L-Università ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

ADVANCED MATRICULATION LEVEL
2025 FIRST SESSION

SUBJECT:	**Geography**
PAPER NUMBER:	I
DATE:	26th May 2025
TIME:	9:00 a.m. to 12:05 p.m.

Answer **FOUR** questions in total. Questions carry 25 marks each.

1. Storm Éowyn, the fifth storm of the 2024/2025 season, hit the UK in late January 2025. Northern Ireland and Scotland experienced the brunt of this storm with winds gusting widely at well over 70Kt (81mph), and in places over 80Kt (92mph). Overall, this was the UK's most powerful storm for over a decade (www.metoffice.gov.uk).

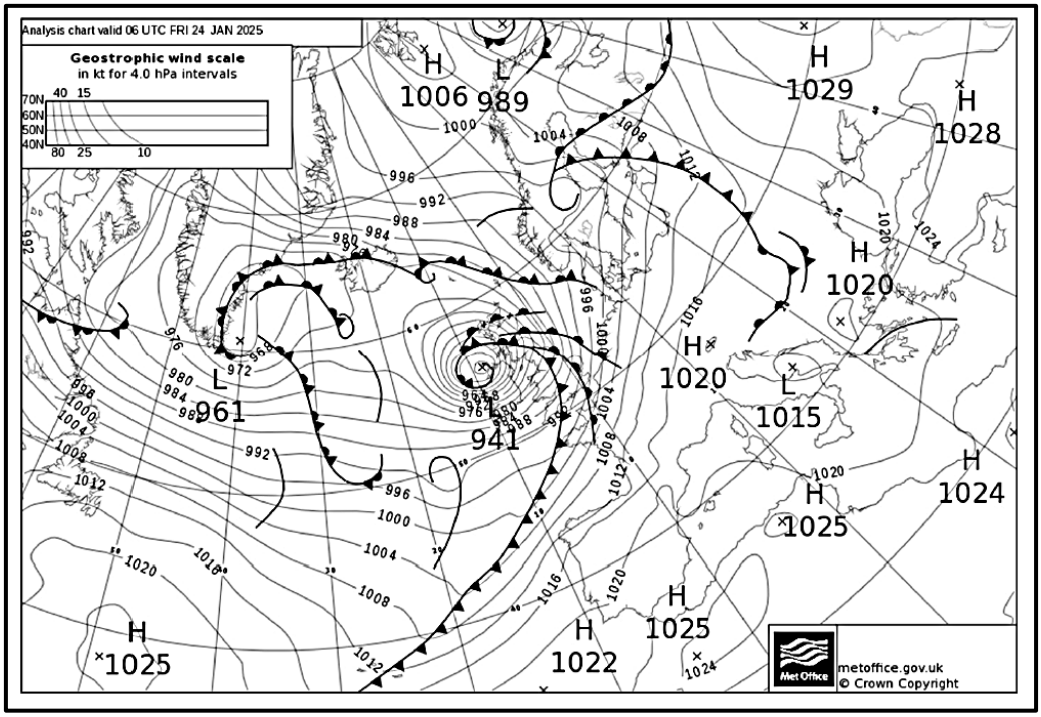

Figure 1: Atmospheric pressure chart showing a mid-latitude storm centred over Northern Ireland on 24th January 2025. (*Source: metoffice.gov.uk*)

(a) With specific reference to atmospheric processes in the Northern Hemisphere, explain how mid-latitude storms develop, mature and eventually dissipate. (10)

(b) Mid-latitude storms significantly influence local weather, making accurate predictions and effective management strategies essential for minimizing their impacts. Outline the key impacts of these storms and discuss the strategies available to prepare for and mitigate their effects. (15)

(Total: 25 marks)

Please turn the page.

2. (a) Outline the theory of plate tectonics with emphasis on the physical mechanisms that drive plate movements. Discuss the evidence backing this theory and refer to **ONE** example to support your answer. (10)

   (b) With the help of annotated diagrams and **ONE** example, examine how different types of plate boundaries contribute to the formation of **THREE** of the following landforms:
   i. mountain ranges;
   ii. ocean trenches
   iii. mid-ocean ridges; or
   iv. rift valleys. (15)

(Total: 25 marks)

3. A study, published in 2023, investigated the effect of the Great Barrier Reef on the transport of sediment along Australia's northeast coast by the process of longshore drift. Figure 2 illustrates sediment longshore transport along the northern coastline of Queensland, where the Great Barrier Reef is also located.

   (a) Explain the process of longshore drift and its role in building beaches along Queensland's coastline. (10)

   (b) In what way is the Great Barrier Reef influencing the processes of longshore drift and incoming waves to build beaches? (5)

   (c) Provide **TWO** examples of hard and/or soft engineering solutions to problems of coastal erosion by longshore drift. Explain their effectiveness to mitigate coastal erosion. (10)

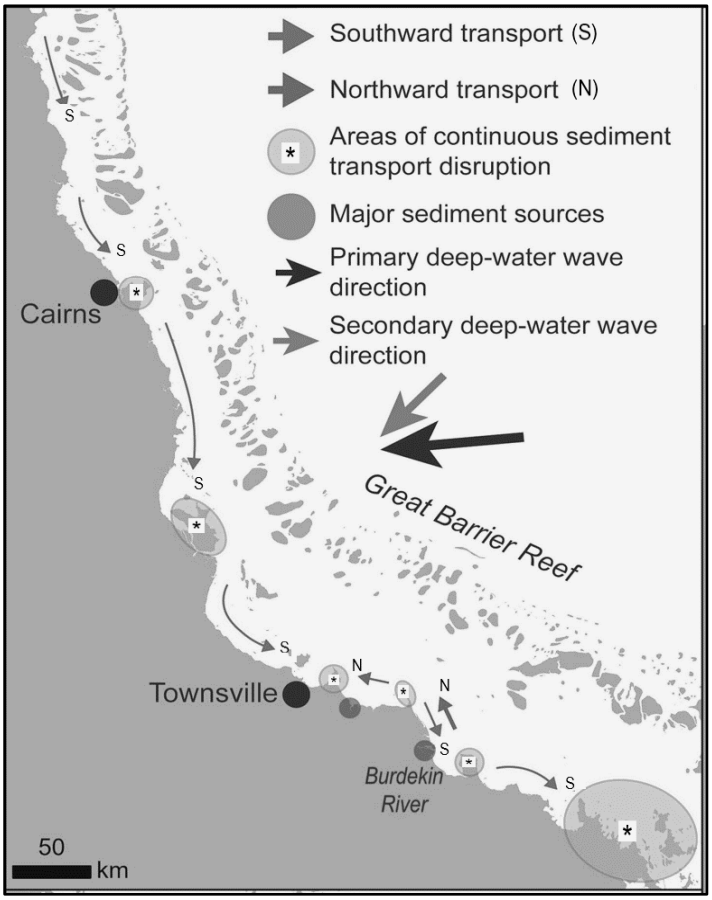

Figure 2: Sediment longshore transport along the northern coastline of Queensland.
(*Source: Adapted from Cowley and Harris, 2023*)

(Total: 25 marks)

4. The frequency of water-related disasters in cities caused by flooding has noticeably increased in recent decades. Figure 3 compares the hydrographic response of a river basin to a rainfall event in its pre-urbanised and urbanised states.

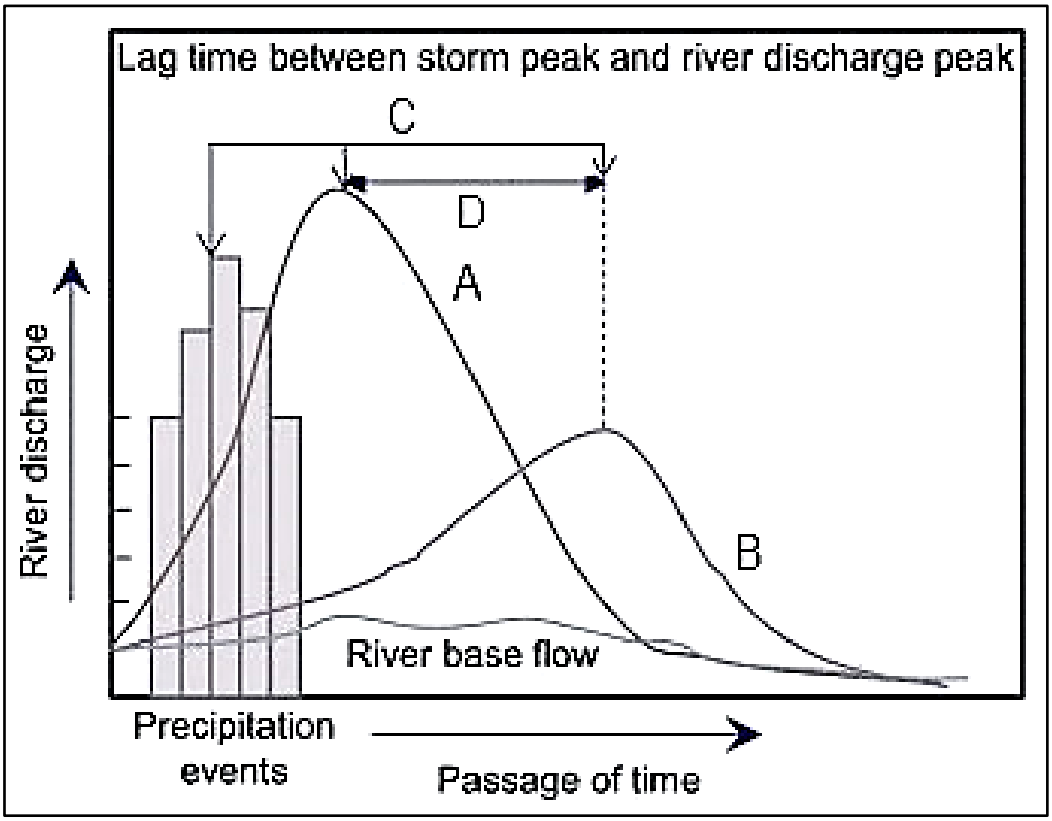

Figure 3: Hydrographic discharge response of a river basin to a rainfall event in its pre-urbanised and urbanised states
(*Source: Adapted from Duan et al., 2016*)

(a) Using Figure 3, explain how **each** of the **TWO** discharge responses to precipitation (A and B) is attributed to either a pre-urbanised or an urbanised state. For **each** give **TWO** reasons to support your answer. (16)

(b) Explain the concept of lag time as illustrated in C and D (Figure 3). Discuss why this concept is considered to be a good indicator to determine how land-use characteristics in a river basin influence flood response. (9)

(Total: 25 marks)

5. (a) Define the term soil fertility and explain its importance in supporting plant growth and agricultural productivity. (7)

(b) Discuss how **THREE** human factors influence soil fertility. (12)

(c) Outline and evaluate **THREE** measures that can be implemented to prevent soil degradation and maintain soil fertility. (6)

(Total: 25 marks)

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6. Current human population growth along Earth's coasts is increasingly coming into conflict with the anticipated consequences of natural and anthropogenic-induced coastal hazards, such as sea level rise.

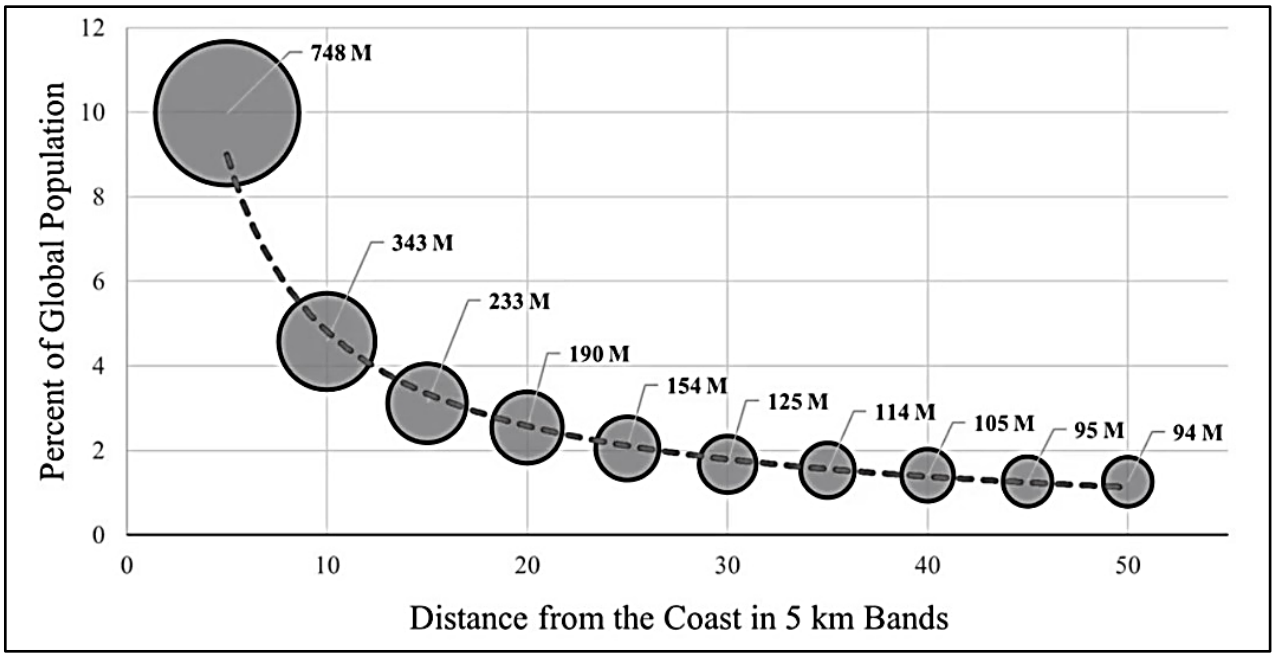

Figure 4: Global coastal population curve expressed as population estimates in 5 km bands for year 2018 (*Source: Cosby et al., 2024*)

(a) Give a brief interpretation of Figure 4. (3)

(b) With reference to your interpretation of Figure 4, explain why the spatial pattern of human occupancy on the coast leads to an increased vulnerability to sea level rise. Give **THREE** reasons for your answer. (12)

(c) Discuss **TWO** measures that could be adopted by countries with populations living along the coast to reduce or mitigate their vulnerability. (10)

(Total: 25 marks)

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ADVANCED MATRICULATION LEVEL
2025 FIRST SESSION

SUBJECT:	**Geography**
PAPER NUMBER:	II
DATE:	27th May 2025
TIME:	9:00 a.m. to 12:05 p.m.

Answer **FOUR** questions in total. Questions carry 25 marks each.

1. Figure 1 shows the global population growth by region from 1800 till 2024. Projections till 2100 are also provided.

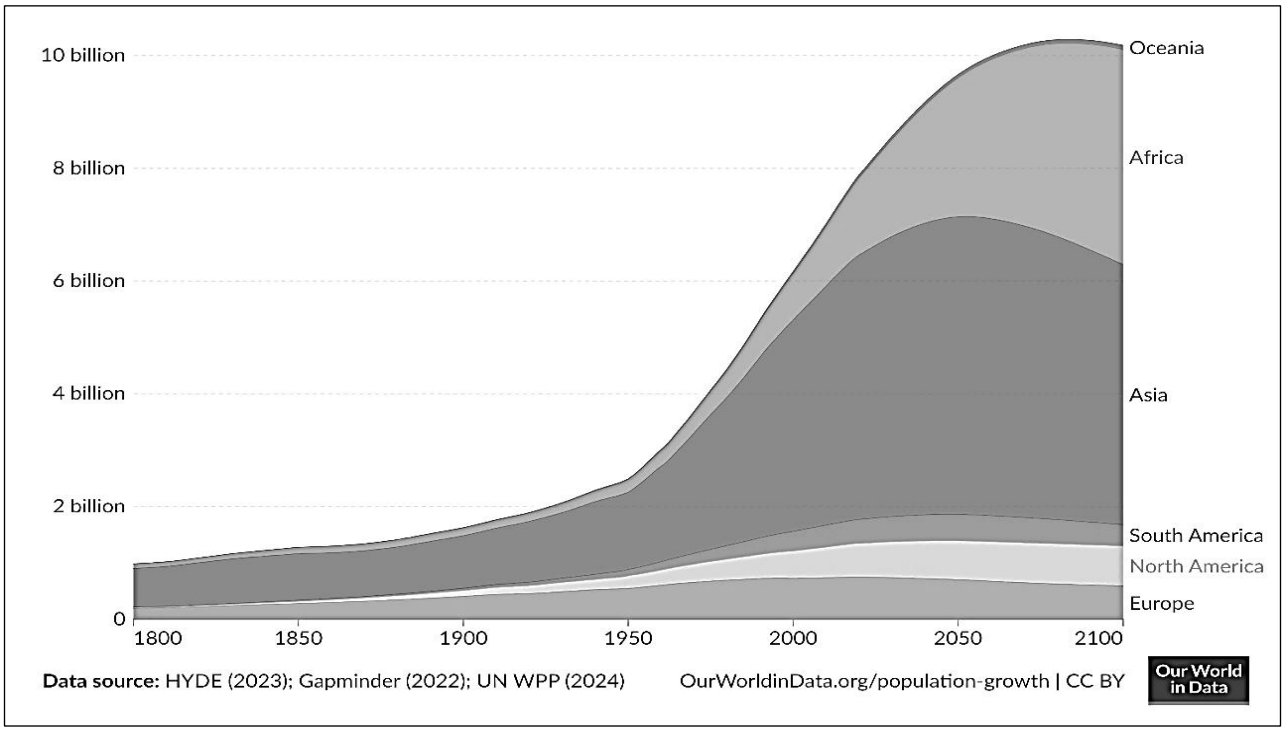

Figure 1. Global population growth by region
(Adapted from: https://ourworldindata.org/grapher/population-regions-with-projections)

(a) Interpret the key findings from the graph shown in Figure 1. (6)

(b) Define the term carrying capacity and explain how it links to issues of worldwide food supplies. (9)

(c) Theories of migration such as Zelinsky's Model illustrate how population dynamics are closely linked to migration patterns. Describe the five stages of Zelinsky's Model of Migration. (10)

(Total: 25 marks)

Please turn the page.

2. Figure 2 shows the main results of the 2020 Census of Agriculture for the Maltese Islands compared to the 2010 Census for various statistics presented in different graphical forms.

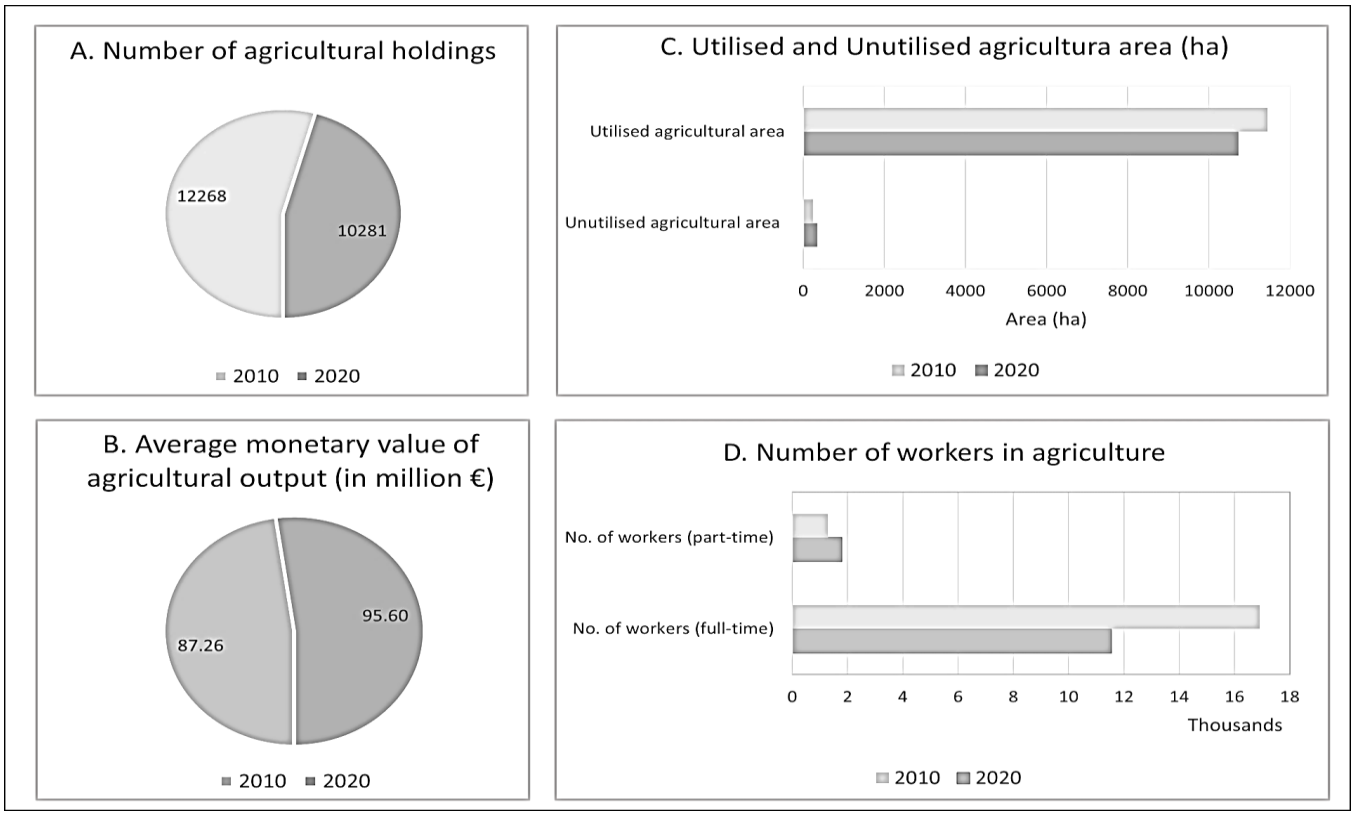

Figure 2. The main results of the 2010 and 2020 Census of Agriculture for the Maltese Islands for:
A. Number of agricultural holdings, B. Average monetary value of agricultural output,
C. Utilised and unutilised agricultural area, D. Number of workers in agriculture
(Adapted from https://nso.gov.mt/wp-content/uploads/Census-of-Agriculture-2020-new.pdf)

(a) Explain the main findings of **each** of the graphs presented in Figure 2. (16)

(b) Discuss **THREE** challenges associated with arable agriculture in the Maltese Islands. (9)

(Total: 25 marks)

3. Natural gas plays a crucial role in the global energy system and has long been an energy source in industrialised countries.

(a) Describe the formation and extraction process of natural gas. (7)

(b) Describe **THREE** benefits related to the use of natural gas. (6)

(c) Discuss **THREE** negative environmental impacts associated with the extraction of natural gas. (6)

(d) Natural gas can be combined with other sources of energy through energy resource combination. Describe **TWO** benefits that can arise from such a concept. (6)

(Total: 25 marks)

4. "The World Travel & Tourism Council (WTTC) is projecting a record-breaking year for Travel & Tourism in 2024, with the sector's global economic contribution set to reach an all-time high of $11.1 trillion. Travel & Tourism will contribute an additional $770 billion over its previous record, stamping its authority as a global economic powerhouse, generating one in every 10 dollars worldwide." *(Source: WTTC, 2024)*

   (a) With reference to the statement above, discuss **THREE** factors which are responsible for the growth in international tourism. (9)

   (b) Over the years, the tourism industry has undergone constant evolution. The COVID-19 pandemic has increased interest in seeking new experiences in nature and outdoors.
      i. Describe the main characteristics of ecotourism and wildlife tourism and provide **ONE** specific example for **each**. (8)
      ii. Explain **TWO** negative impacts of ecotourism and wildlife tourism. (8)

(Total: 25 marks)

5. (a) Briefly describe the **FOUR** major sectors of economic activity and provide **TWO** examples for **each**. (8)

   (b) Table 1 shows the share of total employment in various economic activities in Malta between 2000 and 2020.
      i. Interpret the main findings of Table 1. (6)
      ii. Explain **TWO** reasons for the change in relative importance of economic sectors in the Maltese Islands. (6)

Table 1. Share of total employment in Malta by economic activity from 2000 till 2020

Shares of Total Employment in Malta			
Economic activity	*2000-2006*	*2007-2013*	*2014-2020*
Agriculture, forestry and fishing	1.5	1.5	1.1
Industry (excluding construction)	22.3	18.2	11.5
of which: Manufacturing	19.3	15.8	10.5
Construction	6.9	7.4	5.9
Wholesale and retail trade, vehicle repair	16.0	15.3	14.2
Transportation and storage	5.7	5.6	5.6
Accommodation and food services	6.6	6.7	6.4
Information and communication	2.6	2.8	3.8
Finance and insurance activities	4.0	5.4	5.3
Real estate activities	0.3	0.4	0.9
Professional, scientific and technical activities	3.0	3.8	6.2
Administrative and support service activities	3.7	4.8	8.5
Public administration and defence; education, health and social work activities	24.0	24.6	24.3
Arts, entertainment and recreation	1.2	1.7	3.5

(Adapted from: https://www.centralbankmalta.org/)

   (c) Describe the growth of the aviation industry in the Maltese Islands. (5)

(Total: 25 marks)

Please turn the page.

6. The Maltese Islands have the highest share of artificial land cover in Europe, driving extensive urban sprawl and reducing natural landscapes.

   (a) Define urban sprawl within the context of the Maltese Islands. (5)

   (b) Discuss **TWO** land use conflicts that arise with increasing urban sprawl in the Maltese Islands. (8)

   (c) Discuss the role of **THREE** local authorities in controlling and planning urban development in the Maltese Islands. (12)

(Total: 25 marks)