Humanities Department
H2 Geography (9173)

Name: _____ Class: _____ Duration: 1 h 30 mins

2023 Senior High 1 H2 Geography Seminar Test 2 (10%)

INSTRUCTIONS

Write your name and class on the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use an HB pencil for any diagrams or graphs.
Do not use paper clips, glue or correction fluid.

Answer all questions in Sections A and B.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

Section A

Cluster 3: Sustainable Future and Climate Change

1 Resource 1 shows urbanisation trends from 1960 to 2021 in the United States, China and the world. Resource 2 shows the waste production and treatment statistics in Shanghai, China, from 2011 to 2015. Resource 3 shows urban growth on a map of Shanghai from 1840 to 2011.

(a) With reference to Resource 1, compare the changes in share of urban population between the United States and China. [4]

Award 1 mark for each similarity/difference of changes in share of urban population, to a maximum of 4 marks.
Reserve 1 mark for similarity and 1 mark for difference.

Possible responses:
Similarity

- There was an overall increase in share of urban population in both the United States (70% to 82%) and China (17% to 62%).

Differences

- The United States had a higher share of urban population than the world from 1960 to 2021 while China had a lower share of urban population than the world until 2010 when it increased to be larger than the share of the world's urban population.
- China's share in urban population had a larger increase of 45% in share of urban population than the United States of 12%.
- The United States had a relatively constant increase in share of urban population from 1960 to 2021 while China's share of urban population had a slight decrease/stayed relatively constant from 1963 to 1978 before it continued increasing until 2021.

AO2

(b) Describe **three** ways to measure sustainable urban development. [6]

Award 1 mark for each description of how sustainable urban development could be measured.
Award a maximum of 1 additional mark for further development of each description.

- The Sustainable Cities Index measures sustainable urban development through the perspectives of people, planet and profit
    - With the use of the three pillars, sustainable urban development can be measured in a more holistic manner as cities can be sustainable in different ways.
- The Green City Index measures and assesses the environmental performance of cities across a range of criteria in each region.

- It uses indicators that are modified slightly for each region's index considering data availability and the unique challenges in each region.

- The United Nations Sustainable Development Goals 11 include specific targets around the most critical urban and development issues in cities.
  - The UN has defined 10 targets and 15 indicators for SDG 11, including indicators of the social, economic and environmental aspects that are measurable at the city level.

AO1

(c) With reference to Resource 2, describe the changes in waste production and treatment in Shanghai from 2011 to 2015. [5]

Award 1 mark for each description of waste production and treatment in Shanghai, to a maximum of 5 marks.

Possible answers include:
Production

- There was an overall increase in waste produced from 2011 to 2015 of about 0.8 million tonnes.

Treatment

- There was an overall increase of landfilled waste by about 0.4 million tonnes from 2011 to 2013 before it decreased and remained constant in 2014-2015.
- 0.4 tonnes of waste was composted in 2011 but there was no longer composting done from 2012 to 2015.
- Incinerated waste had increased the most by 2.1 million tonnes from 2011 to 2016.
- Other/unaccounted waste fluctuated from 2011 to 2015, increasing from 0.1 from 2011 to 2012, decreasing by 0.8 million tonnes in 2013 and increasing again by 0.5 million tonnes in 2014 and 0.6 million tonnes in 2015.

AO2

(d) Explain **two** problems associated with nonhazardous solid waste in urban areas. [4]

Award 1 mark for each explanation of problems associated with nonhazardous solid waste in urban areas.
Award a maximum of 1 additional mark for further development of each description, where applicable.
Award a maximum of 2 marks if only one problem associated with nonhazardous solid waste in urban areas was explained.

Possible answers include:

- Overgeneration of urban waste would lead to more waste filling up urban landfills.

- Urban Waste can pose environmental harms to the urban environment through soil and water contamination by leachate.

- Lack of proper collection of urban waste can lead to solid waste left around urban areas which can be unsightly and greatly harm the image of the city.
  - This can affect the economy of the city when investors are deterred by the waste seen in the open areas.
- Improper disposal of urban waste within the city can pose health threats to urban dwellers when solid waste clogs drains, creating stagnant water for insect breeding and floods during the rainy seasons.
  - This can result in vector borne diseases such as dengue and malaria to spread amongst the urban population.

AO1

(e) With reference to Resource 3, describe how urban growth has changed over the years. [5]

Award 1 mark for each description of urban growth, to a maximum of 5 marks.
Award a maximum of 1 additional mark for further development of each description, where applicable.

Possible answers include:

- Urban growth mainly grew towards the North and West of Huangpu District from before 1840 to 1949.
- Most of the urban areas were located on the West of the Huangpu River from before 1991.
- The largest growth in urban areas occurred from 1991 to 2011.
  - Include use of scale: 1cm = 3km on map, largest increase was 12.6km northwards
  - Largest increase was towards the north towards and including Baoshan District
- Most of the urban areas were in the Inner Ring before 1950 and the urban areas grew out of the Outer Ring by 2011.

AO2

(f) With reference to Resource 3, suggest how the rapid urban growth of Shanghai can cause environmental problems in the surrounding areas. [6]

Award 1 mark for each explanation of environmental problems caused by rapid urban growth, to a maximum of 6 marks.
Award a maximum of 1 additional mark for further development of each explanation, where applicable.

Possible answers include:

- Eutrophication and water pollution might occur in the Yangtze River and the Huangpu River if factories are built near those rivers.

  - Industrial effluent might be discharged into the waters if wastewater is not properly managed, polluting the waters and harming aquatic life.
  - Agricultural farms might have fertilizer and chemicals washing into the nearby water bodies, resulting in eutrophication.
- Damage to natural environment occurs when land is cleared for the expansion of urban areas.
  - Deforestation brings about effects on the environment such as loss of biodiversity and increased risk of flooding due to soil erosion.
- Regional climate change might occur if a large amount of forest is removed, resulting in an increase of greenhouse gases in the area.
  - As forests are carbon sinks, carbon dioxide is released into the air when the trees are cut down, causing increases in temperatures.
- Unsustainable sand mining for construction materials from Huangpu and Yangtze rivers and marine ecosystems can lead to a sand crisis.
  - This can result in significant environmental impacts, including coastal and river erosion, shrinking deltas, land-use changes, air pollution, salinization of coastal aquifers and groundwater reserves, threats to freshwater and marine fisheries and biodiversity

AO2

Section B

Cluster 2: Tropical Environments

2 Evaluate the extent to which climate is an important factor influencing the formation of karst landforms in the humid tropics. [20]

<u>Possible Approaches</u>

Candidates could approach the question by making a judgement on whether the formation of karst landforms in the humid tropics is influenced by natural factors through a consideration of the relative significance of natural factors vis-à-vis human factors. Candidates could analyse natural factors such as climate and geology which provide the favourable conditions for the initiation and development of karst landforms over time. They also discuss the role of geology and its characteristics that result in the variations of landforms in the humid tropics. Candidates could also analyse human factors such as groundwater extraction or the enhanced greenhouse effect that have the potential to cause modifications to the karst landforms in humid tropics.

Candidates could also approach the question by making a judgement on whether some factors have a greater influence in some contexts that others through a consideration of two or more case studies. Candidates could evaluate the relative significance of the different factors in each case study and analyse the interplay between the factors.

Levels marked using Generic Level Descriptors for H2 essays.

AO3