



2025 United States Geography Championships – Free-Response Examination

General instructions - Respond to each of examination questions in the space provided on the answer document. **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 number of answers specified. Please write clearly and legibly.

Section 1 - [20 points]

Use the image in section 1 to complete the following.

1. Given the information in this population pyramid, briefly explain in the space provided THREE social, political, or economic factors that would account for the current demographic makeup of South Korea. [6 points]
2. In the space provided, briefly define the demographic transition model (DTM). [2 points]
3. Given the information in this population pyramid, in what stage of the demographic transition model is South Korea currently. What might be expected to happen to South Korea's population growth rate if it enters the as yet hypothetical next stage of the DTM? [2 points]
4. If current trends continue, briefly explain in the space provided THREE social, political, or economic problems that South Korea is likely to face due to its demographic makeup. [3 points]
5. Briefly explain in the space provided a reasonable action the South Korean government could take to mitigate ONE of the problems you identified in part 2. [2 points]
6. Identify ONE specific European country that is currently facing demographic issues similar to South Korea. [1 point]
7. Briefly explain in the space provided TWO specific social, political, or economic reasons that the European nation you identified in part 2 is experiencing these demographic issues. [4 points]

Section 2 - [11 points]

1. Japan has the oldest high-speed rail network in the world. Briefly explain in the space provided THREE geographic, economic, or political factors that might account for the development of high-speed rail in Japan since the 1960s. [3 points]
2. China has the most extensive high-speed rail network in the world, accounting for more than 2/3 of the total mileage of high-speed rail track. Briefly explain in the space provided THREE geographic, economic, or political factors that might account for the very rapid development of China's high-speed rail system over the last 40 years. [3 points]
3. According to international standards, the United States has no currently operating high speed rail lines, despite some passenger trains reaching over 100mph in limited areas. Briefly explain in the space provided THREE geographic, economic, or political factors that might account for the lack of high-speed rail lines in the United States. [3 points]
4. In the space provided, briefly explain TWO economic or environmental benefits of high-speed rail as compared to other modes of transportation. [2 points]

Section 3 - [19 points]

Use the image in section 3 to complete the following.

1. Identify by number each of the following coastal landforms – tombolo, sea stack, spit, tied island, natural arch, lagoon, cliff [7 points]
2. In the space provided, define and briefly explain the formation of a tombolo. [2 points]
3. In the space provided, define and briefly explain the formation of a lagoon. [2 points]
4. In the space provided, define the term longshore drift. [2 points]
5. Briefly describe in the space provided how longshore drift would result in the formation of a sand island like K'gari (Fraser Island) in Australia. [2 points]
6. In the space provided, draw a diagram illustrating the formation of a sea stump of the type seen at number 4 in the image. Your diagram should illustrate at least three steps (but may include more), and each step should be labeled using appropriate vocabulary. [4 points]

Section 4 - [18 points]

Use the image in section 4 to complete the following. This image shows measured peak ground acceleration (PGA) for the 2001 Gujarat earthquake which took place on January 26. In late May of that same year, one of the strongest tropical cyclones on record for the Arabian Sea struck the same area of Gujarat.

Unlike scales that measure strength (like the Richter scale) or intensity (the Mercalli scale), PGA measures how much the earth actually shakes at a given point using specific instruments, and is often used by engineers and architects to help build safer buildings to withstand earthquake damage. PGA is measured in fractions of g (standard acceleration due to Earth's gravity, equivalent to 9.81 m/s^2). Maximum PGA for this earthquake was $1.4g$ at the epicenter, while Ahmedabad recorded a PGA of $0.11g$.

1. Given the information above and the map in Section 4, calculate the PGA experienced by each of the following locations in m/s^2 for each of these locations – the epicenter of the earthquake near Chobari; Ahmedabad; Mumbai; New Delhi. Express your answer as a number rounded to the nearest hundredth and show your work in the space provided. [6 points]
2. Calculate the distance in kilometers between the epicenter of the earthquake and each of the following – Ahmedabad, Mumbai, New Delhi. [3 points]
3. Based on the description of PGA above, briefly explain how the geology or physical characteristics of a region might impact the PGA of an earthquake. [2 points]
4. Briefly explain in the space provided why this region of India is so susceptible to earthquakes. [2 points]
5. Briefly explain in the space provided the effect of climate change on the frequency and intensity of tropical cyclones in the Arabian Sea. [2 points]
6. In recent years, due to a combination of climate change and the risk of both earthquakes and cyclones, the traditional dwelling called a bhunga has been gaining popularity in Gujarat. The bhunga is characterized by thick walls made from natural materials like clay that are covered in white plaster and topped with a light, thatched roof. In the space provided, explain ONE reason why this design would help mitigate EACH of the following – the environmental effects of climate change, the effects of tropical cyclones, the effects of an earthquake. [3 points]

Section 5 - [11 points]

Use the images in section 5 to complete the following.

1. Identify whether each of the following desert landforms are formed by erosion or deposition – barchan dunes, desert pavement, desert varnish, yardangs, mushroom rocks. [5 points]
2. Briefly describe in the space provided how a mushroom rock like the one shown in the image on the left would form in a desert environment. [3 points]
3. Briefly describe in the space provided how a barchan dune like the one shown in the image on the right would form in a desert environment. [3 points]

Section 6 - [10 points]

Use the image in section 6 to complete the following.

1. Identify the specific farming technique seen in this image. [2 points]
2. Briefly describe in the space provided TWO benefits of using this type of irrigation in agriculture. [4 points]
3. Briefly describe in the space provided TWO environmental problems that can result from this type of irrigation. [4 points]

Section 7 - [11 points]

1. Define the term import substitution industrialization. [2 points]
2. Briefly explain in the space provided how tariffs can promote the development of domestic manufacturing within a country. [3 points]
3. Define the term economic liberalization. [2 points]
4. Briefly explain in the space provided TWO demographic changes that are likely to occur in countries undergoing economic liberalization. [4 points]

This is the end of the exam.