

NUS GEOGRAPHY CHALLENGE 2020

INDIVIDUAL COMPONENT

You may only begin this paper at 1400 hrs.

Upload the Answer Booklet to the Google Form by 1530 hrs.

Duration: 1 hour 15 minutes

Section A consists of **15 Multiple Choice Questions.**

Section B consists of **3 Structured Questions.**

This paper carries a total of **50 marks.**

There are **15 pages (including the cover page), 18 questions** and **2 sections.**

Please contact NUS GC immediately if there are any missing pages or questions within this question booklet.

Answer **all** questions in the **Answer Booklet** provided.

Type your school name and full name clearly on the front of your Answer Booklet.

Should any of the above information be missing, your script will be **voided.**

You are *only* allowed to communicate with the NUS Geography Challenge Organising Committee. Please send us a message through:

- 1) Facebook at <https://www.facebook.com/nusgc/>
- 2) Instagram at nusgc
- 3) Email @ nusgeographychallenge@gmail.com

Please state your name, school and your query within the message so that we may confirm your identity and get to answering your queries as soon as possible.

Do note that students are not allowed to receive help during the course of the quiz. Plagiarism or any other form of cheating found will result in immediate disqualification.

Section A: Multiple Choice Questions (15 Marks)

Choose the most appropriate answer for each question and type it in the **Answer Booklet** provided.

1. Figure 1 depicts the Tourist Area Cycle of Evolution, which studies the change in tourism over time in a host economy.

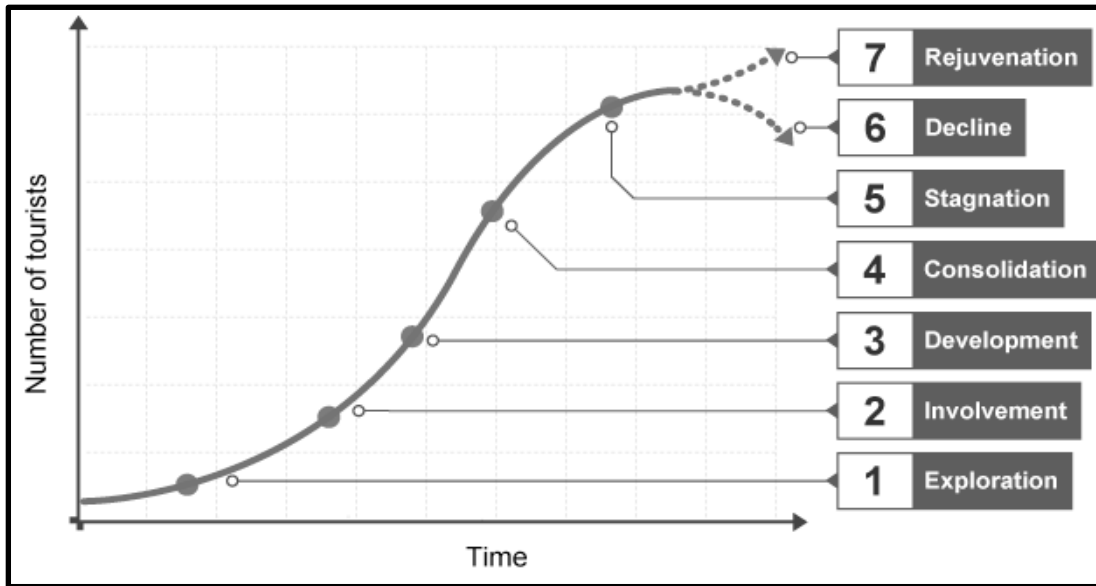


Figure 1: The Tourist Area Cycle of Evolution
(Source: withheld due to testing purposes)

Which of the following statements is **true**?

- (A) At stages 3 and 4, cultural dilution is likely to set in.
 - (B) At stage 4, financial leakages might occur.
 - (C) At stage 5, unemployment levels are likely to rise.
 - (D) All of the above.
2. Which statement **does not** describe the effects of climate change?
- (A) The Walker circulation gradually gets stronger, increasing the intensity of El Niño.
 - (B) Jet streams show more erratic behaviour with more wavy peaks and troughs, leading to more severe weather conditions.
 - (C) Rising sea levels cause flooding in low-lying cities.
 - (D) Shifting growing degree days for crops has created opportunities for farmers to experiment with new crops.

3. Figure 2 depicts the Burgess Model which illustrates urban land usage and explains urban social structures.

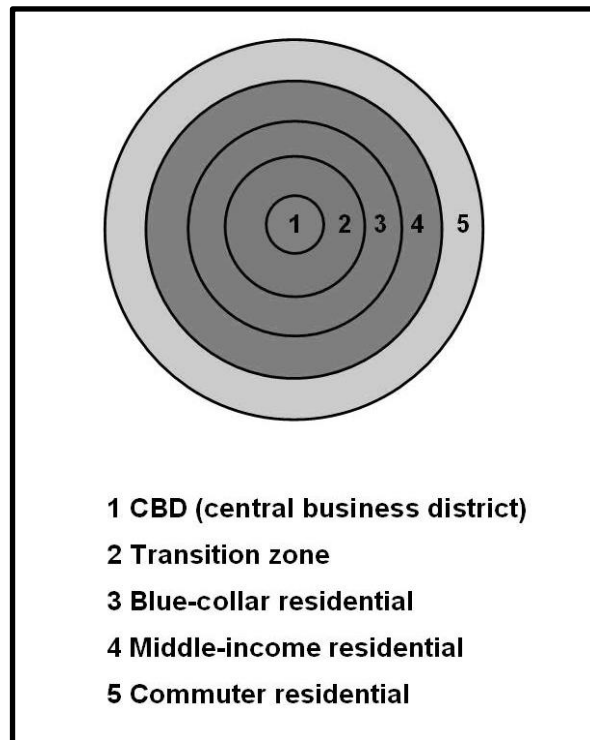


Figure 2: The Burgess Model
(Source: withheld due to testing purposes)

Which of the following statements about the Burgess Model is **false**?

- (A) The Burgess Model assumes that a city grows by outward expansion from a central area.
 - (B) The Burgess Model considers the influence of topography on urban spatial structures.
 - (C) Polycentric cities do not fit the Burgess Model.
 - (D) The Burgess Model overlooks the forces of globalisation.
4. Which of the following is **not** a source of water for Singapore's Four National Taps?
- (A) Reservoir Water
 - (B) Industrial Water
 - (C) Used Water
 - (D) Seawater

5. Deltas are wetlands that emerge where rivers empty sediments into another body of water (National Geographic, 2019). Figure 3 shows the Mississippi River Delta in Louisiana, United States of America.

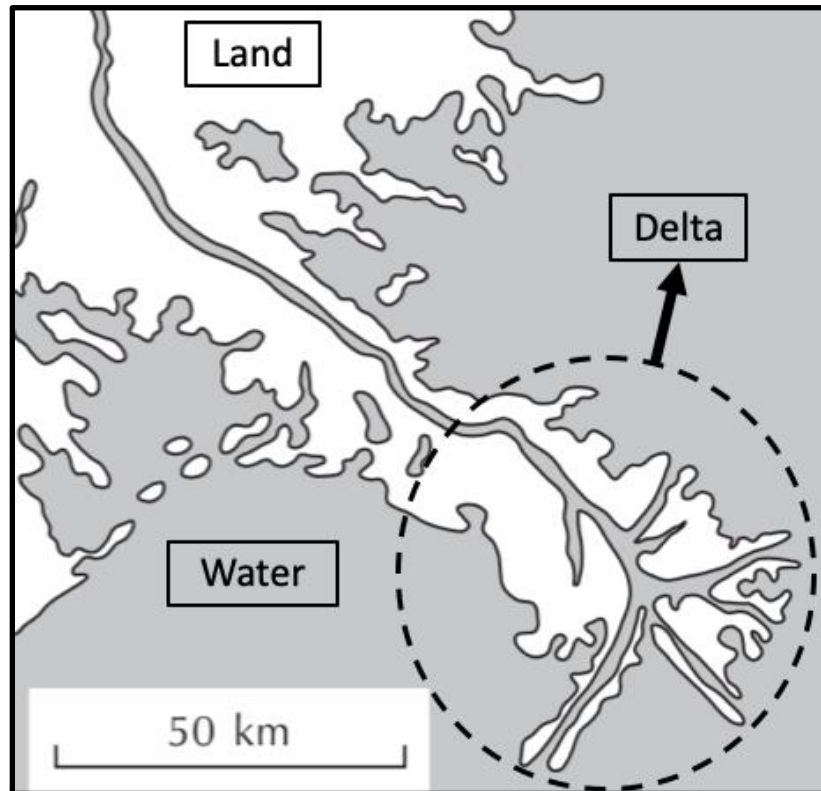


Figure 3: Mississippi River Delta
(Source: withheld due to testing purposes)

There are four main delta shapes in river morphology. Which of the following best describes the delta seen in Figure 3?

- (A) Arcuate delta
- (B) Bird-foot delta
- (C) Cuspate delta
- (D) Estuarine delta

6. The following is an excerpt from an article titled ‘I Live in Jalan Kukoh, One of the Poorest Neighbourhoods in Singapore. This is My Story’ by Bell Tustain (2019).

Surrounded by the delightful views of reflective glass condos in Robertson Quay, well-maintained blocks of Pinnacle@Duxton, and the multi-million-dollar skyscrapers of Raffles Place, I’ve always dreamt of a good or ‘better’ life.

[...]

There’s not a day or hour where I don’t see trash (Jalan Kukoh) around the neighbourhood. I’ve even seen sanitary pads, diapers, and styrofoam boxes containing food waste being thrown out of windows.

(Rice Media, 2019)

Which of the following best represents the urban phenomenon described in the excerpt above?

- (A) Gated Communities
- (B) Spatial Inequality
- (C) Income Gap
- (D) Poverty Trap

7. Which of the following options does **not** reflect the correct characteristics of a Shield Volcano and a Stratovolcano?

	Shield Volcano	Stratovolcano
(A)	Has frequent but quiet eruptions	Has few but violent eruptions
(B)	Contains basaltic lava	Contains rhyolitic lava
(C)	Found at constructive plate margins	Found at destructive plate margins
(D)	Lava has high silica and gas content	Lava has low silica and gas content

8. Figure 4 shows the Demographic Transition Model, as proposed by American demographer Warren Thompson in 1929.

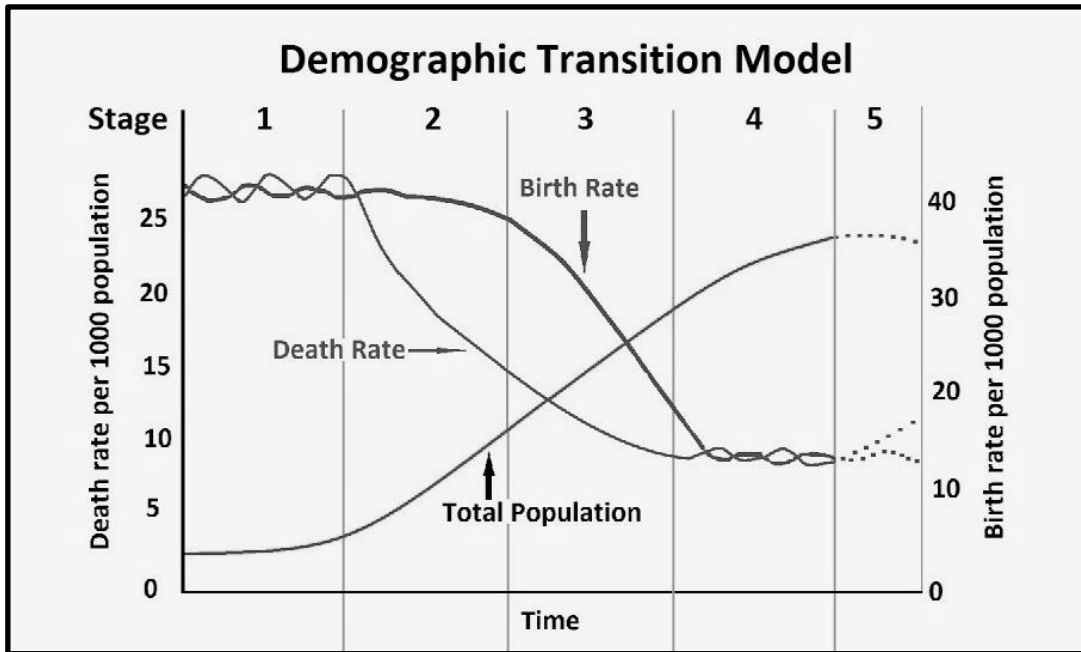


Figure 4: The Demographic Transition Model
(Source: withheld due to testing purposes)

Match the following statements to their corresponding stages in the Demographic Transition Model.

- I. The government introduces policies encouraging immigration.
- II. The elderly make up a small proportion of the national population.
- III. There is enormous stress on physical and human resources.

	I	II	III
(A)	4	2	1
(B)	5	1	2
(C)	2	1	4
(D)	5	4	1

9. Which of the following statements is **false** about dark tourism?

- (A) Dark tourism sites challenge the order and progress of modernity.
- (B) Dark tourism is purely motivated by a tourist's individual desire for actual or symbolic encounters with death.
- (C) Dark tourism is defined as the packaging and consumption of death or distress as an experience of both the distant and recent past.
- (D) Boxing matches and disaster sites are considered dark tourism sites.

10. Relph (1976) describes 'placelessness' as the "casual eradication of distinctive places and the making of standardized landscapes that result from an insensitivity to the significance of place."

Which of the following processes can lead to a sense of 'placelessness'?

- I. Enworldment
- II. Gentrification
- III. Globalisation
- IV. Transworldment
- V. Unworldment

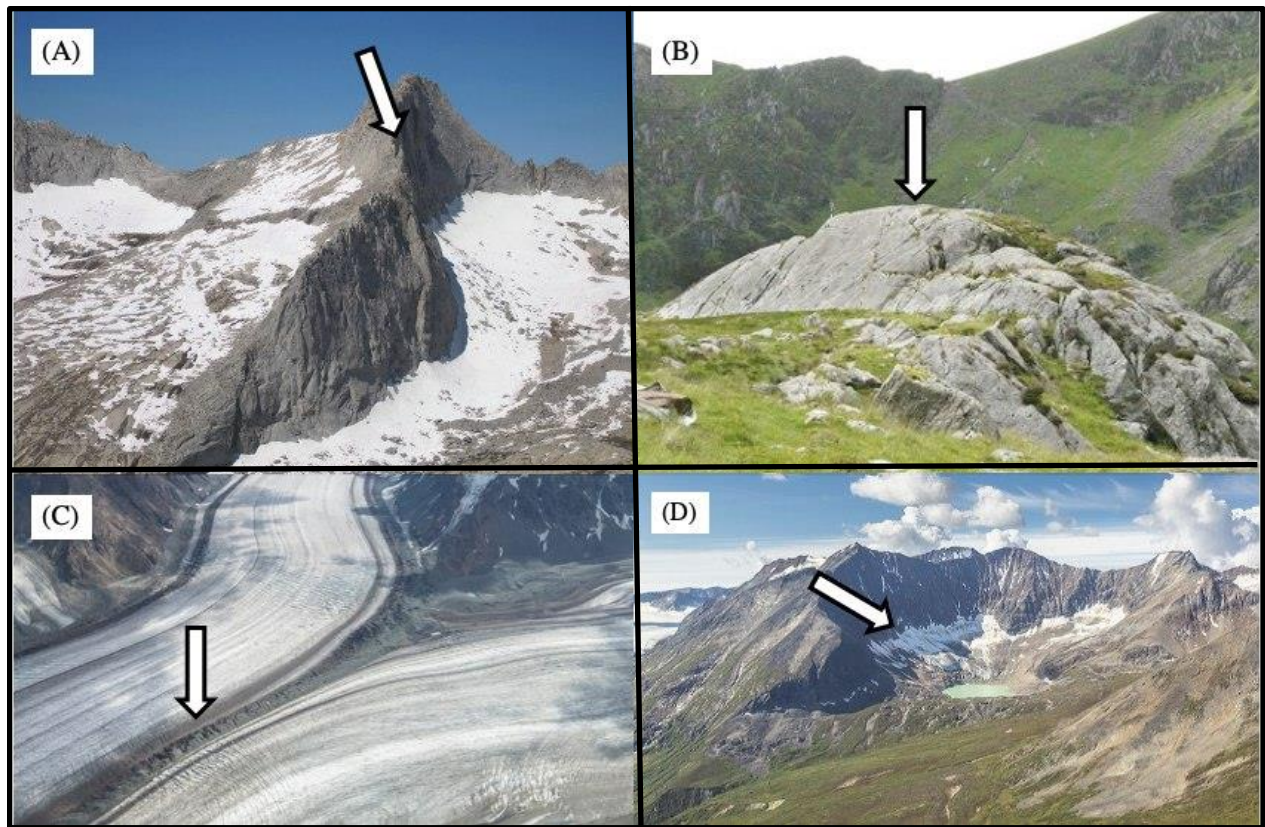
- (A) I, II, III
- (B) II, IV, V
- (C) I, II, III, IV
- (D) All of the above

11. Which of the following statements are **true** about mangroves?

- I. Mangroves are renewable resources.
- II. Planting mangroves contribute to coastal biodiversity.
- III. Mangroves are highly salt-intolerant.
- IV. Mangroves protect people, infrastructure and economic activities from flooding and erosion.
- V. Mangroves play an important role in carbon sequestration.

- (A) III, IV
- (B) II, III, IV
- (C) I, II, IV, V
- (D) All of the above

12. Which of the following is a **depositional** glacial landform?



13. According to Smarter Cambridge Transport (2016), measures used to reduce traffic congestion can either be categorised as temporary or virtuous. The organisation defines virtuous measures as measures that “start a feedback loop that induces more and more people to make a modal shift away from driving.”

Which of the following best exemplifies a virtuous measure?

- (A) Adopting road pricing
- (B) Establishing edge cities
- (C) Increasing the efficiency of rail services
- (D) Building more expressways and roads

14. Which statement about land fragmentation is **false**?

- (A) Land fragmentation harms productivity as labour and capital are divided to manage small plots of land.
- (B) Land fragmentation limits the choices of profitable crops due to scattered plots of land.
- (C) Land fragmentation can occur in developed countries.
- (D) Land fragmentation increases the risk of total crop failure.

15. Refer to Figure 5 below.



Figure 5: A photograph of a cloud
(Source: withheld due to testing purposes)

With reference to Figure 5, which of the following options matches the cloud type and the risk it poses to aviation?

	Type of cloud	Risk to aviation
(A)	Stratocumulus	Obstruction of view due to dense cloud cover
(B)	Cumulus	Dangerous updrafts
(C)	Cumulonimbus	Severe thunderstorms
(D)	Nimbostratus	Danger of downbursts

- End of Section A -

Section B: Structured Questions (35 Marks)

16. Tourism is responsible for nearly a tenth of the world's greenhouse gas emissions (Lenzen et al., 2018). As climate change intensifies and people become increasingly aware of how their actions can affect the environment, ecotourism has become increasingly popular as an alternative form of tourism (Today, 2016).

The Lapa Rios Lodge is a world-renowned model ecotourism project in Costa Rica.

Lapa Rios Lodge 2016

Lapa Rios Lodge is the creation of John and Karen Lewis ... [who] ... set out to establish a private reserve in one of Costa Rica's most unspoiled wildernesses. Their mantra was that a standing forest is more valuable than one cut down, and they engaged the local community by fostering economic opportunities tied to the conservation of the rainforest.

Opened in 1993, Lapa Rios Lodge is now recognized globally as a model of sustainable tourism. A new conservation easement ensures that the property's 1,000 acres, including old-growth primary forest, will be preserved in perpetuity. The Lapa Rios reserve also helps buffer the Osa Peninsula's Corcovado National Park—home to 2.5% of the world's biodiversity—and serves as a wildlife corridor that harbours thousands of trees, plants, birds, insects, and mammals in Central America's largest remaining tropical lowland forest.

Figure 6: Lapa Rios Lodge (*Source: withheld due to testing purposes*)

Ecotourism in Costa Rica: The Role of Nature Conservation Efforts in Costa Rican Global Image *n.d.*

Costa Rica is an exemplary case study of sustainable ecotourism, but the country is not free from criticism. Amos Bien and Martha Honey criticize the Certification for Sustainable Tourism (CST) in their Article ‘Analyzing Costa Rica as a Model for the Implementation of Marketing Certification in Five Target Countries’. They posit that “[small businesses] have expressed their fear that CST and other certification programs might tend to promote larger businesses, because the latter have more working capital and staff” (2005).

Costa Rica has struggled with the balance between preserving natural resources and promoting economic development through ecotourism. However, with more total visitors, a comprehensive policy is necessary to regulate numbers to limit environmental impact. Without which, the country risks “greenwashing”, a phenomenon that occurs when the public image of sustainability is more important to an organization than the actual green practices being implemented.

An American University study of Costa Rica’s ecotourism industry concludes “developing countries face tough choices in the race to join the modernized world and frequently environmental resources are seen more as tools of progress than treasures to be guarded”. The study goes on to say that “the overhead costs of training, infrastructure construction, and promotion can be a burden on poor nations, and the risks can be considerable” (Dasenbrook, 2002).

Figure 7: Ecotourism in Costa Rica: The Role of Nature Conservation Efforts in Costa Rican Global Image. (*Source: withheld due to testing purposes*)

- (a) In your own words, define ecotourism. [1m]
- (b) With reference to Figures 6 and 7, state and explain **two** advantages and **two** disadvantages of ecotourism. [6m]
- (c) Discuss the feasibility and sustainability of having ecotourism in Singapore. [4m]

17. As a small island nation, Singapore has sought land reclamation to increase its usable land area (Figure 8). This is especially important in the face of population pressures and upcoming development plans. As a result of extensive land reclamation projects, Singapore has grown by nearly a quarter of its original size and has become the world's largest importer of sand (United Nations Environment Programme, 2014).

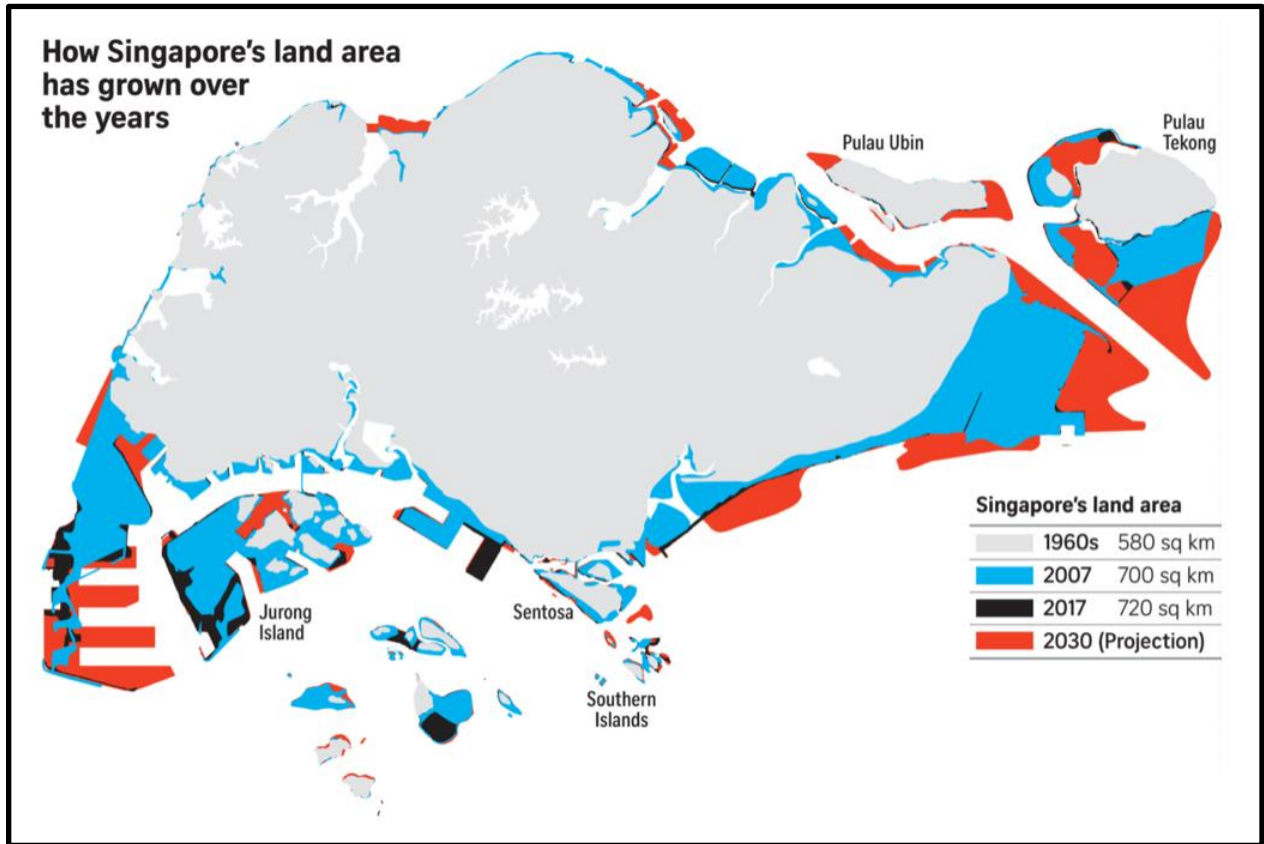


Figure 8: Map of Singapore's land area
(Source: withheld due to testing purposes)

(a) Based on Figure 8, identify **two** different reclaimed land areas in Singapore and their distinctive uses. [2m]

Singapore's demand for sand comes at a heavy social and environmental cost for its sand exporters. In 2019, the island nation came under intense scrutiny following the release of a short film titled 'Lost World' that documented the impact of Singapore's sand mining activities for land reclamation on Cambodian ecosystems and livelihoods (Low, 2019). Figure 9 quotes some of the locals' opinions in response to companies that engage in sand mining.

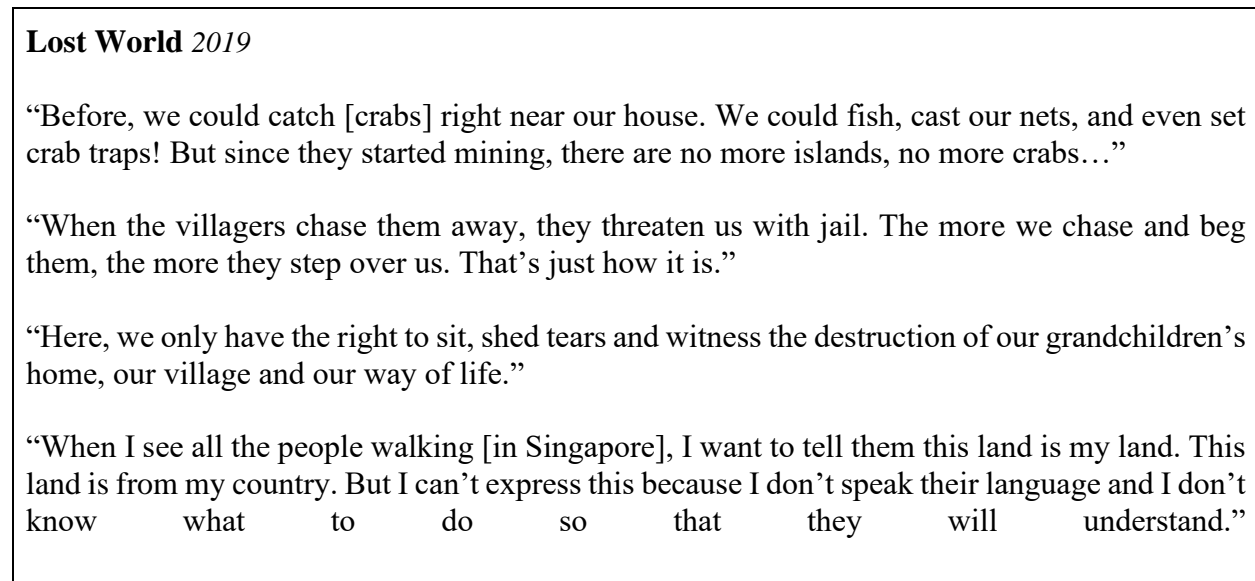


Figure 9: Dialogues from Lost World. (*Source: withheld due to testing purposes*)

- (b) With reference to Figure 9, suggest **three** ways to mitigate the impacts of sand mining on local villagers. [6m]
- (c) Assess the sustainability of Singapore's reliance on sand imports. [6m]

18. In order to tackle the broader challenges of environmental and climate change in line with sustainable developmental objectives, one of the main strategies of Singapore’s Climate Change Action Plan is to encourage the construction or retrofitting of buildings with green design. Specifically, Singapore aims to achieve the Building and Construction Authority’s (BCA) “Green Mark Standard” for 80% of its buildings by 2030 (refer to Figure 10 below).

The BCA Green Mark Scheme was launched as a voluntary scheme in January 2005. The scheme aims to evaluate buildings on their environmental impacts through a comprehensive framework, thereby assessing their overall environmental performance.

Specifically, the environmental performance of building development is determined by the numerical scores (i.e. Green Mark points) achieved according to the degree of compliance with the applicable criteria. Depending on the level of building performance and Green Mark Score, the building development will be eligible for certification under one of the ratings, namely BCA Green Mark Gold, Gold^{PLUS} or Platinum.

The five key criteria that a building will be judged on are:

1. Smart and Healthy Buildings (40 Green Mark Points)
2. Building Energy Performance (40 Green Mark Points)
3. Sustainable Management (35 Green Mark Points)
4. Resource Stewardship (30 Green Mark Points)
5. Advanced Green Effort (20 Green Mark Points)



To encourage building owners, developers and project architects to achieve at least a BCA Green Mark Gold rating in the design and construction of buildings, a cash incentive amounting up to

50% of the upgrading and retrofitting costs will be offered. To encourage commitment to long-term sustainability measures, buildings will also be reassessed once every three years.

Figure 10: BCA Green Mark Scheme (*Source: withheld due to testing purposes*)

- (a)** Using only evidence from Figure 10, explain the limitations of the BCA Green Mark Scheme. [4m]

In the 2019 Draft Masterplan unveiled by the Urban Redevelopment Authority (URA), the Masterplan has, for the first time, highlighted the need to involve the underground as a site for urban interventions.

- (b)** Do you think that 'green buildings' in the underground realm are feasible in Singapore? Explain your answer. [6m]

- End of Geography Challenge 2020 Individual Component -