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SUBJECT: **Geography**  
DATE: 18<sup>th</sup> May 2022  
TIME: 9:00 a.m. to 12:05 p.m.

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### Directions to Candidates

Answer a total of **FOUR** questions: **TWO** questions from **each** of the two sections.  
The use of non-programmable calculators is permitted. **ALL** questions carry equal marks.

### SECTION A: PHYSICAL GEOGRAPHICAL PROCESSES

1. 'On January 15, 2022 at 4:27GMT, a significant tsunami was observed across the Pacific Ocean basin resulting from an undersea volcanic eruption in the Tonga Islands region.'

*(Source: www.noaa.gov)*

- (a) What is a tsunami and what causes it? (8)
- (b) Identify and briefly discuss **THREE** effects tsunamis can have on physical and human environments, in particular within island regions such as the Tonga Islands. (9)
- (c) Discuss **TWO** possible measures that can be taken, at international and/or local level, to reduce the damage caused by tsunamis in the future. (8)

**(Total: 25 marks)**

2. 'Climate change adaptation is a major issue for many countries. Small islands and small island states like the Maltese Islands are particularly vulnerable to climate change. This is due to many factors which are primarily linked to the country's geographic attributes.'

*(Source mra.org.mt)*

- (a) Define the term climate change. (4)
- (b) With reference to the above statement, describe **THREE** geographic attributes that increase vulnerability to climate change. (9)

**(Total: 25 marks)**

- (c) Name and explain **THREE** consequences climate change can have on the Maltese Islands. (12)

**(Total: 25 marks)**

3. Figure 1 shows the weather conditions over Europe and the western Mediterranean Basin on a particular day.

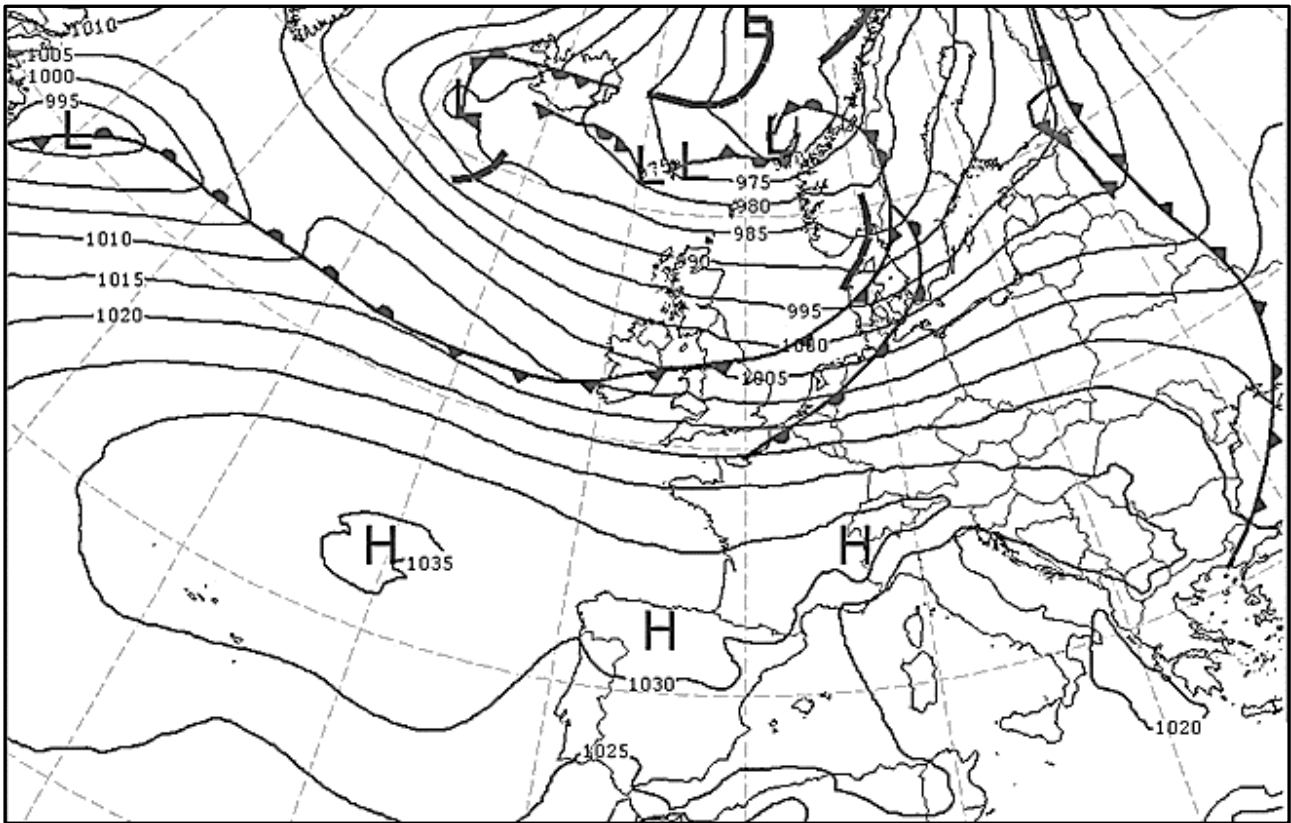


Figure 1: Weather conditions over Europe and the Western Mediterranean Basin.  
(Source: eurometeo.com)

- (a) Briefly explain the importance of isobars in showing weather conditions. (5)
- (b) Describe in detail the weather conditions (shown in Figure 1) in
  - i. the Western Mediterranean basin;
  - ii. Northern Europe. (10)
- (c) Define the following terms and explain their development, air circulation and general weather conditions:
  - i. Anticyclones;
  - ii. Depressions. (10)

**(Total: 25 marks)**

4. Figure 2 shows hydrograph curves for two different locations A and B.

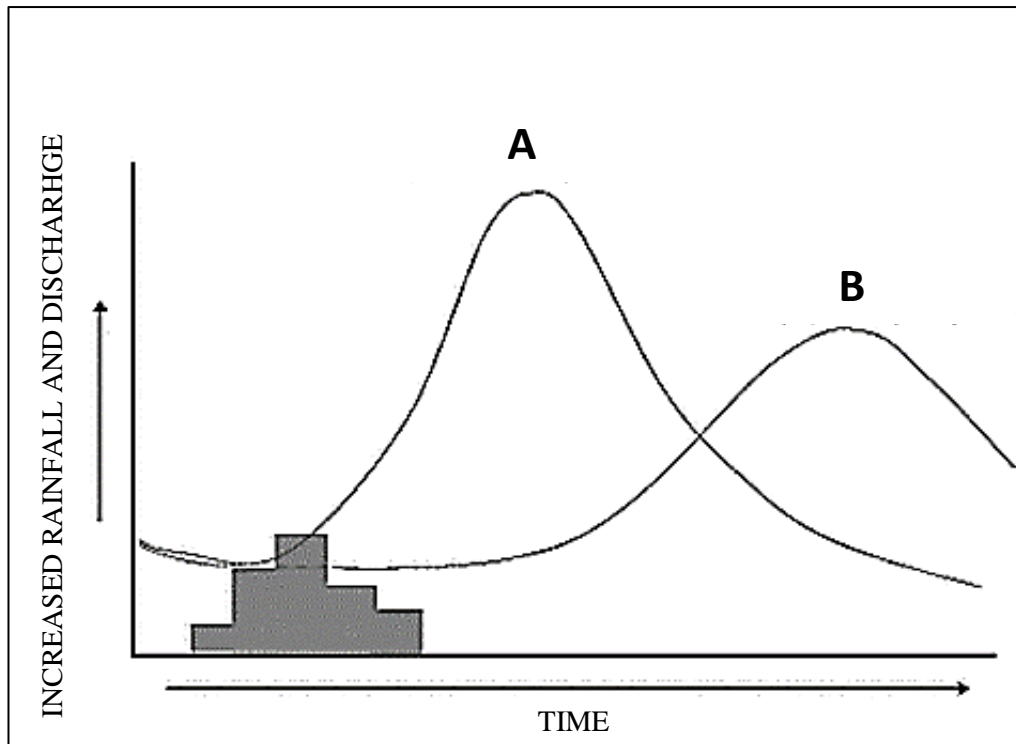


Figure 2: Hydrograph curves for two different locations.  
 (Source: *thebritishgeographer.weebly.com*)

- (a) What is a hydrograph? Explain its use. (6)
  
- (b) Compare the **TWO** hydrograph curves in Figure 2 in terms of:
  - i. rising limb;
  - ii. peak discharge;
  - iii. lag time. (9)
  
- (c) Describe **FIVE** features which may account for the differences in the hydrograph curves labelled A and B in Figure 2. (10)

**(Total: 25 marks)**

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5. Figure 3 shows the rate of loss of global forested areas since the year 2000.

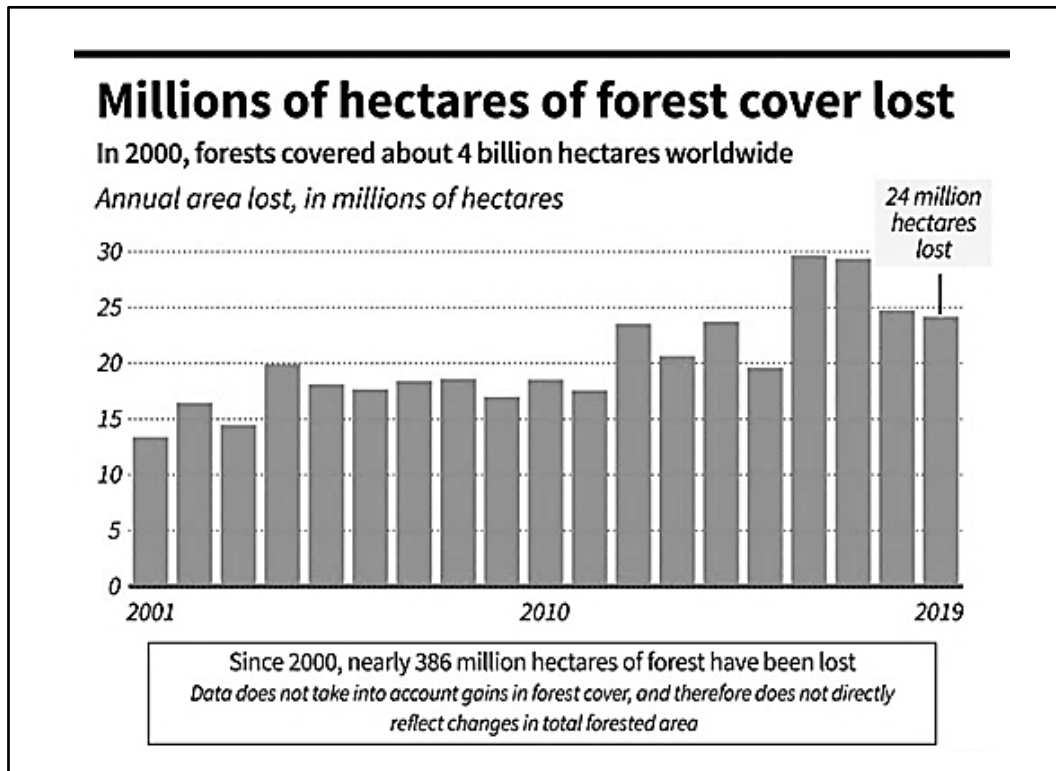


Figure 3: Area of World forest cover lost since the year 2000  
 (Source: Global Forest Watch World Resources Institute)

- (a) Discuss **TWO** possible reasons for the loss of forested area. (10)
- (b) What **THREE** measures can be taken to counter-effect this loss of forested areas? (9)
- (c) Why is the loss of forests considered a global threat? (6)

**(Total: 25 marks)**

**SECTION B: HUMAN GEOGRAPHICAL PROCESSES**

6. The Grand Harbour in Malta, shown in Figure 4, is characterised by the following pollutants amongst others: sewage, heavy metals and organometallic compounds, hazardous wastes, shoreline construction and radioactive substances

(Source: ERA, 2005).



Figure 4: The Grand Harbour  
(Source: Infrastructure Malta, 2020)

- (a) Briefly discuss the potential sources of these pollutants in the Grand Harbour. (5)
- (b) Discuss **THREE** impacts of marine pollution on the flora and fauna in the Grand Harbour. (12)
- (c) Briefly describe **ONE** possible impact of marine pollution on human beings in the Grand Harbour. (4)
- (d) Suggest **TWO** measures that can be implemented to reduce marine pollution in the Grand Harbour. (4)

**(Total: 25 marks)**

7. (a) Briefly define the Demographic Transition Model (DTM). (5)
- (b) Draw a labelled diagram of the Demographic Transition Model and describe **each** stage. (15)
- (c) Briefly explain **ONE** criticism of the Demographic Transition Model. (5)

**(Total: 25 marks)**

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8. Figure 5 shows a map of St Paul's Bay and the Burmarrad Area to the south.

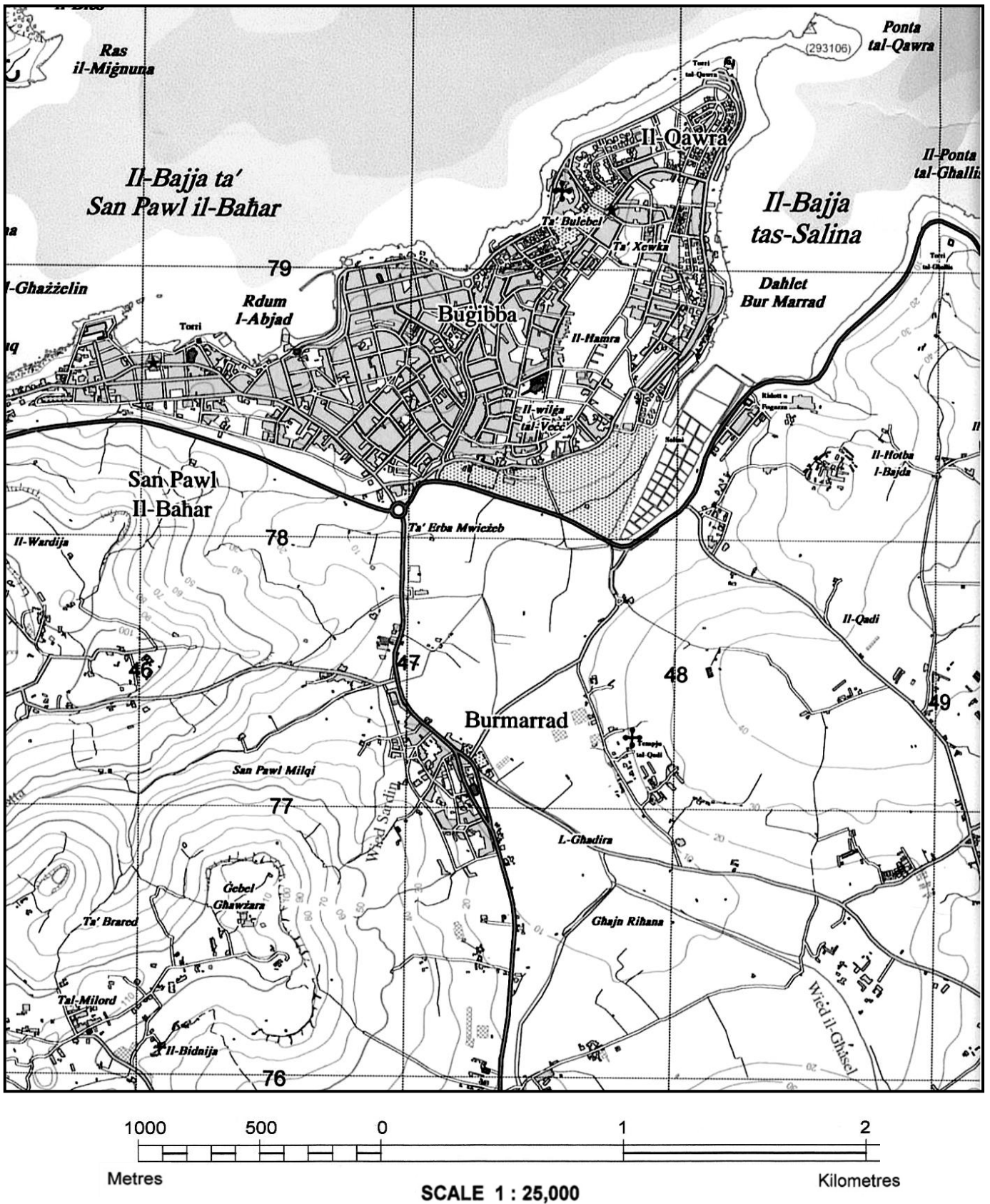
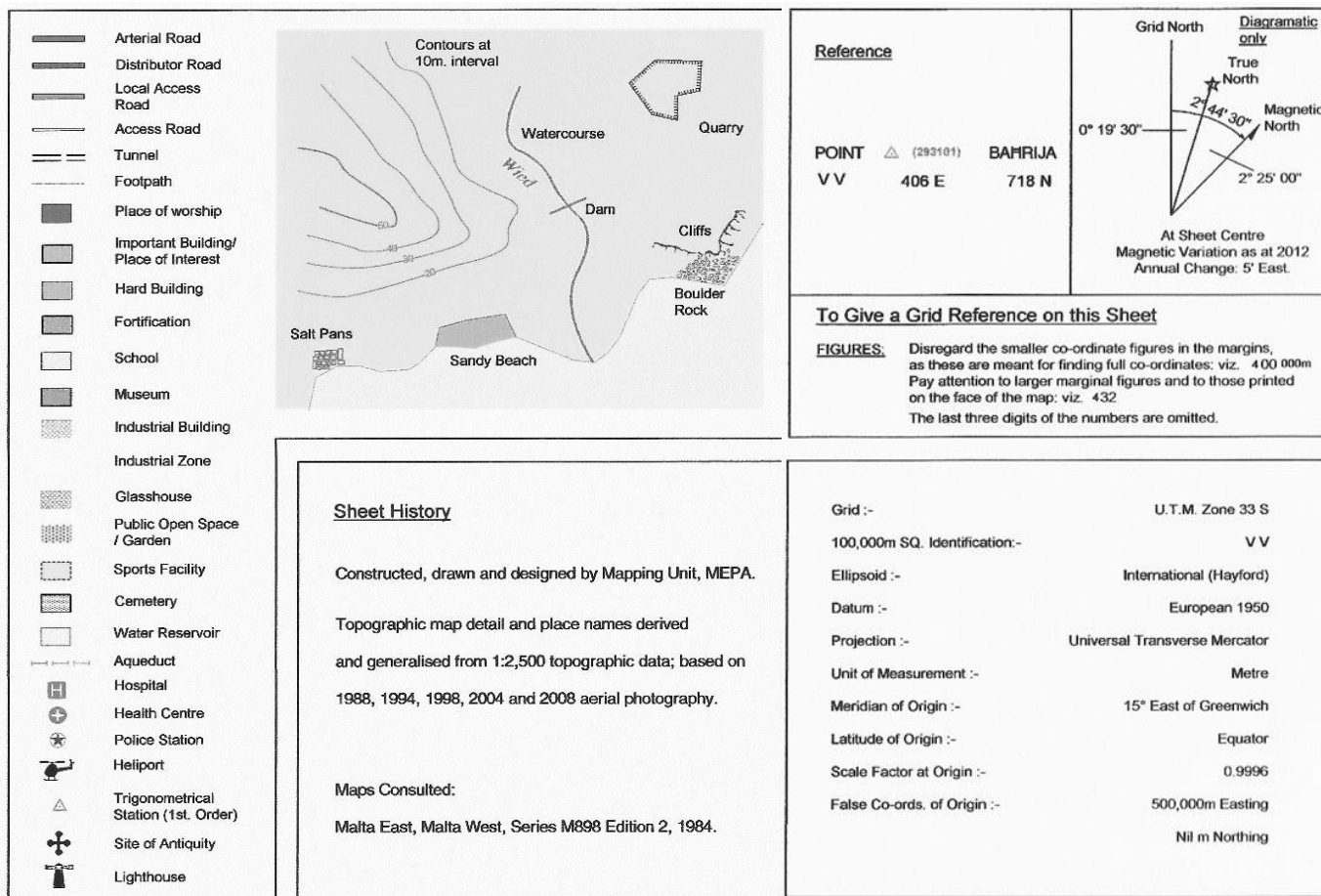


Figure 5: Map of St Paul's Bay and Burmarrad  
(Source: Planning Authority, 2018)



Key/Legend to figure 5 (Source: Planning Authority, 2018)

- (a) Use Figure 5 and the key above to describe the area south of Bugibba. (10)
- (b) Describe **TWO** land uses shown on the map (Figure 5). (10)
- (c) Briefly describe the settlement patterns of Burmarrad and St. Paul's Bay in Figure 5. (5)

**(Total: 25 marks)**

9. Johann Heinrich Von Thünen (1783 – 1850) was a farmer, landowner, and an economist. In his work "The Isolated State" (1826) he linked spatial and economic geography with rent theory.

- (a) List **FIVE** assumptions used by Von Thünen to set up his model. (5)
- (b) Explain Von Thünen's agricultural model. Draw a sketch diagram to support your answer. (15)
- (c) Discuss **ONE** criticism of Von Thünen's agricultural model. (5)

**(Total: 25 marks)**

**Please turn the page.**

- 10 (a) Define thematic map. (5)
- (b) Name **THREE** types of thematic maps and briefly describe how **each** type represents data. (15)
- (c) Figure 6 below shows the population density in the USA in 2007. Describe the pattern shown in Figure 6. (5)

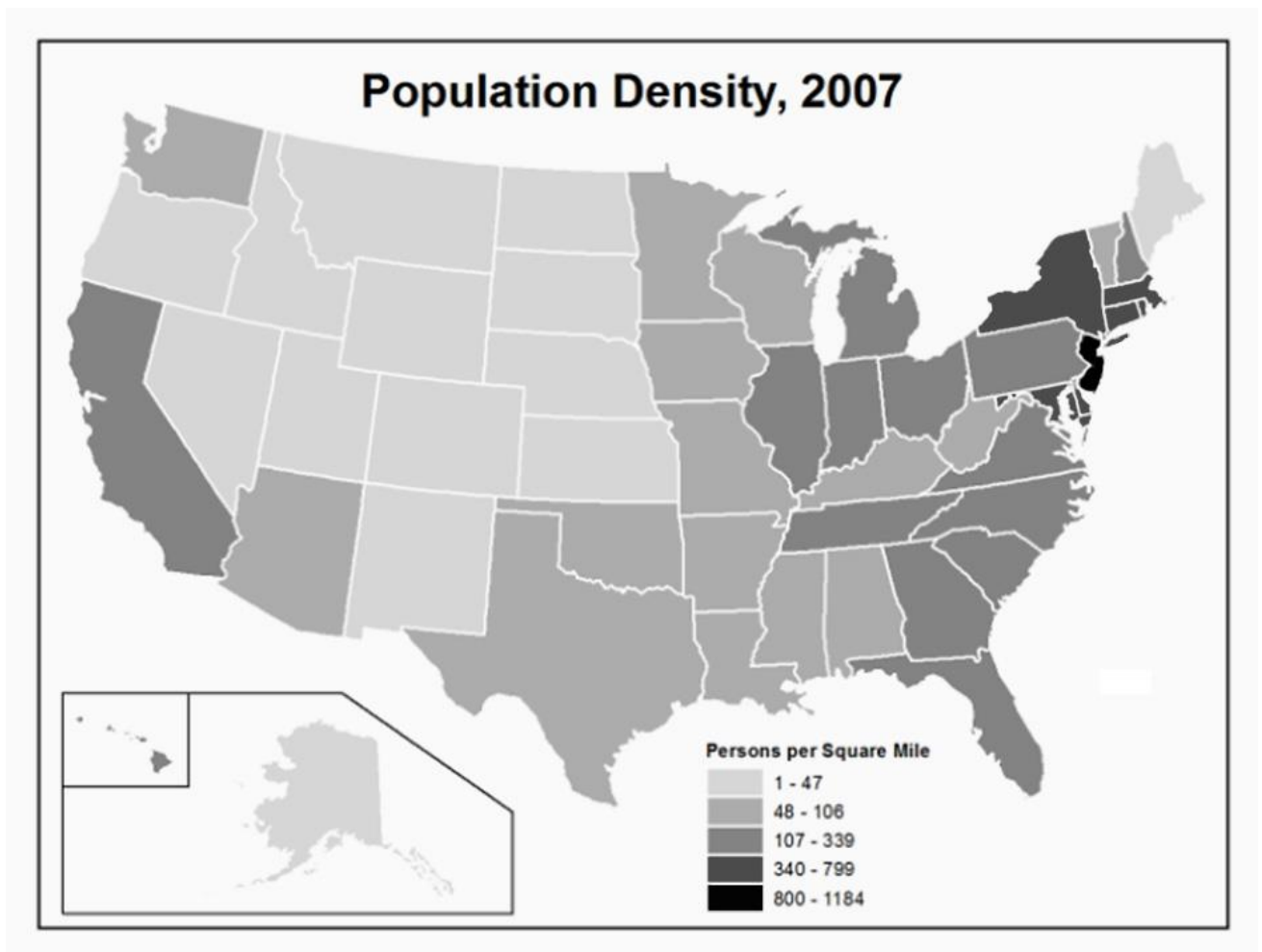


Figure 6: Choropleth world map showing population density of the USA in 2007.  
Source: <https://alg.manifoldapp.org>)

**(Total: 25 marks)**