Section 1 - Population Growth [14 marks]

1. Given the information in the graph above, give two reasons for the trend in global population growth rate between 1920 and 1960.

2. Several countries in the world currently have annual population growth rates over 2%. Identify and explain four factors that might account for population growth rates over 2%.

3. Identify two possible educational measures countries with fast-growing populations might implement to decrease growth rate in the future. Briefly explain how each of these measures would help to control population growth.

4. Identify and explain two reasons for the increase in average population age in developed countries. Identify one way in which this increase in average age effects the economy of developed nations, and one way in which it effects the health care system of these nations.

Grading notes: This question is adapted from the 2016 iGeo Written Examination and the 2017 and 2013 AP Human Geography examinations, and is meant to test analytical skills and knowledge of population geography. All parts of the question are point marked.

Expected answers:
1. [2 marks] Acceptable answers include advancements in medical technology and improved public health; improved living conditions and a higher standard of living; increased availability of food and through better agricultural technology and production methods; increases in birth rates in many countries following global conflicts [other reasonable answers accepted]

2. [4 marks] Acceptable answers include lack of access to birth control or information about family planning; early marriage age; traditional views on the role of women in society; children viewed as a viable labor force; low HDI or high poverty rates; cultural or religious preferences; lack of educational opportunities for girls and women [other reasonable answers accepted]

3. [4 marks] Acceptable answers include increased sex education; education about the benefits family planning; increased educational opportunities for girls and women; increased educational opportunities for all young people to increase economic development [other reasonable answers accepted]

4. [4 marks] Acceptable answers for increase in population age fall into three broad categories – decreased fertility / birth rate (delayed marriage age, increased educational / professional opportunities for women, access to birth control, less need for children as labor / pension); increased life expectancy (better nutrition / diet, better health care, higher standard of living, better public health / safety); and migration of younger people. Economic effects could include increased costs of social programs, economic pressure on adult children, more seniors in the work force, decreased productivity due to retirement of older workers, and several others. Effects on health care will usually identify the increased cost of geriatric care, financial burden on younger people, changes in health insurance cost for younger and more healthy people, and increased cost for governments.

Section 2 - Historical Geography [6 marks]

1. Briefly identify and explain the ways in which each of the following changed American cities in the period from the end of the Civil War to the end of the 1920s – a) immigration, b) industrialization.

Grading notes: Urban geography is well represented on the iGeo written exam, the AP Human Geography exam and the AP US History exam. This type of question is designed to test written expression of concepts in urban geography. Both sections of the question were level marked, and marks were awarded for effects and well-reasoned explanations.

Expected answers:
1. [3 marks] The New Immigration from 1880 to the 1920s brought Southern and Eastern Europeans to the United States, along with Mexican immigrants to areas of the South and Southwest. In addition, Asian immigrants came to the West coast and large cities like New York in the late nineteenth century. Answers that address increasing urban population, the settlement of these immigrants in tight-knit ethnic or religious neighborhoods, the construction of tenement housing, and the conditions of urban poverty in which these immigrants lived would be expected. Some students may make connections between the New Immigration and the Second Industrial Revolution. Other reasonable answers accepted.

2. [3 marks] Again, links to the previous part of the question would be valid, but were counted twice for marks. Effects of industrialization could include the widespread availability of steel and its effect on the urban environment, more efficient and widespread mass transit, electrification, the introduction of the automobile and its impact on the urban environment. Other reasonable answers were accepted.

Section 3 - Biogeography [10 marks]

1. Using the images, name the type of forest shown in A, B, and C in the space provided on the answer document. Match each type of forest to the appropriate climate graph shown in 1, 2, and 3.

2. Given the vegetation depicted and the appropriate climate graph, in what specific area of the United States would a forest like the one shown in image B most likely be located?

3. Identify and explain two reasons for the loss of forests worldwide. Of the three types of forests shown in the images, which would be most susceptible to loss?

Grading notes: This question set is adapted from the 2014 iGeo Written Examination. Questions 1 and 2 are point marked. For question 3, one mark was awarded for each correct reason and explanation, and one point for the correct forest type.

Expected answers:
1. A. [2 marks] Mediterranean forest; Graph 3
1. B. [2 marks] Temperate rainforest (Temperate coniferous forest); Graph 1
1. C. [2 marks] Tropical rainforest (Tropical and subtropical moist broadleaf forests, tropical moist forest, TSMF); Graph 2

2. [1 mark] This a northern California redwood forest; any answer in the Pacific Northwest or northern California / Oregon / Washington would be considered for credit.

3. [3 marks] Possible reasons could include clearing of land for agriculture or building; transportation infrastructure; expansion of tourism or leisure activities; mining activities; logging or harvest of wood for industry or energy; pollution, including acid rain; forest fires (other reasonable answers accepted); Image C (tropical rainforest) would be most susceptible to loss.

Section 4 - Cultural Geography [4 marks]

1. For what common purpose would all three of these structures have been used?

2. Given that purpose, explain why each of these structures is raised off the ground. Explain the purpose of the slits in the walls of two of the structures. Why are they absent in the third?

Grading notes: This question is adapted and expanded from a particularly problematic question on the 2017 iGeo Multimedia Test. Both questions are point marked.

Expected answers:
1. [1 mark] These are all granaries from various cultures.

2. [3 marks] They are all raised from the ground to prevent access to the grain by rodents and other small creatures. The horreo and Georgian granary have slits to allow for ventilation to keep the grain from spoiling. The Dogon granary does not have them because it is located in a dry climate.

Section 5 – Geology [6 marks]

1. Identify the type of rock in A, B, and C from the microscopic thin sections pictured.

2. Define the term lithification. Which of the rock types depicted in the thin sections would be formed by this process?

Grading notes: Geology and rock formation is a major theme on the iGeo WRT and MMT examinations. This question set is adapted and expanded from a question on the 2017 iGeo MMT. All parts are point marked, with two marks awarded for a correct definition of lithification, and one mark for identifying the rock type.

Expected answers:
1. A. [1 mark] Sedimentary rock
1. B. [1 mark] Igneous rock
1. C. [1 mark] Metamorphic rock

2. [3 marks] Lithification is the process in which sediments compact under pressure, expel fluids, and become solid rock; or the process of porosity destruction through compaction and cementation. Lithification includes all the processes which convert unconsolidated sediments into sedimentary rocks.

Section 6 – Urban Geography [10 marks]

1. Define the term urban heat island.

2. Identify and explain three differences between urban and surrounding rural areas that account for the temperature difference between them.

3. Identify and two characteristics of the urban microclimate that would cause higher levels of air pollution than surrounding rural areas. Explain why each of the characteristics you chose contributes to these higher levels of pollution.

4. Identify and explain two possible public policies municipal governments could enact to reduce air pollution.

5. During Hurricane Harvey in 2017, the city of Houston experienced catastrophic flooding. Identify and explain two reasons why urban areas like Houston are more susceptible increased flooding during extreme rain events than surrounding rural areas.

Grading notes: This is the type of mixed question that might appear on the iGeo written exam. This question set was adapted from the 2007 AP Environmental Science Examination. All questions were point marked.

Expected answers:
1. [1 mark] An urban or metropolitan area that significantly warmer than its surrounding rural areas due to human activities. The main cause of the UHI is from the modification of land surfaces.

2. [3 marks] Possible answers include changes to land surfaces such as concrete, asphalt and buildings (resulting in an increase in heat absorption and increased energy emission); decrease in trees and green space (loss of shade and evaporative cooling); increase in combustion from various sources (heat is a by-product); tall buildings (decreased air flow, decrease in cooling by convection); population (increased energy usage, increase in activities with heat as a by-product) [other reasonable answers accepted]

3. [2 marks] Possible answers include increased combustion (increased temperature and ozone precursors result in increased ozone; increased particulates; increased nitrogen dioxide and smog; other pollutants produced by combustion); industry (production of hydrocarbons and particulates; increased ozone); urban development / decreased vegetation (release of particulates from soil, fewer particulates and CO_2 absorbed); UHI (increased ozone from photochemical reactions) [other reasonable answers accepted]

4. [2 marks] Possible policies include tax incentives, construction of public transport systems, and regulations such as zoning to limit certain types of construction. Reasonable explanations may vary.

5. [2 marks] Urban development in areas like Houston results in less absorption of water from manmade surfaces, which increases runoff and overwhelms drainage capacity; suburbanization and urban sprawl can magnify this effect preventing absorption of floodwaters outside of city centers; subsidence due to aquifer depletion and construction makes drainage in urban areas less effective; UHI can cause rainfall events to be more severe in urban areas (other reasonable answers accepted)

Section 7 – Migration [10 marks]

1. Define the term refugee. According to UNHCR and UNRWA, is the number of refugees in the world closer to 5 million, 25 million, 50 million or 100 million people?

2. Given the information in the chart of refugees resettled by country, which of these countries has resettled the largest number of refugees per capita? Describe the trend in resettlement of refugees in the United States in the years after the time period covered in the chart, and particularly since the beginning of 2017.

3. Given the information in the graph of refugees per capita, why did Lebanon and Jordan have so many refugees within their borders in the period covered by the graph? Explain why a small and relatively remote nation like Nauru made this list.

4. Identify and explain three reasons why refugees would leave their country of origin.

Grading notes: This question was adapted from the 2015 AP Human Geography exam. All questions were point marked.

Expected answers:

1. [2 marks] A refugee is a displaced person who has been forced to cross national boundaries and who cannot return home safely (other reasonable equivalents accepted); 25 million

2. [3 marks] Australia has accepted the most refugees per capita; In the US, roughly the same number of refugees were accepted in 2014, 2015, and 2016. Under the Trump administration, that number has been cut roughly in half (to about 29,000) in 2017 due to more restrictive administration policies. (other reasonable explanations accepted)

3. [2 marks] Lebanon and Jordan have so many refugees within their borders because of their proximity to Syria. Nauru makes this list due to an agreement with Australia to accept and process refugees seeking entry to Australia.

4. [3 marks] Political reasons include conflict / war, political persecution, forcible eviction by government or military; Social reasons include religious persecution, racial or ethnic persecution / genocide; Environmental factors include famine, epidemics, and natural disasters. (other reasonable answers accepted)