese residents living in each of the six districts in Malta. The table also shows the total population in each of the districts. Work out the Location Quotient for each district and interpret your answers. (6 marks)

Formula: $LQ = (S / S) / (T / T)$

Note: please show all working in your answer.

Table 1: Non-Maltese residents by district (NSO, 2011)

District	Non-Maltese Residents	Total Population
Southern Harbour	1603	79203
Northern Harbour	7548	120063
South Eastern	3221	64121
Western	1287	57928
Northern	5137	63597
Gozo and Comino	1290	31143

8. (a) Define the purpose for using scatter graphs. (4 marks)
- (b) Mary carried out a fieldwork study on a mountain. The aim of her fieldwork was to record temperatures along a transect varying in altitude. The transect was 1 km long and temperatures were recorded every 100 metres going uphill and starting at 0 metres. The temperatures recorded were as follows, in the order provided:
Temperatures (°C): 20, 15, 10, 5, 2, 0, -2, -5, 20, -7.
- (i) Draw a scatter diagram of the recorded temperatures. (6 marks)
- (ii) Describe the scatter diagram, and state whether there was any issue with the data. State **TWO** possible reasons for that issue. (14 marks)
9. Figure 4 shows a picture of M arr ix-Xini in Gozo.



Figure 4: M arr ix-Xini, Gozo
(Source: <http://www.maltawildplants.com>)

- (a) Describe the landforms and features of geographic interest that are visible in Figure 4. (10 marks)
- (b) Draw a sketch of Figure 4. Use the instructions below as guidelines.
- (i) Divide the scene in three: the foreground, middle distance, and background.
- (ii) Use a legend.
- (iii) Label main features. (10 marks)
- (c) List **FOUR** main pieces of equipment necessary to conduct sketching on the field. (4 marks)

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UNIVERSITY OF MALTA, MSIDA
MATRICULATION EXAMINATION
ADVANCED LEVEL
MAY 2017

SUBJECT:	GEOGRAPHY
PAPER NUMBER:	II
DATE:	23 rd May 2017
TIME:	9.00 a.m. to 11.05 a.m.

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

SECTION A: ATMOSPHERIC PROCESSES

Choose **ONE** question from this section.

1. The British weather tends to be characterised by rain and strong winds due to atmospheric depressions.
 - (a) Define the term depression in weather systems. (3 marks)
 - (b) Depressions follow a life-cycle in which three main stages can be identified. The life-cycle is usually between two to five days. List and explain the **THREE** life-cycle stages of a depression. Provide a sketch diagram for **EVERY** stage (diagrams do not need to be coloured). (21 marks)
2. Solar radiation (insolation) is absorbed, reflected and scattered as it passes through the atmosphere.
 - (a) List **THREE** gases or particles which absorb incoming radiation. (3 marks)
 - (b) List and briefly explain **ONE** factor which causes reflection of solar radiation back into space. (2 marks)
 - (c) Define and explain the term 'albedo'. Give at least **ONE** example to support your answer. (5 marks)
 - (d) List and briefly explain **ONE** factor which causes solar radiation to be scattered. (2 marks)
 - (e) List and explain **TWO** long-term and **TWO** short-term factors which influence the amount of insolation received on the Earth's surface. (12 marks)

3. Figure 1 shows that over the past 100 years the average sea level around the world rose by nearly seven inches. This is projected to further increase in the future.

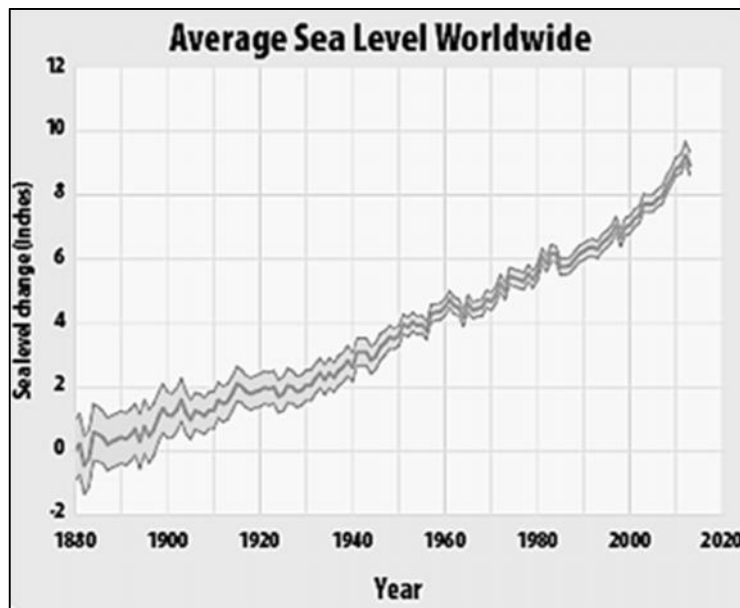


Figure 1: Average sea level rise since 1880 and projections for the future (<https://www3.epa.gov/climatechange/kids/impacts/signs/sea-level.html>)

- (a) List and describe **TWO** factors that lead to changes in sea level. (6 marks)
- (b) List and discuss **THREE** main threats of an increase in sea level. (12 marks)
- (c) List and briefly explain **THREE** ways how populations can adapt to sea level rise. (6 marks)

SECTION B: GEOMORPHOLOGY

Choose **ONE** question from this section.

4. Volcanic areas are hazard risk areas.
- (a) Explain the term hazard risk area. Support your answer with **ONE** example of a hazard risk area. (4 marks)
- (b) List and explain in detail **FOUR** reasons why some people choose to live in hazard risk areas. (8 marks)
- (c) Identify **THREE** immediate effects and their consequences of a volcanic eruption on the people living in a hazard risk area. (12 marks)

AM 13/IL.17m

5. It is widely accepted that there are two extreme wave types that affect the shape of a beach (Waugh, 2000: 144). These are destructive and constructive waves.
- (a) Explain, in detail, the principal characteristics of these two types of waves. Draw a well-labelled diagram to show the differences between the two wave types. (12 marks)
 - (b) Define longshore drift and draw a diagram to support your answer. (8 marks)
 - (c) List and define **TWO** types of coastal landforms of deposition. (4 marks)
6. In 1915, the German geologist and meteorologist Alfred Wegener first proposed the theory of continental drift.
- (a) Briefly explain the theory of continental drift and provide **ONE** example supporting the evidence of the existence of this theory. (3 marks)
 - (b) Using the Mediterranean area as a case study, explain how continental drift is shaping the landscape of this region. (6 marks)
 - (c) Identify **THREE** types of plate boundaries, and:
 - (i) draw a labelled diagram of each plate boundary; (6 marks)
 - (ii) describe their role in creating major land formations; (6 marks)
 - (iii) provide an example of each plate boundary. (3 marks)

SECTION C: BIOSPHERIC PROCESSES

Choose ONE question from this section.

7. A pattern of soils and vegetation in relation to climate exists around the world. One biome which is affected by its respective climate is the hot desert.
- (a) List and briefly explain **TWO** climatic characteristics associated with hot deserts. (6 marks)
 - (b) Explain the key soil characteristics in hot deserts AND list **THREE** important plant adaptations. (10 marks)
 - (c) Define the term 'desertification' and discuss its main causes in semi-arid environments like the Sahel Region. (8 marks)

AM 13/IL.17m

8. Weathering, leaching and podzolization are three factors that affect soil formation. Subsequently, four key properties that should be understood to appreciate how a particular soil could be managed are its nutrients, biota, moisture and temperature.

- (a) Define the roles of leaching and podzolization in soil formation. (10 marks)
- (b) List **TWO** nutrients which are needed by soil. (2 marks)
- (c) Explain the process and significance of cation exchange. (8 marks)
- (d) Briefly explain the relationship between temperature, moisture, biota activity and nutrients in soils. (4 marks)

9. Figure 2 shows a temperate deciduous forest landscape.



Figure 2: A temperate deciduous forest
(<http://www.bioexpedition.com/temperate-deciduous-forest-biome/>)

- (a) Describe the key characteristics of vegetation in temperate deciduous forests. (10 marks)
- (b) Describe the type of soil which is usually associated with temperate deciduous forests. (8 marks)
- (c) Give **TWO** examples of countries where temperate deciduous forests are found. (2 marks)
- (d) List and briefly explain **TWO** human activities that are negatively affecting the temperate deciduous forests' ecosystems. (4 marks)

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MATRICULATION EXAMINATION

ADVANCED LEVEL

MAY 2017

SUBJECT: GEOGRAPHY
PAPER NUMBER: III
DATE: 23rd May 2017
TIME: 4.00 p.m. to 6.05 p.m.

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

SECTION A: HUMAN GEOGRAPHY AND THE DEVELOPING WORLD

Choose **ONE** question from this section.

- The morphology of rural settlements can vary considerably across space. Dispersed and nucleated rural settlements are two examples of how such morphology is commonly classified.
 - Describe the key characteristics of dispersed and nucleated rural settlements. (9 marks)
 - List **THREE** other examples of how rural settlements can be classified based on their morphology. (3 marks)
 - Describe **THREE** factors underlying the development of dispersed rural settlements and **THREE** factors underlying the development of nucleated rural settlements. (12 marks)
- Figure 1 shows three population pyramids in 2005 representing three patterns of population change.

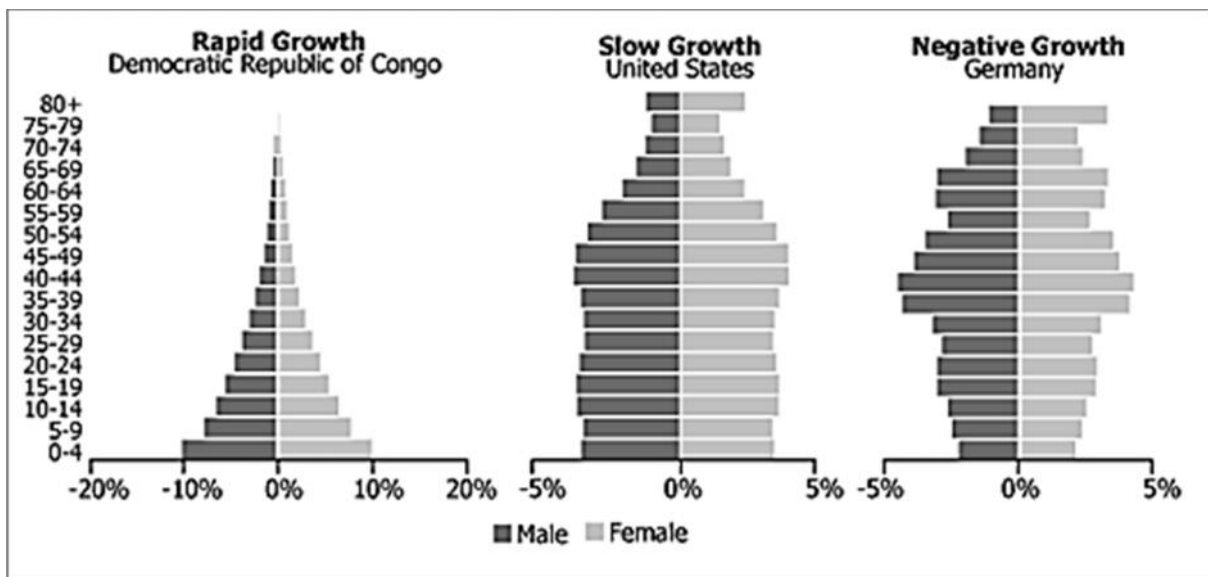


Figure 1: Three Patterns of Population Change in 2005.
 (<http://www.prb.org/Publications/Lesson-Plans/HumanPopulation/Change.aspx>)

Question continues on next page.

- (a) Explain why population pyramids are used. (4 marks)
 - (b) Describe and interpret the **THREE** population pyramids in Figure 1. (10 marks)
 - (c) List **TWO** main factors affecting the population structure of a country. (2 marks)
 - (d) Briefly discuss **TWO** problems which are normally associated with a population structure typical of developed countries and **TWO** problems which are usually associated with population structures in developing countries. (8 marks)
3. Farming is an economic activity which is affected by various determinants, and which is also facing several challenges.
- (a) Describe how **EACH** of the following factors affect farming:
 - (i) Temperature.
 - (ii) Gradient (angle of slope).
 - (iii) Soil.
 - (iv) Farm size.
 - (v) Transport.
 - (vi) Technology. (18 marks)
 - (b) Discuss **THREE** major challenges which the agricultural sector in developing countries is facing. (6 marks)

SECTION B: ISSUES IN RESOURCE MANAGEMENT

Choose ONE question from this section.

4. Figure 2 shows a nuclear energy power plant in Escambia County, Florida (United States).



Figure 2: A nuclear energy power plant in Escambia County.
(<http://inweekly.net/wordpress/?p=4302>)

- (a) Define ‘nuclear energy’ and explain its main usage. (2 marks)
 - (b) **Excluding** the United States, list **TWO** other countries where nuclear energy is used. (2 marks)
 - (c) List and explain **FOUR** factors that affect the location of nuclear energy power plants. (12 marks)
 - (d) Discuss **TWO** positive and **TWO** negative issues associated with nuclear energy power plants. Give examples where possible. (8 marks)
5. Despite the growing international concerns, tropical rainforests are disappearing at a rate of over ten million hectares per annum (Source: FAO).
- (a) List **TWO** countries where tropical rainforests are found. (2 marks)
 - (b) Discuss the importance of forest and woodland resources. (10 marks)
 - (c) Uncontrolled exploitation of forest resources (e.g. deforestation) leads to negative environmental consequences such as soil erosion, disruption of nutrient cycles and destruction of important habitats. Discuss **FOUR** ways how tropical rainforests could be managed in a more sustainable manner. (12 marks)
6. Resources are often defined as features which in some way or another are needed by people. There are different types of resources, and one common way to distinguish them is by the renewable and non-renewable classification.
- (a) Explain the difference between renewable and non-renewable resources. (4 marks)
 - (b) Briefly describe and interpret Figure 3. (4 marks)

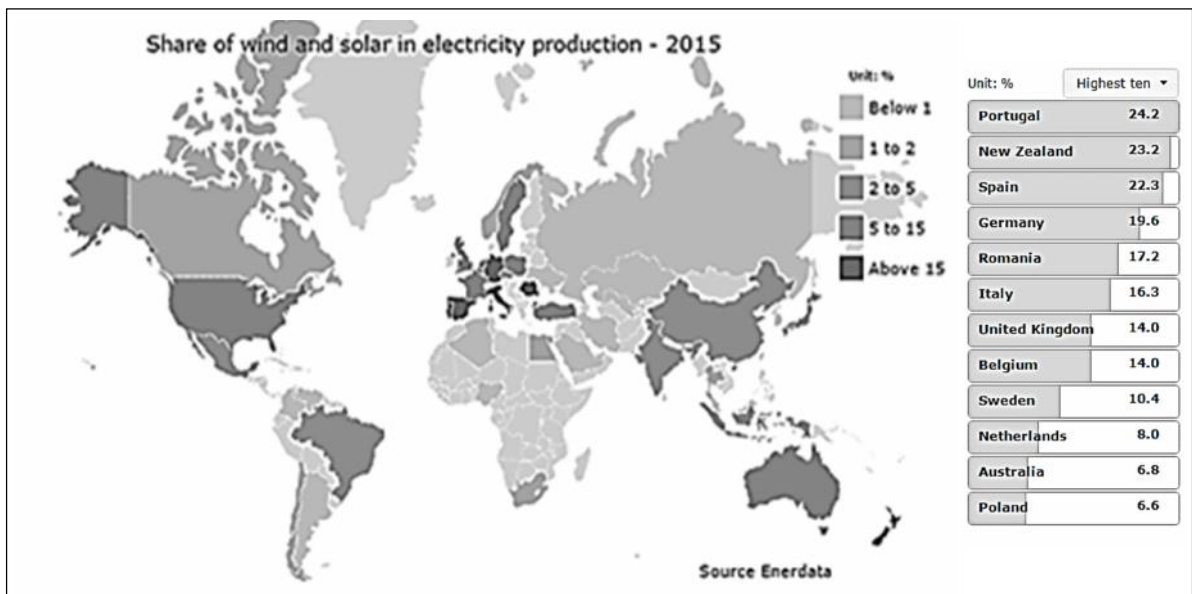


Figure 3: Global share of wind and solar energy for electricity production in 2015
 (<https://yearbook.enerdata.net/#wind-solar-share-electricity-production.html>)

Question continues on next page.

- (c) List **TWO** benefits of solar energy. (4 marks)
- (d) Discuss **THREE** negative environmental impacts associated with wind energy and **THREE** negative environmental impacts associated with solar energy. (12 marks)

SECTION C: THE GEOGRAPHY OF TOURISM AND RECREATION

Choose ONE question from this section.

7. Over the decades, tourism has experienced continued growth and deepening diversification to eventually become one of the fastest growing economic sectors in the world. The World Travel and Tourism Council describe tourism as one of the world's largest industries, supporting 277 million jobs and generating 9.8 per cent of the world's GDP. (Ministry of Tourism, 2015)
- (a) Define the following terms. Use examples to support your answers:
- (i) Backwash effect.
 - (ii) Spread effect.
 - (iii) Multiplier effect. (15 marks)
- (b) Despite the benefits that the tourism industry brings to host countries, negative impacts also exist. List and discuss **THREE** examples of how the multiplier effect can influence the host country negatively. (9 marks)
8. "Around 120 million tourists visit the Alps every year making the impact of tourism on Alpine nature considerable. New waves of 'mass tourism' threaten to destroy pristine wildlife areas – the very thing that attracts tourists in the first place." (WWF Global, 2016)
- (a) List and discuss in detail **FOUR** ways how tourism is leading to the destruction of pristine wildlife in Alpine regions. Discuss in relation to specific examples. (16 marks)
- (b) Identify and explain **TWO** measures that can help mitigate negative impacts related to mass tourism in Alpine environments. (8 marks)
9. "Tourism is defined as the sum of the phenomena and relationships arising from the interaction of tourists, business suppliers, host governments and host communities in the process of attracting and hosting these tourists and other visitors." (Macintosh and Goeldner, 1986)
- (a) Identify and discuss **FOUR** social and cultural impacts of tourism on the host country. Use examples to support your answers. (16 marks)
- (b) List and discuss in detail **TWO** types of planning policies used to manage negative environmental impacts of tourism on the host country. Use examples to support your answers. (8 marks)