Marking Schemes

Paper 1

Section A

Question No.	Key
1.	A (64%)
2.	D (26%)
3.	B (50%)
4.	C (74%)
5.	C (38%)
6.	D (42%)
7.	B (39%)
8.	D (77%)
9.	A (46%)
10.	C (59%)
11.	D (53%)
12.	A (61%)
13.	B (73%)
14.	A (64%)
15.	D (68%)
16.	A (82%)
17.	B (76%)
18.	C (76%)
19.	B (68%)
20.	C (94%)

Note: Figures in brackets indicate the percentages of candidates choosing the correct answers.

This document was prepared for markers' reference. It should not be regarded as a set of model answers. Candidates and teachers who are not involved in the marking process are advised to interpret its content with care.

Section B

Question 1 **Marks**

(a) **Merits:**
- dense vegetation growth in summer 1
- strong sunlight at noon/ sufficient daylight 1
- adequate relevant data 1

Demerits:
- unstable weather/ extreme weather 1
- heavy rain/ very hot weather 1
- high risk 1(4)

(b) **Relevant concepts/ arguments:**
- the locations of transects Q and R
- the differences in characteristics of vegetation at transects Q and R/ the strata
- representativeness of the samples collected from the sub-groups/ strata
- easier comparison between sub-groups/ strata
- saves time/ fair

Marking criteria:

- Accurate and clear explanation of 3 aspects, demonstrating good knowledge and understanding of how to use stratified methods to set up transects Q and R to collect samples	4
- Appropriate explanation of 2 aspects, demonstrating basic to adequate knowledge and understanding of how to use stratified methods to set up transects Q and R to collect samples	2-3
- Brief/ general description, demonstrating elementary knowledge of how to use stratified methods or to set up transects Q and R to collect samples	1

(c) (i) - the coverage of undergrowth increases with increasing light intensity / the higher the light intensity, the larger the coverage of undergrowth / there is a positive relationship between light intensity and undergrowth coverage 1 (1)

(ii) - scatter diagram/ scattergram/ scatter graph 1 (1)

How to use data to draw conclusions:
- observe the spread/ distribution of data points on the graph 1
- identify the orientation of the best-fit line 1
- describe the relationship between the two variables/ conclude that there is a positive relationship of the two variables 1
- observe the distance of data points from the best-fit line (e.g. close to/ scattered) 1 (2)

(d) **Relevant concepts/ arguments:**
- Merits of the data collection methods: quantitative analysis, systematic sampling
- Drawbacks of the data collection methods:
  - inadequate data: transects, sampling points
  - data collected at different times/ seasons
  - other factors may affect the coverage of the undergrowth, e.g. canopy cover, altitude, human activities
- Improvement in data collection methods:
  - increase the number of transects, sampling points, samples
  - divide the students into groups and collect data from different transects simultaneously
  - more sub-groups/ strata, e.g. canopy cover, altitude, aspects, gradient

Marking criteria:

- Demonstrates sound knowledge and understanding of data collection methods - States the merits and drawbacks clearly and in greater detail - Suggests sound improvements corresponding to the drawbacks and provides relevant information for elaboration - Communicates ideas and expresses views logically	5-6
- Demonstrates adequate knowledge and understanding of data collection methods - States some merits and/ or drawbacks appropriately - Makes appropriate recommendations for improvement - Communicates ideas and expresses views clearly	3-4
- Demonstrates elementary to basic knowledge and understanding of data collection methods - States briefly/ in general the merits and/ or drawbacks - Makes general/ brief recommendations for improvement - Communicates simple ideas	1-2

Max. 18

Question 2 **Marks**

(a) (i) - trench/ ocean trench 1(1)

(ii)

Appropriate annotations:	
- two plates collide	1
- denser plate subducts/ denser Philippines plate subducts/ slab pull	1
- magma rises along the cracks/ intrusive vulcanicity	1
- lava/ volcanic ash is ejected onto the earth surface/ sea floor	1
- lava cools and solidifies	1
- submarine volcanoes rise above sea level	1 (4)
- appropriate labels showing resultant landform features: volcanic islands and a trench	1 (1)

*Only ONE diagram (Max. 4)

(b) (i)

Adverse socio-economic impact (Max.3)	**Causes (Max. 2)**
- reduction in fresh water supply (1) - disrupted traffic/ traffic accidents (1) - health hazards (1) - outdoor activities disrupted/ suspended(1) - loss of property/ lives (1) - e.g. reduction in farming productivity/ farmers' income/ income from fisheries (1) - aftermath cost (1)	Appropriate description of the effects brought about by the ejection of volcanic ash/ poisonous gas: - ash fell into lake (1) - ash buried farmland/ settlements/ cities and towns/ roads (1) - ash lowered visibility/ poisonous gas caused air pollution (1)

(4)

(ii)

Explanation (Max. 3)	**Evidence (Max. 2)**
- high level of preparedness/ awareness/ instant response (1)* - sufficient time to respond (1) - effective evacuation plans/ facilities (1)	- erupted at noon/ in daytime (1)* - evacuation centres opened shortly/ within 1.5 hours after the eruption (1) - residents evacuated quickly/ within 3 hours (1) - warning signals issued twice/ with different levels/ instant warning (1)

(4)

*Evidence should match the corresponding explanation

(c) **Relevant concepts:**

- People-environment relationship: constraints and co-existence
- Relevant factors: soil fertility, economic activities, population distribution
- Risk management:
  - reduce loss of lives and property
  - cost effectiveness
  - social impacts of banning human activities (land use zoning) in the area

Marking Criteria:

- Logical and well-elaborated explanations/ arguments with reference to the information provided, demonstrating good knowledge and understanding of the appropriateness of the measure - With appropriate judgement	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding of the appropriateness of the measure, OR - Two or more appropriate explanations/ arguments demonstrating adequate knowledge and understanding of the appropriateness of the measure	3
- An appropriate explanation/ argument in detail with reference to the information provided, demonstrating basic knowledge and understanding of the appropriateness of the measure, OR - Two or more brief explanations/ arguments demonstrating basic knowledge and understanding of the appropriateness of the measure	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of land use zoning	1

Max. 18

Question 3 **Marks**

(a)

Explanation (Max. 4)	Map evidence
- abundant supply of raw materials/ energy / raw material-/ power-oriented industry/ high weight loss (1) - low transport/ production cost (1)	- coalfield/ iron ore nearby (1)
- high accessibility/ easy transport (1)	- presence of railway (1)
- large local market (1) - sufficient labour supply (1)	- major cities nearby (1)
- water for cooling (1)	- presence of river (1)

(6)

(b)
- long history of development 1
- well-developed infrastructure e.g. rail transport 1
- supply of skilled labour 1
- well-established markets/ business 1
- upgraded manufacturing plants/ not wasting the upgraded manufacturing plants 1
- increased supply of raw materials 1 (3)

(c) (i) **Effects on Inputs:**
- more advanced information/ communication technology used* 1
- use less raw material/ water/ energy 1
- labour with higher education level 1
- higher capital inputs 1

Effects on Production:
- greener/ more environmentally friendly production process* 1
- higher level of automation/ efficiency 1
- better monitoring of production processes/ higher management efficiency 1
- higher productivity 1 (5)

* At least ONE describing the improvement in the technological level

(ii) **Relevant concepts/ arguments:**
- locational pull: raw material, power, market
- favourable conditions for technological advancement in manufacturing
- other factors: government policies and priorities, state-owned enterprises, government expenditure on research and development
- effects of industrial inertia/ agglomeration economies
- changes in locational pattern/ distribution, e.g. southern shift, extend along the coastline to SE/S China

Marking criteria:

- Logical and well-elaborated explanations/ arguments with reference to the information provided, demonstrating good knowledge and understanding - Logical discussion of the significance of different factors* - With appropriate judgement to explain relevant factors affecting the location	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding, OR - Two or more appropriate explanations/ arguments demonstrating adequate knowledge and understanding - Appropriate discussion of the significance of different factors*	3
- An appropriate explanation/ argument with reference to the information provided, demonstrating basic knowledge and understanding, OR - Two or more brief explanations/ arguments demonstrating basic knowledge and understanding	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding	1

* factors other than technological development

Max.18

Question 4 **Marks**

(a) (i) **Commercial land use pattern (Max. 2):**

- concentrated/ clustered 1
- grid pattern 1
- linear / along the main roads 1

Road network pattern (Max. 2):

- dense road network 1
- main roads stretching from NW to SE/ parallel main roads 1
- many road junctions 1

*bonus mark (max. 1) for illustrating with appropriate example(s) from the map extract 1 (3)

(ii) **Description:**

- traffic congestion 1
- air pollution 1

Explanation (Max. 3):

- Central is the Central Business District in Hong Kong 1
- intense commercial activities compete for road space/ high demand for transport by commercial activities 1
- low road capacity on narrow roads 1
- traffic congestion at road junctions/ illegal parking at roadside 1
- high pedestrian and traffic flows during peak hours/ more exhaust fumes from vehicles 1
- air pollutants trapped by high-rise and dense building 1 (4)

(iii)

- divert traffic flow 1
- increase road space/ capacity 1
- reduce the traffic flow in the CBD 1
- reduce the amount of time lost through traffic congestion 1
- reduce emission of air pollutants from road transport 1 (3)

(b) (i)

Favourable conditions (Max. 2)	Explanation (Max. 3)
- existing reclaimed land (1) - coastal location (1) - attraction of existing land use/ transport facilities (1)	- land available / ready to use (1) - flat land for development/ ample space (1) - pleasant sea view (1) - opportunity for complementary sea transport / high accessibility (1) - complementary/ synergy with adjacent land uses (1) - comprehensive land use planning (1)

(4)

(ii) **Relevant concepts/ arguments:**

- accessibility and connectivity
- people-oriented approach: pedestrian environment, opportunities for recreational activities
- social benefit: image, social well-being
- limitations: scale

Marking criteria:

- Logical and well-elaborated explanations/ arguments with reference to the information provided, demonstrating good knowledge and understanding of social sustainability - With appropriate judgement	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding of social sustainability, OR - Two or more appropriate explanations/ arguments demonstrating adequate knowledge and understanding of social sustainability	3
- An appropriate explanation/ argument with reference to the information provided, demonstrating basic knowledge and understanding of social sustainability, OR - Two or more brief explanations/ arguments demonstrating basic knowledge and understanding of social sustainability	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of sustainability	1

Max.18

Question 5 **Marks**

(a) **General description (Max. 2):**

- located at Sahel 1
- concentrated/ mainly located at 0° - 20°N/ south of Sahara Desert 1
- mainly located in NE Africa 1

Specific description:

- high risk: mainly in East Sahel/ East Africa 1
- medium risk: concentrated/ mainly located at Central Sahel 1(3)

(b) (i)

Description (Max. 1)	Explanation (Max. 2)
- low annual rainfall (1) - high annual mean temperature (1)	- high evaporation rate (1) - drought/ water shortage for farming/ dry soil (1) - limited scale of farming/ low farming productivity/ low land carrying capacity (1)

(3)

(ii)

Description (Max. 3)	Explanation (Max. 3)
- high population growth rate (1) * - low literacy rate (1) - low GDP per capita (1) - high percentage of economy based on agriculture (1)	- increase in demand for food (1)* - low labour productivity/ low know-how and skills (1) - lack of money to buy/ import food (1) - lack of capital to improve farming facilities (1) - vulnerable to natural hazards/ extreme weather (1)

(5)

*Explanation should match corresponding description

(c)

- immediate/ short-term increase in food supply 1
- increases in financial ability to buy imported food 1
- failure to increase food supply/ solve food shortage problem in the long run 1
- farmers may lose their motivation to farm 1(3)

(d) **Relevant concepts/ arguments:**

- functions: soil and water conservation, land productivity
- settings:
  - carrying capacity of land, availability of local resources
  - education level
  - availability of capital
  - government

Marking criteria:

- Logical and well-elaborated explanations/ arguments with reference to the information provided, demonstrating good knowledge and understanding of sustainable agricultural development in Sahel - With appropriate judgement	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding of sustainable agricultural development in Sahel, OR - Two or more appropriate explanations/ arguments demonstrating adequate knowledge and understanding	3
- An appropriate explanation/ argument with reference to the information provided, demonstrating basic knowledge and understanding of sustainable agricultural development in Sahel, OR - Two or more brief explanations/ arguments demonstrating basic knowledge and understanding	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of agricultural characteristics in Sahel	1

Max.18

Section C

Question 6

Account for the physical conditions favouring deposition at the lower course of a river. Discuss whether the channelisation implemented in recent years can manage the river environment in Hong Kong in a sustainable way.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

<table>
<tr><th colspan="2">Marking Guidelines</th></tr>
<tr><td colspan="2">Account for the physical conditions favouring deposition at the lower course of a river</td></tr>
<tr><td colspan="2">Relevant concepts:
• Physical conditions:
- river energy
- discharge
- river basin characteristics
- channel characteristics</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of the fluvial processes of the lower course
• Systematic and logical description and explanation of the physical conditions favouring deposition at the lower course</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of the fluvial processes of lower course
• Appropriate description and explanation of the physical conditions favouring deposition at the lower course
• Award higher marks to more systematic and/ or more in-depth explanation</td><td>3 – 5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of the fluvial processes of lower course
• Brief/ general description of the physical conditions favouring deposition</td><td>1 – 2</td></tr>
<tr><td colspan="2">Discuss whether the channelisation implemented in recent years can manage the river environment in Hong Kong in a sustainable way</td></tr>
<tr><td colspan="2">Relevant concepts:
• River management: flood control, people-environment relationship
• Channelisation measures adopted in recent years:
- channelisation: widening, deepening, straightening channels, concrete lining
- green channelisation/ river revitalisation: simulating the natural fluvial environment
- water-friendly facilities
• Changes to river environment, e.g. frequency of floods, channel flow, velocity, water quality, fluvial ecosystem, aquatic habitat, biodiversity</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of how the channelisation implemented in recent years has changed the river environment in Hong Kong
• Systematic and logical discussion with reference to sustainable ways of managing the river environment in Hong Kong including green channelisation/ river revitalisation</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge of how the channelisation implemented in recent years has changed the river environment in Hong Kong
• Appropriate discussion with reference to sustainable ways of managing the river environment in Hong Kong
• Award higher marks to more systematic and/ or more in-depth discussion</td><td>3 – 5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of how channelisation has changed the river environment in Hong Kong
• Brief/ general description of the channelisation measures adopted</td><td>1 – 2</td></tr>
<tr><td></td><td>Max. 12</td></tr>
</table>

Question 7

Describe and explain the changes brought about by different commercial agricultural activities on the vegetation characteristics of tropical rainforests. Discuss whether the development of agroforestry can make use of the developed tropical rainforests in a sustainable way.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

<table>
<tr><th colspan="2">Marking Guidelines</th></tr>
<tr><td colspan="2">Describe and explain the changes brought about by different commercial agricultural activities on the vegetation characteristics of tropical rainforests</td></tr>
<tr><td colspan="2">Relevant concepts:
- Major commercial agricultural activities in tropical rainforests: plantations, cattle ranching
- Characteristics of commercial agricultural activities in tropical rainforests, e.g. scale, intensity
- Changes in vegetation characteristics, e.g. density, diversity, height, layer/ structure</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of commercial agricultural activities in tropical rainforests
• Systematic and logical description and explanation of how different commercial agricultural activities have changed the vegetation characteristics of tropical rainforests, including their differences in changing the vegetation characteristics</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of commercial agricultural activities in tropical rainforests
• Appropriate description and explanation of how different commercial agricultural activities have changed the vegetation characteristics of tropical rainforests
• Award higher marks to answers with more systematic and/ or more in-depth description and explanation</td><td>3 - 5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of commercial agricultural activities in tropical rainforests
• Brief/ general description of commercial agricultural activities and/ or changes to the vegetation characteristics of tropical rainforests</td><td>1 - 2</td></tr>
<tr><td colspan="2">Discuss whether the development of agroforestry can make use of the developed tropical rainforests in a sustainable way</td></tr>
<tr><td colspan="2">Relevant concepts:
- The characteristics of agroforestry
- Sustainable use of tropical rainforests
• Environment: soil conservation, biodiversity, carrying capacity of tropical rainforests
• Society: food supply, social well-being, livelihood
• Economy: economic return, cost of development
- The limitations of practicing agroforestry in developed tropical rainforests</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of agroforestry in tropical rainforests
• Systematic and logical discussion of the practice of agroforestry to achieve sustainable development of tropical rainforests with two or more aspects and/ or their limitations</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of agroforestry in tropical rainforests
• Appropriate discussion of the practice of agroforestry to achieve sustainable development of tropical rainforests with more than one aspect or limitations
• Award higher marks to answers with more systematic and/ or more in-depth discussion</td><td>3 - 5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of sustainable development in tropical rainforests
• Brief/ general description of pros or limitations of practicing agroforestry in tropical rainforests</td><td>1 - 2</td></tr>
<tr><td></td><td>Max.12</td></tr>
</table>

Question 8

Describe and explain the adverse impact brought about by climate change on the hydrosphere. Discuss whether advanced technology is effective in alleviating the adverse impact brought about by climate change on the hydrosphere.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

<table>
<tr><th colspan="2">Marking Guidelines</th></tr>
<tr><td colspan="2">Describe and explain the adverse impact brought about by climate change on the hydrosphere</td></tr>
<tr><td colspan="2">Relevant concepts:
• adverse impact on the hydrosphere:
- change in water cycle, rise in sea level, glacier retreat
- extreme hazards: frequency, magnitude, areas affected
• spatial differences, e.g. tropical region, polar region
• temporal differences, e.g. long-term, short-term</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of the adverse impact brought about by climate change on the hydrosphere
• Systematic and logical description and explanation of the adverse impact brought about by climate change on the hydrosphere, including the spatial and/ or temporal aspects</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of the adverse impact brought about by climate change on the hydrosphere
• Appropriate description and explanation of the adverse impact brought about by climate change on the hydrosphere, including spatial or temporal aspects
• Award higher marks to answers with more systematic and/ or more in-depth explanation</td><td>3 – 5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of the adverse impact brought about by climate change
• Brief/ general description of the adverse impact brought about by climate change</td><td>1 – 2</td></tr>
<tr><td colspan="2">Discuss whether advanced technology is effective in alleviating the adverse impact brought about by climate change on the hydrosphere</td></tr>
<tr><td colspan="2">Relevant concepts/ arguments:
• Advanced technologies, e.g. early warning and information systems, water resource management, use of GIS
• Effectiveness of adaptation measures to improve water resource management and alleviate adverse impacts
• Limitations of advanced technology: cost-effectiveness, level of development, scale, short term vs long term
• Other mitigation measures, e.g. renewable energy, energy-efficient technology
• Implementation of relevant measures through international cooperation</td></tr>
<tr><th>Performance of Candidates</th><th>Marks</th></tr>
<tr><td>• Comprehensive knowledge and understanding of advanced technology's effectiveness in alleviating the adverse impact of climate change on the hydrosphere
• Systematic and logical discussion of the effectiveness of advanced technology and/ or its limitations to alleviate the adverse impact of climate change on the hydrosphere</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of advanced technology to alleviate the adverse impact brought about by climate change on the hydrosphere
• Appropriate discussion of the effectiveness of advanced technology or its limitations in alleviating the adverse impact of climate change on the hydrosphere
• Award higher marks to more systematic and/ or more in-depth discussion</td><td>3 – 5</td></tr>
<tr><td>• Elementary to basic knowledge of relevant advanced technology
• Brief/ general description of advanced technology's effectiveness in reducing the adverse impact of climate change</td><td>1 – 2</td></tr>
<tr><td></td><td>Max. 12</td></tr>
</table>

Section D

Question 1 **Marks**

(a) (i) - NE to SW/ SW to NE 1 (1)

(ii) Orientation of river valley(s): (Max. 4)
- Tai Lam fault/ other fault lines/ the fault lines control(s) the direction of river valley(s) 1
- faults are the lines of weakness 1
- less resistant 1
- (less resistant to) denudation/ weathering/ erosion 1
- land along the faults is eroded into valleys/ the fault lines are widened/ deepened into valleys/ rivers 1

Drainage pattern:
- rectangular drainage system/ rivers join at right angles 1
- following the fault which meets at a right angle 1 (5)

(b) (i)

Geological characteristics (Max. 2)	Impact on the landform feature (Max. 3)
- granite/ plutonic rock / mica and feldspar (1) - less resistant (1) - well-jointed structure facilitates water seepage deep into the rock (1)	- chemical weathering/ spheroidal weathering (1)* - at least 2 examples of the chemical processes (1) - thick/ abundant/ loosened weathered materials created can easily be eroded/ washed away/ removed (1) - forms steep-sided valleys/ gullies/ badlands (1)*

(4)

(ii)

Rainfall characteristics (Max. 2)	Impact on the landform feature (Max. 3)
- high annual rainfall (facilitates erosion/ weathering) (1) - heavy rain in summer/ rainfall concentrated in summer (facilitates erosion) (1) - high rainfall intensity (facilitates erosion) (1) - dry winter dries up soil (1)	- chemical weathering/ spheroidal weathering (1)* - facilitates erosion (1) - rainsplash (1) - stronger overland flow/ surface runoff / sheet wash (1) - deepen and widen the cracks (1) - more effective on sparse vegetation/ bare land (1) - forms steep-sided valleys/ gullies/ badlands (1)* - facilitates the formation of cracks in topsoil /soil (1)

(4)

*Award mark **once only** to this impact on the landform feature

(c) Relevant concepts:
interactions between physical settings and human activities
- construction of dams and reservoirs: changes in valley and river environment nearby
- designation of country parks: nature conservation, recreation, outdoor education
- afforestation: water and soil conservation
- outdoor activities: trampling/ other negative impacts on environment

Marking Criteria:

- Logical and well-elaborated explanation/ argument with reference to the information provided, demonstrating good knowledge and understanding of the effect of human activities on physical landscape - With appropriate judgement	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding of the effect of human activities on physical landscape, OR - Two or more appropriate explanations/ arguments demonstrating adequate knowledge and understanding	3
- An appropriate explanation/ argument demonstrating basic knowledge and understanding of the effect of human activities on physical landscape, OR - Two or more brief explanations/ arguments demonstrating basic knowledge and understanding	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of the effect of human activities on physical landscape	1

Max. 18

Question 2 **Marks**

(a) (i) Winter (1)

(ii)

Description (Max. 2)	Explanation (Max. 4)
- temperature decreases with increasing latitude / highest temperature near Equator (1)	low latitude in the northern hemisphere: -larger angle of insolation (1) -sunrays pass through a shorter distance in the atmosphere/ less solar energy is lost through absorption, scattering and reflection (1) - insolation is concentrated on a smaller area (1) - longer sunshine duration (1)
- lowest temperature in continental interior / Arctic circle (1)	- distance from the sea/ inland and coastal location (1) - different specific heat of land and sea/ greater loss of heat of land than sea (1)
- isotherms bend poleward over sea/ isotherms bend equatorward over land / temperature decreases from the ocean to the continental interior with same latitude (1)	

(6)

(b) (i)

	city A	city B	Description
wind direction	N (1)	NE/ NNE (1)	
wind speed (Max. 2)	2.5 m/s* (1)	5 m/s * (1)	- city A has lower wind speed/ city B has higher wind speed (1)

(3)

* no mark without unit

(ii)

wind direction (Max. 3)	- winter monsoon/ high pressure centre/ anticyclone is formed in the north/ continental interior (1) - wind blows from area of high pressure to area of low pressure (1) - wind moves out in clockwise direction from the high pressure centre (1) - winds deflect to the right in the northern hemisphere/ Coriolis force (1) - different location/ difference in latitude of cities A and B (1)
wind speed	- isobars around city A are widely spaced/ isobars around city B are closely spaced (1) - gentle pressure gradient at city A/ steep pressure gradient at city B (1)

(4)

(c)

Explanation: higher temperature in Hong Kong/ lower temperature in city B (Max. 3)
- southward movement of cold front/ passage of a cold front over city B/ cold front located to the north of Hong Kong (1) - cold air mass over city B* (1) - warm air over Hong Kong/ warm air near the coast of South China* (1)
Explanation: precipitation in Hong Kong (Max. 3)
- frontal rain in Hong Kong (1) - cold air mass over city B *(1) - warm air over Hong Kong/ near the coast of South China* (1) - cold/ dry air mass meets warm/ moist air (1) - uplifting warm air over Hong Kong/ warm air near the coast of South China (1) - air cools /condensation takes place (1)

(4)

* Mark awarded **once only**

Max. 18

Question 3 **Marks**

(a) (i) Comparison:

- both road length and number of passenger-carrying vehicles increased 1
- number of passenger-carrying vehicles increased faster than road length 1
- road length increased by 107 km/ 5.1% 1
- total number of vehicles increased by 185582/ 36.6% 1
- the largest share of the increase was from private cars 1(3)

(ii)

Advantages (Max. 2)	Explanation (Max. 2)
- the passenger-carrying capacity of public buses is larger (1) - about 24 times (1) - public buses take up much less road space than private cars (1) - about 1/8 (1) - uses designated routes (1)	- more efficient user of road space (1) - use of bus causes less congestion than large number of private cars (1) - favours the planning of road space use (1)

(3)

(b) Explanation:

- large increase in residential population / working population 1
- presence of different types of land uses 1
- increasing demand for public transport / goods transport 1
- large increase in traffic flow along the main road/ road X 1
- dense road network 1
- large number of road junctions/ presence of roundabouts 1
- queuing of large number of buses at bus stops causes congestion 1(5)

(c) Suggestion:

- reinforce traffic laws/ increase penalty 1
- eliminate illegal parking/ illegal cargo loading and unloading 1
- increase parking spaces/ cargo handling space 1
- restrict use of roads to special types of vehicles/ goods vehicles 1(3)

(d) Relevant concepts/ arguments:

Merits of BRT:

- priority for public buses (large number of bus routes using main roads)
- more efficient use of road space
- BRT buses operate at a faster speed
- take fewer resources to develop than rail systems

Limitations of BRT:

- reduces road space for other vehicles
- volume of / demand for road traffic not reduced
- restrictions on other vehicles at junctions between main road and other roads
- congestion problem shifts to other roads in the area

Marking criteria:

- Logical and well-elaborated explanation/ argument with reference to the information provided, demonstrating good knowledge and understanding of BRT - Sound discussion of the feasibility of developing BRT system in District A, including its merits and limitations - With appropriate judgement	4
- A detailed explanation/ argument with reference to the information provided, demonstrating adequate knowledge and understanding of BRT, OR - Two or more appropriate explanation(s)/ argument(s) demonstrating adequate knowledge and understanding of BRT, including its merits and limitations	3
- An appropriate explanation/ argument demonstrating basic knowledge and understanding of BRT, OR - Two or more brief explanation(s)/ argument(s) demonstrating basic knowledge and understanding of BRT	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of BRT	1

Max. 18

Question 4

Marks

(a) Description (Max. 2)

- reduction in cultivated land/ farmland/ agricultural land use 1
- high loss rate in the central part of Zhujiang delta/ Foshan 1
- e.g. Zhongshan/ Dongguan/ Guangzhou 1
- low rate of loss in the E/ NW 1
- e.g. Huizhou/ Zhaoqing 1

Explanation (Max. 3)

- more built-up areas 1
- higher level of industrialisation/ urbanisation 1
- cultivated land is converted to industrial/commercial/ other urban land uses 1
- higher accessibility in central ZDR/ Foshan 1(4)

(b)

Description	Explanation (Max. 3)
- the proportion of staple crops / rice production dropped significantly / the proportion of fruit and vegetable production increased significantly (1)	- increase in total highway length/ improvement in transport network/ higher accessibility (1) - allows more efficient transport of perishable crops (1) - increase in GDP per capita/ rise in income (1) - higher living standard/ increase in purchasing power for farm produce with higher prices (1) - increased demand for vegetables and fruit/ market gardening (1) - higher profit for vegetables and fruit/ lower profit for rice (1)

(4)

(c) (i)

- loss of cultivated land 1
- farm labour decreased 1
- lower income earned compared to other industries 1(2)

(ii)

- greenhouse farming/ a more controlled environment 1
- more intensive use of land/ higher productivity 1
- specialisation / flower planting 1
- higher level of automation/ less labour intensive 1
- agro-tourism/ leisure tourism 1
- provides extra income/ diversifies income sources/ markets 1
- higher market demand for horticultural produce/ higher prices 1(4)

(d) Relevant concepts:

- choice of crops: specific growing conditions of vegetables, fruit and rice
- economic incentives: scale of production, farm income, cost effectiveness (e.g. land rent), availability of capital
- government support: technical and financial assistance

Marking Criteria:

- Logical and well-elaborated explanation with reference to the information provided, demonstrating good knowledge and understanding of greenhouse technology - With appropriate judgement by referring to the human factors relevant to Foshan	4
- A sound explanation/ argument in greater detail with reference to the information provided, demonstrating adequate knowledge and understanding of greenhouse technology, OR - Two or more appropriate explanation(s)/ argument(s) demonstrating adequate knowledge and understanding	3
- An appropriate explanation/ argument demonstrating basic knowledge and understanding of greenhouse technology, OR - Two or more brief explanation(s)/ argument(s) demonstrating basic knowledge and understanding	2
- One brief explanation/ argument demonstrating elementary knowledge and understanding of greenhouse technology	1

Max. 18

Section E

Question 5

Account for the influence of rainfall on the occurrence of landslides in Hong Kong. Discuss the effectiveness of engineering measures in mitigating landslides caused by rainfall in Hong Kong.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

Marking Guidelines	
Account for the influence of rainfall on the occurrence of landslides in Hong Kong	
Relevant concepts: • hot and wet climate: chemical weathering, formation of thick weathering profile • heavy rain plays a key role in triggering landslides, increases slope instability (stress > strength) - high rainfall intensity, long rainfall duration, torrential rain in summer - reduces strength / resisting force of the slope: increased infiltration of rainwater in the slope, increased pore water pressure in the slope, decreased slope cohesion - increases stress / driving force of the slope: saturation of soil, increase in weight of slope - formation of slip surface	
Performance of Candidates	**Marks**
• Comprehensive knowledge and understanding of the formation of landslides and the influence of rainfall on the occurrence of landslides in Hong Kong • Accurate and detailed description and explanation of the influence of rainfall, especially heavy rain, on the occurrence of landslides in Hong Kong (reduced strength, increased stress) • Answers supported by appropriate Hong Kong examples or data	6
• Adequate to good knowledge and understanding of the formation of landslides and the influence of rainfall on the occurrence of landslides in Hong Kong • Appropriate description and explanation of the influence of rainfall on the occurrence of landslides in Hong Kong • Award higher marks to answers with more systematic and/ or more in-depth description and explanation; with Hong Kong examples and/ or data	3 – 5
• Elementary to basic knowledge and understanding of the influence of rainfall on the occurrence of landslides in Hong Kong • Brief/ general description and explanation	1 – 2
Discuss the effectiveness of engineering measures in mitigating landslides caused by rainfall in Hong Kong	
Relevant concepts/ arguments: • Effectiveness: - engineering measures e.g. drainage channels, weep holes, spraying concrete on slopes / shotcrete - functions of the engineering measures: reduce infiltration, drain away excess water on slopes, increase strength / resisting force, enhance slope stability - supporting engineering measures e.g. soil nails, retaining walls • Limitations: - cost-effectiveness; slope maintenance; natural factors e.g. nature and scale of the slopes • Other supporting measures e.g. inspection of slopes, restriction of development on slopes	
Performance of Candidates	**Marks**
• Comprehensive knowledge and understanding of measures for mitigating landslides caused by rainfall in Hong Kong • Systematic and logical discussion of the effectiveness of the engineering measures (measures in response to rainfall together with the use of related supporting engineering measures) in mitigating landslides caused by rainfall in Hong Kong • With appropriate judgement	6
• Adequate to good knowledge and understanding of the measures for mitigating landslides caused by rainfall in Hong Kong • Appropriate discussion of the effectiveness of the engineering measures for mitigating landslides	3 – 5

caused by rainfall in Hong Kong • Award higher marks to answers with more systematic and/ or more in-depth discussion and/ or from more than one argument	
• Elementary to basic knowledge and understanding of engineering measures for mitigating landslides caused by rainfall in Hong Kong • No/ irrelevant discussion of the effectiveness of engineering measures	1 – 2
	Max. 12

Question 6

Account for the physical factors leading to the occurrence of drought in North China. Discuss the effectiveness of the South-to-North Water Diversion Project as the solution to the drought problem in North China in the long run.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

Marking Guidelines	
Account for the physical factors leading to the occurrence of drought in North China	
Relevant concepts: • definition of drought: water shortage (water supply < water demand), prolonged dry period, abnormal dry weather • climate: - rainfall: variability of rainfall brought about by monsoons or weather systems, precipitation lower than normal - more distinct temperature changes e.g. frequent heat waves, high temperature, high evaporation • relief: rain shadow effect, mountain ranges block the east and southeast monsoon • location: distance from the sea, moderation effect of the sea, uneven distribution of freshwater resources	
Performance of Candidates	**Marks**
• Comprehensive knowledge and understanding of the definition of drought and physical factors leading to drought in North China • Systematic and logical description and explanation of the climatic and other physical factors leading to drought in North China • Answer illustrated with appropriate examples and/ or climate data	6
• Adequate to good knowledge and understanding of the definition of drought and physical factors leading to drought in North China • Appropriate description and explanation of the climatic and other physical factors leading to drought in North China • Award higher marks to answers with more systematic descriptions and/ or more in-depth explanations; with examples and/ or climate data	3 – 5
• Elementary to basic knowledge and understanding of the physical factors leading to drought in North China • Brief/ general description and explanation of the factors leading to drought in North China	1 – 2
Discuss the effectiveness of the South-to-North Water Diversion Project as the solution to the drought problem in North China in the long run	
Relevant concepts/ arguments: • Benefits of the Project - amount of water supply, reliability of water supply, water quality, water resource management • Challenges: human factors - water demand/ consumption in North China: population density; economic development - supply of water resources offset by human activities e.g. irrigation methods • Other supporting measures to reduce water demand e.g. water conservation	
Performance of Candidates	**Marks**
• Accurate and comprehensive knowledge and understanding of measures for solving the drought problem in North China • Coherent and logical discussion of the effectiveness of the South-to-North Water Diversion Project in solving the drought problem in North China in the long run, in relation to water supply and demand • With appropriate judgement and examples	6
• Adequate to good knowledge and understanding of measures for solving the drought problem in North China • Appropriate discussion of the effectiveness of the South-to-North Water Diversion Project in solving the drought problem in North China in the long run, in relation to water supply and/ or demand • Award higher marks to answers with more systematic and/ or more in-depth discussion; and/ or with examples	3 – 5
• Elementary to basic knowledge and understanding of the South-to-North Water Diversion Project • No/ Irrelevant discussion of the effectiveness of the project in solving the drought problems in North China	1 – 2
	Max. 12

Question 7

Describe the characteristics of transit-oriented development. Discuss the significance of transit-oriented development in affecting urban expansion in Hong Kong.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

Marking Guidelines	
Describe the characteristics of transit-oriented development	
Relevant concepts: • Setting up high quality mass transit system and stations • Mixed land use development - residential, commercial, institutional, recreational land uses in close proximity to stations • Compact development near transit stations, with density decreasing with distance from station • Development within walking distance of the station • Pedestrian- and bicycle-friendly design	
Performance of Candidates	**Marks**
• Comprehensive knowledge and understanding of the characteristics of transit-oriented development • Answer illustrated with appropriate examples	6
• Accurate to good knowledge and understanding of the characteristics of transit-oriented development • Award higher marks to answers with more systematic description	3 – 5
• Elementary to basic knowledge and understanding of the characteristics of transit-oriented development	1 – 2
Discuss the significance of transit-oriented development in affecting urban expansion in Hong Kong	
Relevant concepts: • Urban expansion in Hong Kong: vertical (high-rise buildings) and horizontal (New Town development, urban development along main transport arteries, low density housing development in suburban areas, brownfield sites) • Impact of transit-oriented development on urban development: - higher land rent at most accessible location - high-density / compact development - mixed commercial-residential development near mass transit stations - good accessibility near transit stations reduces need for road transport, slows down suburbanisation - enhanced sustainable living - enhanced mobility without cars • Other factors affecting urban expansion in Hong Kong: - New Town development (government planning) - demand for better housing quality / lower land rent in suburban areas - improved accessibility in suburbs (road and railway network development) - urban encroachment in the form of brownfield sites / storage facilities on former agricultural land	
Performance of Candidates	**Marks**
• Accurate and comprehensive knowledge and understanding of the significance of transit-oriented development on urban expansion in Hong Kong • Coherent and logical discussion of the significance of transit-oriented development and other factors affecting urban expansion in Hong Kong • With appropriate judgement	6
• Adequate to good knowledge and understanding of the significance of transit-oriented development for urban expansion Hong Kong • Appropriate discussion of the significance of transit-oriented development for urban expansion Hong Kong • Award higher marks to answers with more systematic and/ or more in-depth discussion	3 – 5
• Elementary to basic knowledge and understanding of the significance of transit-oriented development for urban expansion in Hong Kong • Brief description of the significance of transit-oriented development or other factors for urban expansion in Hong Kong	1 – 2
	Max. 12

Question 8

Account for the changes in land use pattern from rural-agricultural dominant to urban-industrial dominant in the Zhujiang Delta Region since the 1980s. Discuss the impact of urban-industrial dominant development on the environmental conditions in the region since 2000.

Notes:

1. Award appropriate marks according to the **QUALITY** and **DEPTH** of discussion; **do not** count the number of points **only**.
2. Max. marks should be given to good quality answers with **well-elaborated arguments** and demonstrating good knowledge of relevant geographical concepts.
3. Award appropriate marks to reasonable answers not included in this marking scheme.

<table>
<tr><th colspan="2">Marking Guidelines</th></tr>
<tr><td colspan="2">Account for the changes in land use pattern from rural-agricultural dominant to urban-industrial dominant in the Zhujiang Delta Region since the 1980s</td></tr>
<tr><td colspan="2">Relevant concepts/ arguments
• Land use changes: decline in agricultural land use, more urban, industrial and transport land uses, the emergence of villages-in-the city
• Spatial and temporal differences in land use changes:
– E-central ZDR VS W ZDR
– 1980s-2000 vs post 2000
– Land use changes: converted from traditional, low-value added industries to high-value added
• Relevant causes: industrialisation and urbanisation, better accessibility, more intense land use competition, expansion of towns and cities, emergence of city clusters and metropolises (e.g. Guangzhou-Foshan), government policy (e.g. redefining the administrative areas, establishment of high-tech industrial parks/ science parks, Emptying the Cage for New Birds policy etc.)</td></tr>
<tr><td>Performance of Candidates</td><td>Marks</td></tr>
<tr><td>• Comprehensive knowledge and understanding of land use changes in ZDR since the 1980s
• Systematic and logical description and explanation of land use changes in ZDR since the 1980s with reference to either spatial or temporal differences.</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of land use changes in ZDR since the 1980s
• Appropriate description and explanation of land use changes in ZDR since the 1980s
• Award higher marks to answers with more systematic and / or more in-depth description and explanation</td><td>3-5</td></tr>
<tr><td>• Elementary to basic knowledge and understanding of land use changes in ZDR since the 1980s
• Brief/ general description of and explanation for land use changes in ZDR since the 1980s</td><td>1-2</td></tr>
<tr><td colspan="2">Discuss the impact of urban-industrial dominant development on the environmental conditions in the region since 2000</td></tr>
<tr><td colspan="2">Relevant concepts/ arguments
• Industrial upgrading: change from traditional, low-value added industries to high-value added industries (i.e. release fewer pollutants, use cleaner energy, more capital to implement environmental protection policies/ green technologies in the production processes); very polluting industries closed down
• Impacts of urban development: increase in traffic flow, construction sites and building density, expansion of mass transit system
• Impact on environmental conditions: water, air, land
• Other factors: government policy, e.g. tightened environmental controls, use of cleaner energy, Emptying the Cage for New Birds policy etc.</td></tr>
<tr><td>Performance of Candidates</td><td>Marks</td></tr>
<tr><td>• Comprehensive knowledge and understanding of the post 2000 environmental conditions in ZDR
• Coherent and logical discussion of the changes in urban and industrial development affecting environmental conditions in ZDR since 2000
• With appropriate judgement</td><td>6</td></tr>
<tr><td>• Adequate to good knowledge and understanding of the post 2000 environmental conditions in ZDR
• Appropriate discussion of changes in urban and/ or industrial development affecting environmental conditions in ZDR since 2000
• Award higher marks to answers with more systematic and/ or more in-depth discussion</td><td>3-5</td></tr>
</table>

• Elementary to basic knowledge and understanding of post 2000 environmental conditions in ZDR • Brief explanation of the changes in land use affecting the environmental conditions in ZDR	1-2
	Max. 12