2023 United States Geography Championships
Cartographic Examination Question Document

General instructions -
Respond to each of the following questions on the answer document provided. Only answers written in the appropriate space on the answer document will be marked. Where appropriate, you should write sentences or phrases instead of single words. If a question or section asks for a specific number of reasons or answers, give only the required number of answers specified. The examination consists of four sections, and each section will be worth the specified number of marks. You have one hour to complete this section of the examination and the accompanying multiple choice questions.

Section 1 [25 marks]
Please refer to the map and photograph in Section 1 of the Resource Document.

1. Identify by number the location of cirques in the photograph. Briefly define the term cirque and explain its formation. [4 marks]

2. Identify by number the location of aretes in the photograph. Briefly define the term arete and explain its formation. [4 marks]

3. Identify by number the location of a moraine in the photograph. Briefly define the term moraine and explain its formation. [4 marks]

4. Identify by number the location of a pyramidal peak in the photograph. Briefly define the term pyramidal peak and explain its formation. [4 marks]

5. Briefly explain the relationship between the coloration of the glacial lakes in the photograph and the retreating glaciers that caused their formation. [4 marks]

6. Identify whether each of the following is a depositional or erosional landform – fjord, esker, kame, outwash fan, u-shaped valley [5 marks]

Section 2 [25 marks]
Please refer to the maps in Section 2 of the Resource Document.

1. Briefly define the term redistricting. [2 marks]

2. Briefly define the terms packing and cracking as they apply to redistricting. [4 marks]

3. Briefly explain in the space provided how packing and cracking could each be used to both facilitate or hinder minority representation in Congress. [4 marks]

4. Briefly describe in the space provided the changes in the proposed 2022 Tennessee Congressional district map reflected in images 2 and 3. [3 marks]

5. Briefly define the term contiguity as it applies to redistricting. Briefly explain whether or not the proposed 5th, 6th, and 7th districts are contiguous. [4 marks]

6. Briefly define the term compactness as it applies to redistricting. Briefly explain whether or not the proposed 5th, 6th, and 7th districts are compact. [4 marks]

7. Briefly define the term community of interest as it relates to redistricting. Briefly explain how this proposed map does or does not keep communities of interest intact. [4 marks]

Section 3 [25 marks]
Please refer to the map in Section 3 of the Resource Document.

1. Rank the following methods of travel from lowest to highest in terms of their average CO2 equivalent emissions per kilometer traveled (1 = lowest emissions per kilometer, 6 = highest emissions per kilometer) – intercity bus, medium-sized gas-powered automobile, a domestic flight within the UK, long-haul international flight, intercity train, international train

2. Briefly explain the methodology you used to determine your answer for question 1.

3. Based on the data on the map, what two nations led the world in CO2 emissions from aviation in 2018? Identify three factors that would account for these two nations leading the world in this category.

4. In addition to CO2 emissions, identify and briefly explain three other ways air travel contributes to greenhouse gas emissions.

5. Is there a difference in average CO2 emissions per passenger based on whether they sit in first class or coach? Briefly explain your answer in the space provided.

6. Identify and briefly explain two reasonable ways that airlines and manufacturers might reduce CO2 emissions from air travel.

7. Identify and briefly explain two reasonable public policies that governments might enact to reduce CO2 emissions from air travel.

Section 4 [25 marks]
Please refer to the images in Section 4 of the Resource Document.

1. Define the term atmospheric river. Briefly describe the role of atmospheric rivers in the global water cycle.

2. Given the information on the maps in Section 4, what has been the effect of precipitation brought by atmospheric rivers on drought conditions in California since late last year? Be as specific as possible in the space provided.

3. How and why is the extreme precipitation in California this year likely to affect the risk of wildfires in the state during the upcoming fire season? Be as specific as possible in the space provided.

4. How and why is the extreme precipitation in California this year likely to affect the risk of mudslides in the state during the upcoming year? Be as specific as possible in the space provided.

5. How and why is the extreme precipitation in California this year likely to affect the risk of coastal erosion in the state during the upcoming year? Be as specific as possible in the space provided.