**MERIDIAN JUNIOR COLLEGE**
PRELIM EXAMINATION
Higher 1

_____

# H1 Geography                                                 **8813/01**

Paper 1                                                **13 September 2018**

**3 hours**

Additional Materials: Answer Paper
                                    1 Insert
                                     World outline map
_____

**READ THESE INSTRUCTIONS FIRST**

Write your name and civics group clearly on **all** 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 staples, paper clips, glue and correction fluid.

Answer **four** questions in total.
**Section A**
Answer Question 1.
**Section B**
Answer Question 2.
**Section C**
Answer **two** questions, each from a different theme.

**Start each question on a fresh sheet of paper.**

You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.
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You are reminded of the need for good English and clear presentation in your answers.

At the end of the examination, fasten this **cover sheet,** the question paper, Insert and all your work in **chronological order** securely together for submission.
The number of marks is given in the brackets [   ] at the end of each question or part question.
_____

This document consists of 4 printed pages

Name:                    _____

Class:                    _____

Index number:        _____

| Qn no. (Section A) | Marks | Qn no. (Section B) | Marks |
|---|---|---|---|
| 1 | | 3 or 4 * | |
| 2 | | 5 or 6 * | |
| Total | | | |

**\* Please circle the question attempted**

**Section A**

**Theme 3: Geographical Investigation**

**1**  You are part of a team of 20 Singaporean researchers funded by the Thai government to study whether flood risk varies across different sites on the Chao Phraya River in Bangkok. The research is carried out from the months of September to December.

Your team has decided to do quantitative research through measuring the river discharge and qualitative research through administering questionnaire surveys to the residents in both sites.

Your team has identified 2 study sites along the Chao Phraya River with different types of residents: legal homeowners at site A and slum dwellers at site B

Your team decided to measure the channel velocity, cross section area, channel depth and channel width to investigate the flood risk of the Chao Phraya River at both sites.

Your team will be using an ultrasonic sensor to measure channel depth. An ultrasonic sensor sends a sound wave to the river bed and uses the time taken for an echo to return to the sensor to measure channel depth.

Your team has also been provided with a flowmeter to measure river velocity.

Your team will be given access to the current satellite imagery of the Chao Phraya river.

The Thai government granted your team full access to all location along the Chao Phraya river and have also provided boats for you all to take measurements from.

For this investigation, your team came up with the hypothesis:

**'The flood risk at site B is higher than the flood risk at Site A.'**

Resource 1 shows the Satellite Map of Site A and Site B in Bangkok.
Resource 2 shows photographs of Site A and Site B.
Resource 3 is a cross section illustration of how the ultrasonic sensor works.
Resource 4 shows the annual rainfall distribution in Bangkok.

**(a)**  With reference to Resource 1 and 2, explain why the hypothesis is suitable.   [4]

**(b)**  Explain how your group will minimise the impact of their investigation to the river and its users.   [4]

**(c)**  With reference to Resource 1 and 3, describe how channel depth can be measured accurately at Site A.   [3]

**(d)**  Explain possible challenges that might arise when trying to conduct the quantitative and qualitative research at both sites.   [6]

**(e)**  Evaluate this investigation about flood risk and explain how the quantitative and qualitative research could be improved to better understand flood risk in Site A and Site B.   [8]

## Section B

### Theme 2: Urban Change
### Ecological Footprint and Sustainable Development

2   Resource 5 shows the global ecological footprint distribution.
Resource 6 shows global ecological footprint changes from 1961 to 2009.
Resource 7 shows the projected urbanisation trends until 2050.

**(a)**   With reference to Resource 5, describe the global ecological footprint   [3]
distribution.

**(b)**   With reference to Resource 5 and your own knowledge, explain why   [6]
ecological footprint distribution differs globally.

**(c)**   With reference to Resource 6, describe the changes in global ecological   [3]
footprint from 1961 to 2009.

**(d)**   With reference to Resource 7, account for projection in urbanisation trends   [5]
until 2050.

**(e)**   With reference to any of the Resources and your own knowledge, to what   [8]
extent do you agree that urbanisation will hinder the achievement of
sustainable development?

**Section C**

Answer **two** questions from this section.
**Either** Question 3 **or** Question 4 and **Either** Question 5 **or** Question 6.

**Theme 1: Climate Change & Flooding**

**3** **(a)** With the aid of diagrams if necessary, explain the rainfall pattern associated with Indian sub-continent in the period from December to February. [9]

**(b)** Assess the effectiveness of the responses to global warming at a variety of scales. [16]

**4** **(a)** Explain how overland flows vary in the tropics. [9]

**(b)** Describe the main aspects of tropical monsoon (Am) climates. To what extent are they distinctive from other tropical climates? [16]

**Theme 2: Urban Change**

**5** **(a)** Explain how urban reimaging may affect different urban dwellers in cities at high levels of development. [9]

**(b)** To what extent do you agree that environmental factor is the most important factor in affecting the liveability of cities? [16]

**6** **(a)** Explain how the issue of crowding **or** fear is produced in cities in countries at low levels of development. [9]

**(b)** Assess the success of strategies used to try to mitigate the issue of **either** crowding **or** fear in the city. [16]

# H1 Geography                                8813/01

Paper 1                                        **13 September 2018**
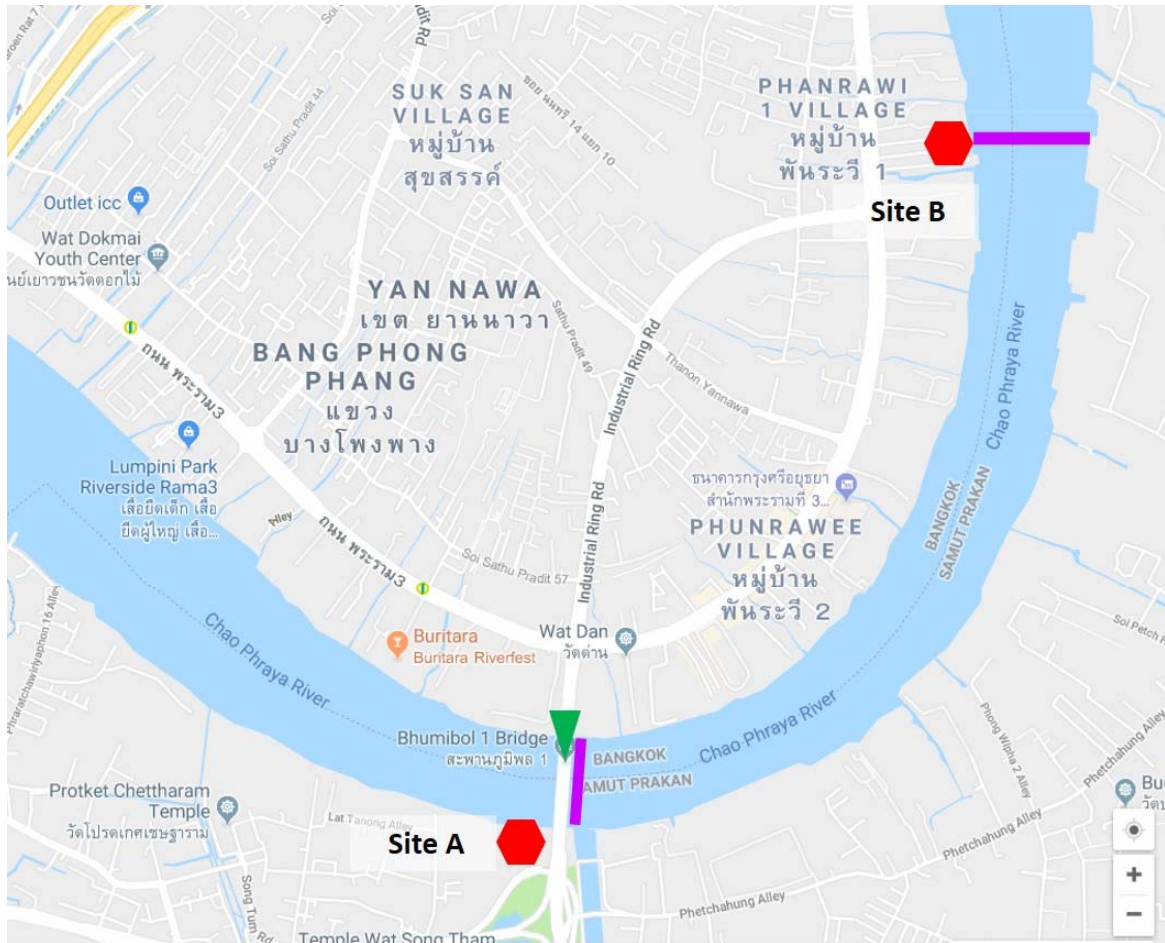
INSERT

**3 hours**

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## READ THESE INSTRUCTIONS FIRST

This Insert contains all the Figures and Tables referred to in the questions.

---

This document consists of 6 printed pages.

**Resource 1 for Question 1**

**Satellite imagery for Site A and Site B in Bangkok**



| | |
|---|---|
| ▬▬▬ Channel width to measure | Scale: 1 cm is to 200m |
| ⬡ Investigation site | |
| ▼ Bridge | |

**Resource 2 for Question 1**

**Site A**



**Site B**



/

# Resource 3 for Question 1

## Ultrasonic sensor used to measure flood risk

Removable Steel Support fixed to Bridge/Boat

Sensor

An ultrasonic sensor sends a sound wave to the river bed and uses the time taken for an echo to return to the sensor to measure channel depth

Steel Suspension Line

Weight

River Bed
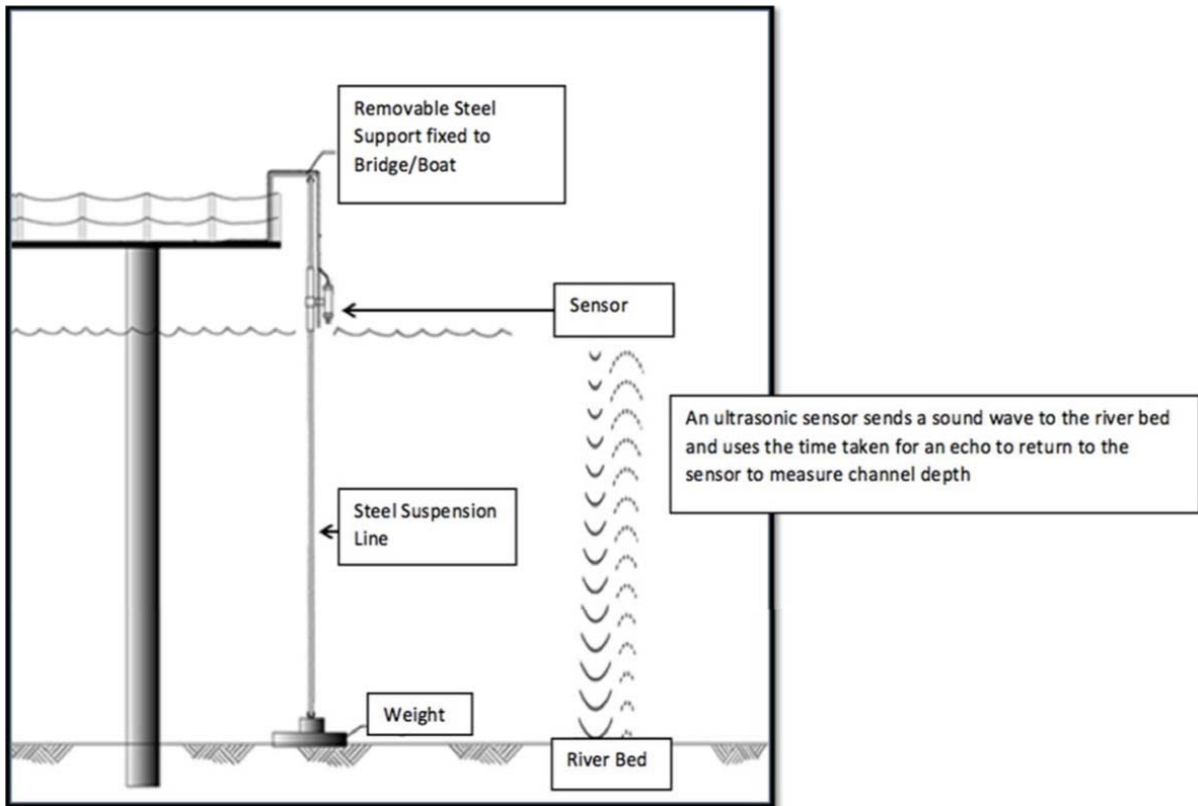
# Resource 4 for Question 1

## Annual rainfall distribution in Bangkok

Precipitation

400 mm

300 mm

200 mm

100 mm

0 mm

Precipitation

Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

Average precipitation (rain/snow) in Bangkok, Thailand   Copyright © 2016 www.weather-and-climate.com
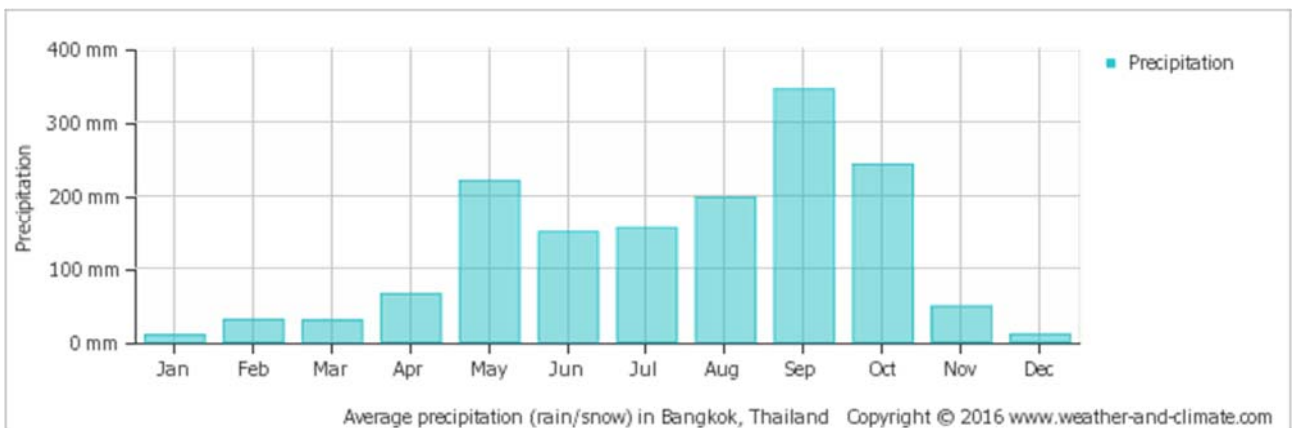
**Resource 5 for Question 2**

**Global ecological footprint distribution, by country, 2000**



Key
productive land per person (hectares)

| | |
|---|---|
| 6.0 and over | |
| 4.9–5.9 | |
| 2.0–3.9 | unsustainable |
| 1.0–1.9 | sustainable |
| less than 1.0 | |
| insufficient data | |

North-South divide
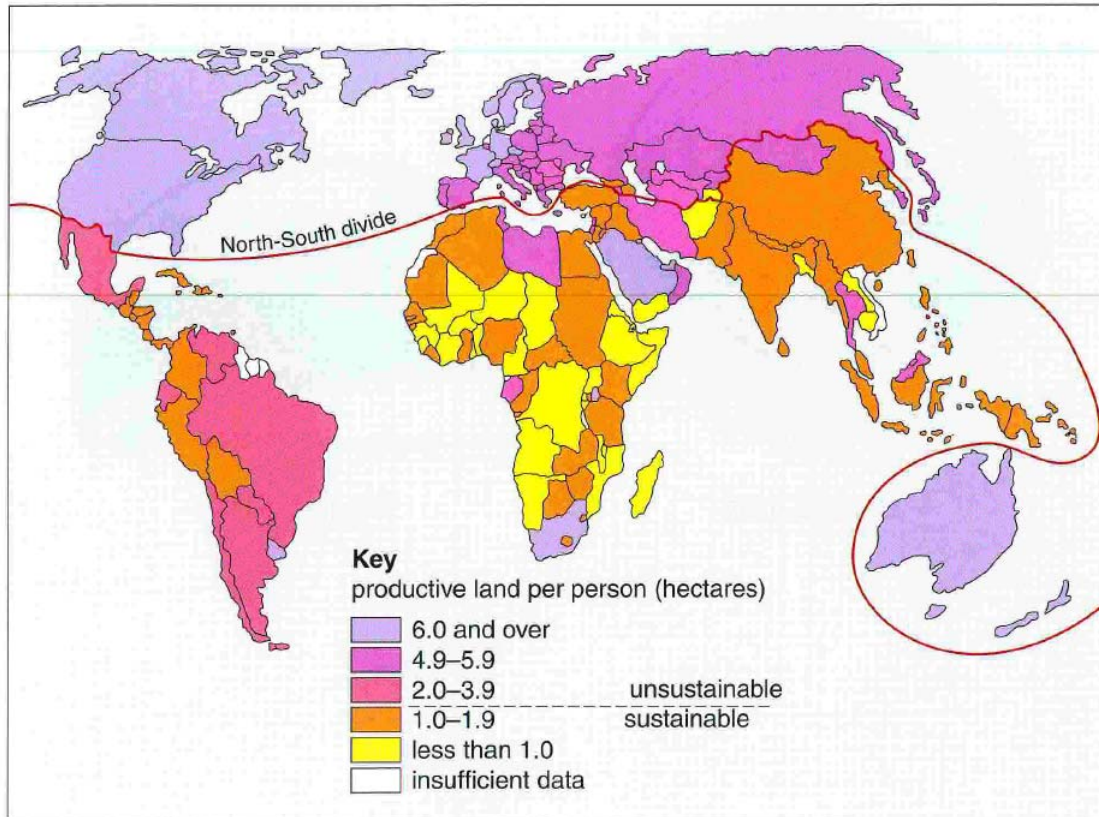
**Resource 6 for Question 2**

**Global ecological footprint changes from 1961 to 2009**
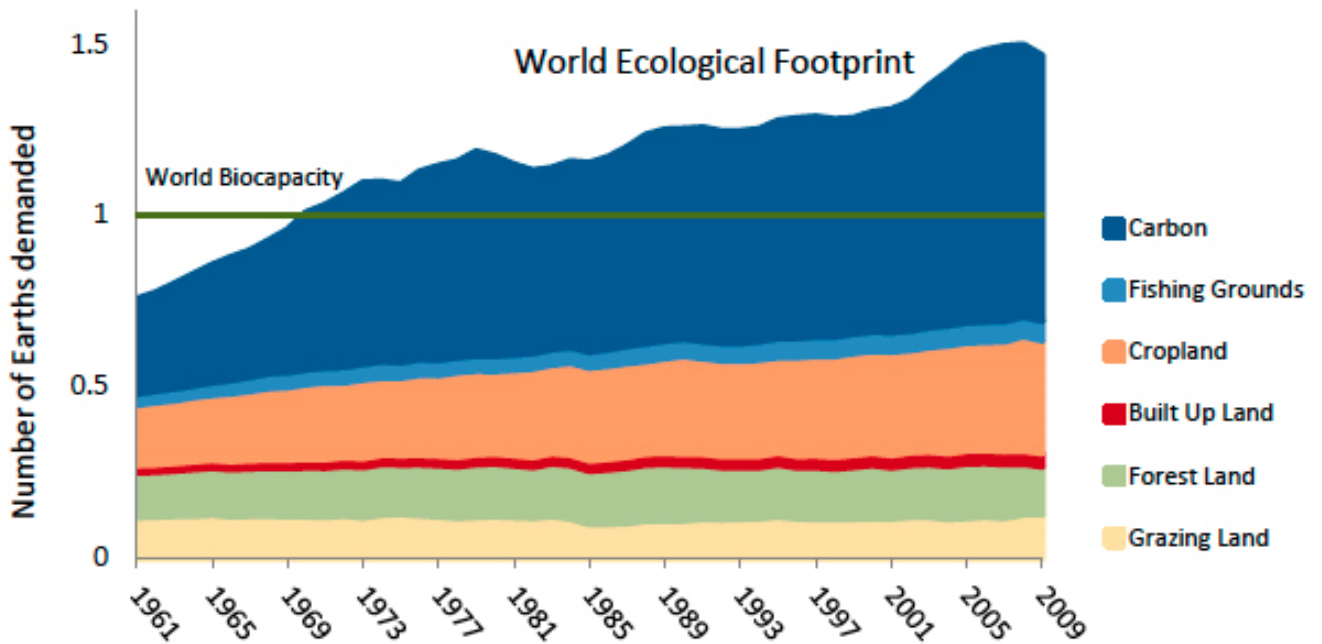


**Resource 7 for Question 2**

**Urbanisation trends until 2050**



Source: United Nations, Department of Economic and Social Affairs, Population Division (2014).
World Urbanization Prospects: The 2014 Revision, custom data acquired via website

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## Theme 3: Geographical Investigation

| **1(a)** | With reference to Resource 1 and 2, explain why the hypothesis is suitable. | **[4]** |
| --- | --- | --- |

- The hypothesis is suitable because it can be **tested through measurements** of the river discharge to determine flood risk with equipment

- The hypothesis is suitable to test because the characteristics of the two sites are different,

- The hypothesis is suitable to test because students have adequate manpower and time to carry out

| **(b)** | Explain how your group will minimise the impact of their investigation to the river and its users. | **[4]** |
| --- | --- | --- |

- To minimize impact to the river, our group will ensure that we do not dump any litter into the river
- To minimize impact to the users of the river, do not disrupt other activities.

| **(c)** | With reference to Resource 1 and 3, describe how channel depth can be measured accurately at Site A. | **[3]** |
| --- | --- | --- |

- Use the Bhumibol 1 Bridge as reference for the channel width and attach ultrasonic sensor on the bridge and make sure sensor is lowered till just at the surface
- Take readings at **various intervals** for channel depth, measure at least 3 times at each interval for the results to be **reliable**
- Once all the intervals are taken, channel depth can be found by taking the **average**

| **(d)** | Explain possible challenges that might arise when trying to conduct the quantitative and qualitative research at both sites. | **[6]** |
| --- | --- | --- |

- Disruption of velocity
- different rocks/branches/debris at river bed affecting channel depth and ultrasonic sensor measurement
- Dangerous to row between/under slums
- Challenge in qualitative research includes **language barrier** in conducting the survey
- Residents especially in Site B are unwilling to answer the survey as they are not sure what the information will be used for. Too busy to answer the questionnaire survey

*Mix of both Quantitative and Qualitative challenges are required to score full credit*
*(3 well explained points)*

| **(e)** | **Evaluate** this investigation about flood risk and **explain** how the quantitative and qualitative research could be **improved** to better understand flood risk in Site A and Site B. | **[8]** |
| --- | --- | --- |

**Evaluate:** *Explain what is good about this investigation*

- Comprehensive, utilize both quantitative and qualitative data to find out about flood risk. Different characteristics of sites to investigate, certain information can be tallied with other information like satellite information to cross check channel width.

**Improvement to quantitative and qualitative** *(Essentially answering the challenges in d) and also check if there are some resources meant to be used but not used e.g. R4*

Improvement to quantitative:

1. Seen from R4 → actually Bangkok has seasonality of rainfall, therefore measurement of flood risk needs to be extended to more months when measuring to better understand how flood risk varies across the year.

2. Measure infiltration rate of slopes at both side as runoff can affect floodrisk

3. Take note of any flood mitigation measures already in place at both sites

**Improvement to qualitative:**

1. Bring a translator along, translate the questionnaire

2. Do a flood risk matrix (elaborate)

3. Interview government officials about (?)
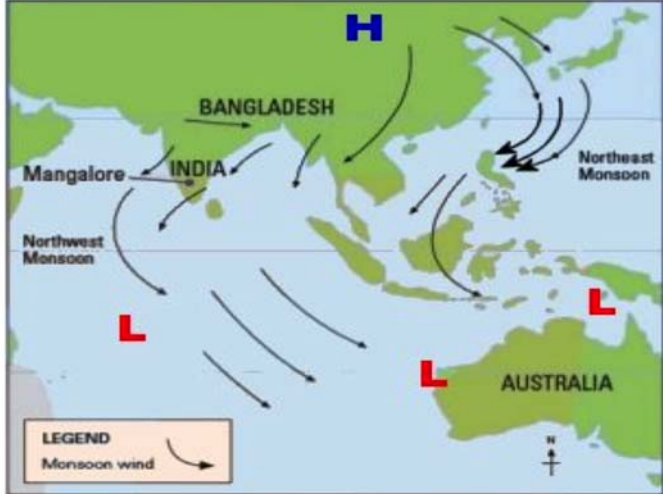
## Section B

## Theme 2: Urban Change

## Ecological Footprint and Sustainable Development

| 2 | (a) | With reference to Resource 5, describe the global ecological footprint distribution. | [3] |
|---|---|---|---|

- Countries North of the North-South divide have higher and unsustainable ecological footprint of more than 4.9 productive land per person compared to countries South of the divide
- Countries located South of the divide have a greater variation in ecological footprint from less than 1.0 to 6.0 and over compared to countries north of the divide

- The highest ecological footprint can be found in continents such as North America, Western Europe and Australia at 6.0 and over productive land per person
- Continent with the lowest ecological footprint is Africa with majority of the continent having less than 1.9 productive land per person

- Anomaly can be seen that in continents like Africa, South Africa has high EF of 6.0 and over .
  **Or** Anomaly like Middle East and South Africa (south of the divide)

*Reminder: East/West of Continents, Countries or Oceans but not world map(only north south and name by continents because earth is round and rotating).*

| | **(b)** | With reference to Resource 5 and your own knowledge, explain why ecological footprint distribution differs globally. | [6] |

**Ecological footprint: Amount of Biologically productive land required to produce energy, food and goods consumed and also to absorb waste [MUST LEARN]**

- DCs (mostly at North of the divide) has higher EF because
- Affluence → more consumption of foods from elsewhere → import goods and food → high EF (cite data)
- DCs have more energy use for their type of industries and lifestyles → contribute to EF by carbon footprint (a subset of EF)
- DC by consuming more food/goods → produce more waste and take up more biologically productive land

EF is already measured by per capita → Its not total carbon emission and carbon footprint please read the question thoroughly

| | **(c)** | With reference to Resource 6, describe the changes in global ecological footprint from 1961 to 2009. | [3] |

- Overall <u>steady</u> increase from about 0.75 earths to 1.5 earths demanded, and in 1969 the world Biocapacity has been exceeded.
- Carbon contributed to the <u>largest increase</u> by about 0.5 earths demanded
- Built up land, forest land and grazing land remained <u>relatively constant</u> over the period

| | **(d)** | With reference to Resource 7, account for projection in urbanisation trends until 2050. | [5] |

See data: 90 Percent of urbanisation until 2050 will take place in Africa and Asia: data shows the Countries in Asia and Africa that will have the largest increase

Urbanisation-> Proportion of people in a country living in towns and cities.

*Essentially asking why LDCs have large projected urbanisation*

- DCs already reached high levels of urbanization, hard to continue urbanizing e.g. Singapore already 100% urbanized, so majority of urbanization will happen in LDCs
- Large scale Rural-Urban Migration where people move to cities to seek jobs in factories etc
- Large scale natural increase (higher birth rate) + lowering death rates due to improvements in healthcare

| | **(e)** | With reference to any of the Resources and your own knowledge, to what extent do you agree that urbanisation will hinder the achievement of sustainable development? | [8] |
|---|---|---|---|

SD: Development that meets the needs of the present without compromising ability of future generation to meet their own needs. Maximise three interdependent goals (social, economic, environmental), meet the basic needs of the poor, overcome limitations in technology

**Hinder SD**: Harder to achieve environmental development → seen from the EF increase, more urbanisation where have more demands on environmental resources and also produce more carbon emissions etc in cities.

**Hinder SD**: Compromise on social development where the rural urban migration lead to the poor staying in slums etc….

**Not hinder SD**: Help to meet the basic needs of the poor (jobs in urban area), help achieve social and economic development for countries that urbanised properly

Levels marked: Accept a range of points, high level responses need to show both sides of the argument and also link to SD and its tenets

| 3 | (a) | With the aid of diagrams if necessary, explain the rainfall pattern associated with Indian sub-continent in the period from December to February | [9] |
|---|---|---|---|



NORTHEAST MONSOON (AMIHAN)
November to March

- Student should explain how the Position of the overhead sun changes in relation to the months and migration of the ITCZ

- Subsequently, students should then explain places in India that encounter more rain (east coast- Chennai) compared to places which experiences dry season

| | (b) | Assess the effectiveness of the responses to global warming at a variety of scales. | [16] |
|---|---|---|---|

Students should first define global warming – rise in global temperature worldwide

in this essay, student need to address at least 3 scales (Global, Regional, National, Local/Individual) and also the two types of responses: Adaptation and Mitigation approaches.

Higher level responses will not just compare effectiveness of responses across scale but also how effectiveness of responses vary within scale (e.g. DCs vs LDCs)

| 4 | (a) | Explain how overland flows vary in the tropics | [9] |
|---|---|---|---|

Students must identify the different types of overland flows → HOF and SOF

Students must identify the different types of tropical climate – at least → Humid vs Arid Tropics

Students should then proceed to explain how different factors that vary across different tropical climates affect HOF/SOF

Factors include:
- Type of rainfall
- Vegetation Density
- Geology
- Relief
- Urbanisation

| | (b) | Describe the main aspects of tropical monsoon (Am) climates. To what extent are they distinctive from other tropical climates? | [16] |
|---|---|---|---|

*Student must address both aspects of the question: Describe and To What Extent are they distinctive → all five climates should be addressed*

Tropical Monsoon (Am): High rainfall, distinct wet and dry season

- Similar to all tropical climates in terms of average annual temperature above 18°C

- Similar to Humid tropical climates (high rainfall)

- Different in terms of total amount of rainfall (especially vs Savanna and Arid Tropic climates)

- Different in terms of seasonality of rainfall (only similar to Aw climate)

| **5** | **(a)** | Explain how urban reimaging may affect different urban dwellers in cities at high levels of development. | [9] |
|---|---|---|---|

Explain what is Urban Reimaging

Explain the effects of Urban Reimaging – Social, Economic, Environmental and positive negative on urban dwellers

Important to note that context of this question is DC

| | **(b)** | To what extent do you agree that environmental factor is the most important factor in affecting the liveability of cities? | [16] |
|---|---|---|---|

Define what is urban liveability

Signpost that there are various factors affecting liveability environmental, socio-economic, political factors

Rank environmental factors against other factors and explain why environmental factors are **is/is not** the most important factor in affecting the liveability of cities

| 6 | (a) | Explain how the issue of crowding **or** fear is produced in cities in countries at low levels of development. | [9] |
|---|---|---|---|

- Answers may consider how cities at high levels of development (e.g. economic, social, environmental) may host factors which contributes to fear. There are several sources of fear in the city (e.g. crime and terrorism).
- associated with cities at high levels of development and make explicit links to how these contribute to fear in cities. For instance, a city with a high level of economic development may raise the international profile of the city and makes it a possible target for terrorists and hence increased fear amongst residents in the city.

| | (b) | Assess the success of strategies used to try to mitigate the issue of **either** crowding **or** fear in the city. | [16] |
|---|---|---|---|

Indicative content:
Having established the factors which contribute to fear in the city in part (a), candidates would now explain how to better cope with fear.

- Answers should include a discussion of both successes and failures in mitigating the chosen issue (crowding or fear).
- For fear in the city, strategies to cope with fear include increased surveillance, redesigning environment, militarization of police and a visible presence of armed police on city streets and at airports and seaports, to investment in 'safe' living environments such as the provision of street lighting/street cameras to reduce crime or strengthened border controls to seek to reduce the threat of terrorism.
- A higher level response could look at the effectiveness of strategies with reference to 1-2 specific case studies. Another possible approach could be to analyse the application of selected strategies in different cities and account for their success(es) and failure(s).