

Name: _____

Class: _____



JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2019

GEOGRAPHY
Higher 2

9751 / 01
September 2019

Paper 1 Structured Essay Questions

3 hours

Additional materials: Writing Paper
 World outline map (upon request)

READ THESE INSTRUCTIONS FIRST

Write your name and civics class 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 or correction fluid.

Answer **three** questions. **One** from each section.

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.

Diagram and sketch maps should be drawn whenever they serve to illustrate an answer.

The world outline map may be annotated and handed in with relevant answers.

You are reminded of the need for good English and clear presentation in your answers.

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.

This document consists of **3** printed pages and **1** blank page.

[Turn over]

Section A

Tropical Environments

Answer **one** question from this section

- 1 (a) Explain the weakening of the Walker Circulation in the Pacific region. [12]
- (b) To what extent are monsoonal winds the most dominant factor in influencing rainfall patterns in the tropics? [20]
- 2 (a) Explain the role of climate in influencing soil development in the tropics. [12]
- (b) To what extent is climate the most important factor in the formation of karst landscapes in the humid tropics? [20]

Section B

Development, Economy and Environment

Answer **one** question from this section

- 3 (a) Explain the factors that led to the emergence of a new international division of labour (NIDL). [12]
- (b) "Human Development Index (HDI) is the best indicator to measure development." [20]
How far do you agree with this statement?
- 4 (a) Explain the environmental impacts of extractive industries on countries at low levels of development. [12]
- (b) To what extent does the resource curse thesis hold true for countries that are resource rich? [20]

Section C

Sustainable Development

Answer **one** question from this section

- 5 (a) Explain the effects of the use of fossil fuels on the global carbon cycle. [12]
- (b) “International agreements is the most effective way to manage climate change.” To what extent do you agree with this statement? [20]
- 6 (a) Explain how the concept of *urban metabolism* is important in understanding sustainable urban development in cities of countries at varying levels of development. [12]
- (b) “The best strategy to manage non-hazardous solid waste in cities is reducing waste generation.” How far do you agree with this statement? [20]

End

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H2P1 Geography Suggested Mark Scheme

Level	Marks	Descriptors
4	10–12	Response is consistently analytical and comprises purposeful explanations. Response addresses the question fully using accurate and detailed knowledge. Depth of relevant knowledge and understanding is evident throughout. Response is coherent and use of terminology is accurate throughout.
3	7–9	Response is analytical and explanatory rather than descriptive. There is a clear focus on the question. Response demonstrates relevant knowledge and understanding. The response is coherent and the use of terminology is mostly accurate.
2	4–6	Response includes analysis and explanation but is generally dominated by description. Response reflects understanding of the question and is generally relevant. Some parts of the response may be unclear. Use of terminology is limited.
1	1–3	Response lacks focus on the question. Response is generally fragmentary and lacks a clear structure and organisation. There may be many unsupported, brief or incomplete assertions and/or arguments with some inaccurate use of terminology.
0	0	No creditworthy response.

Note: The assessment involves qualitative rather than quantitative evaluation. Judgements on the level to be awarded to an answer will be based on the principle of 'best fit' determined by the descriptors within each level.

Level	Marks	Descriptors
5	17–20	Response is perceptive, logical and has strong evaluative elements. Evaluation is relevant and comprehensive. Strong evidence of synoptic thinking where knowledge from different topics is synthesised purposefully. Response fully addresses the demands of the question and features detailed and accurate knowledge reflecting depth of understanding of the subject content. The argument or discussion is coherent and well supported by relevant material. Use of terminology is accurate.
4	13–16	Response displays a sound evaluative element. There is some evidence of synoptic thinking through synthesising knowledge from different topics. Response is generally focussed on the demands of the question and features accurate knowledge, reflecting depth of understanding of the subject content. The argument or discussion is coherent and supported by relevant material. Use of terminology is accurate and appropriate.
3	9–12	Response is broadly evaluative rather than descriptive. Response addresses the question and features accurate knowledge, reflecting some understanding of the subject content. Argument or discussion is mainly coherent and supported by material which is largely relevant. Use of terminology is relevant and mostly accurate.
2	5–8	Response is largely descriptive. Response attempts to provide an argument to address the question. The weakest responses in this level may lack balance and/or depth. Response structure is broadly coherent but may lack clarity. Some lapses in use of terminology though generally accurate.
1	1–4	Response lacks focus on the question and may be largely irrelevant to it. Response is fragmentary and lacks clarity. There may also be unsupported assertions and/or arguments with limited or no use of relevant terminology.
0	0	No creditworthy response.

Note: The assessment involves qualitative rather than quantitative evaluation. Judgements on the level to be awarded to an answer will be based on the principle of 'best fit' determined by the descriptors within each level.

Section A (Tropical Environments)

- 1 (a) Explain the weakening of the Walker Circulation in the Pacific region. [12]**

Indicative content:

Candidates should explain the how the weakening of the Walker Circulation is resulted. Responses should explain how atmospheric circulation affects oceanic circulation thus resulting in the Walker Circulation.

A higher level of response would supplement answer with well-annotated diagrams of Walker Circulation and El Nino (weakening of Walker Circulation) to support the explanation. Candidates could also analyse how the weakening of Walker Circulation affects location spatially and its effects varies temporally.

- (b) To what extent are monsoonal winds the most dominant factor in influencing rainfall patterns in the tropics? [20]**

Indicative content:

Explanation to rainfall patterns in the tropics should focus on factors at different scales. Global or macro-scale factors such as ITCZ and STHP with reference to Hadley cells. Regional or meso-scale factors such as monsoonal winds and El Nino (episodic atmospheric event). Localised factors such as maritime/coastal locations, topography and tropical cyclones (episodic phenomenon).

A higher response would consider multiple factors and how the different factors affects climate at different scales. Students should take a stand that generally global factors play a more important predominant role than localised factors which play the supporting but significant roles. Perspective on temporal aspect could also be an influential factor on rainfall pattern in the tropics i.e. less permanent or temporary or episodic events or factors do not have a lasting influence on the rainfall pattern.

- 2 (a) Explain the role of climate in influencing soil development in the tropics. [12]**

Indicative content:

Candidates should demonstrate an understanding of the impacts of climate on the soil profiles of humid tropics and arid tropics. Answer will need to make clear links to explain how climate can result in the different aspect of the soil profile (e.g. thickness, colour) of both humid and arid tropics. Important processes such as laterisation and calcification/salinization have to be linked to the influence of climate.

A high level response will acknowledge the spatial variations in the soil profiles, where climate play a more significant role with its global scale of influence.

- (b) To what extent is climate the most important factor in the formation of karst landscapes in the humid tropics? [20]**

Indicative Content

Karst landscapes in the humid tropics have characteristic surface and sub surface morphology as a result of the interaction between water and geology. Candidates should demonstrate the movement of both surface water (rivers) and sub-surface river and water and the dissolution processes of the rock type (limestone or dolomites) and rock structure. A variety of surface landforms such as cone, tower and isolated karst and surface landforms such as cave and speleothems could be used to illustrate the movement of water affect the geology or vice versa. Other factors that could influence the karst landforms could be tectonic uplift, vegetation and time.

A higher level response should demonstrate the differential erosion by water on the soluble rock guided by secondary permeability of the rock structure. This is evident through the varied landforms found in the landscapes. Evidence of the varied landscapes can be seen. The counter argument to the statement could examine the presence of other factors such as tectonic uplift in changing the dynamic of solution processes to enhance the forms of the landforms over time. Reference to concrete examples of karst landscapes in Guilin, China or Vietnam and Malaysia should be credited.

Section B (Development, Economy and Environment)

- 3 (a) Explain the factors that led to the emergence of a new international division of labour (NIDL). [12]**

Indicative content:

Candidates should explain factors that led to the emergence of NIDL. The underlying development of the NIDL is the primary desire of firms to maximise profits that governs any factor that allows the firms seek to either lower costs or increase revenue. The factors that have led to the emergence of NIDL relate to technology, comparative advantage and actions by actors such as TNCs, states and supranational organisations.

A higher level response would analyse that the NIDL are dynamic nature, giving rise to different spatial configurations of labour over time.

- (b) “Human Development Index (HDI) is the best indicator to measure development.” How far do you agree with this statement? [20]**

Indicative Content:

Responses should include a discussion of the usefulness and limitations of HDI in measuring development comprehensively or holistically. Candidates could highlight the usefulness of HDI in terms multi-dimensionality and comparability between countries. There is also a need to discuss other indicators such as MPI, MDGs and SDGs to show how they may be better (or not) than HDI in being the best or better indicator.

A higher level response could comprise the evaluation of 3 or more indicators in terms of being 'best' in measuring development using appropriate criteria.

- 4 (a) Explain the environmental impacts of extractive industries on countries at low levels of development. [12]

Indicative Content:

Candidates should explain possible environmental impacts of extractive industries. Discussions of the environmental impacts of extractive industries can include impacts on ecosystem and habitat destruction, geomorphological changes to the surrounding landscapes, as well as pollution problems associated with inappropriate surface disposal of waste rocks or 'tailings'. Explanation should include details of these impacts and why these impacts would occur, particularly in the context of LDCs.

A higher level response would include a well-elaborated case studies situated in LDCs to elaborate on identified impacts of extractive industries. Candidate could also examine the degree of impacts on countries with low level of development is dependent on the nature of stakeholder.

- (b) To what extent does the resource curse thesis hold true for countries that are resource rich? [20]

Indicative Content

Candidates should discuss the conditions of resource rich countries that causes them to be susceptible to the resource curse thesis. The discussion should also include a recognition that the resource curse thesis would not apply to all resource rich countries, as countries that have managed to diversify its economy, or limit economic leakages are able to avoid the resource curse. Arguments should be well exemplified throughout.

A higher level response would be to discuss the underlying conditions (e.g. existing political climate/direction) that causes resource rich countries to fall under the resource curse.

Section C (Sustainable Development)

- 5 (a) Explain the effects of the use of fossil fuels on the global carbon cycle. [12]**

Indicative content

Candidates should demonstrate an understanding of the impact of the use of fossil fuels on the global carbon cycle. Answer will need to make clear links to explain how fossil fuel combustion can impact the different aspects of global carbon cycle. Important processes of how use of fossil fuels intensify the amount of carbon in the atmosphere and how the various carbon sinks are affected via positive feedback loops.

A higher level response will acknowledge the spatial variation in anthropogenic activities that impact the carbon cycle OR the impact on carbon cycle in the temporal scale.

- (b) “International agreements is the most effective way to manage climate change.” To what extent do you agree with this statement? [20]**

Indicative content:

Candidates to show understanding of the various strategies to manage climate change at the different levels: global, regional and local scales. There is a need to address international agreements as it is the given content in the question and discuss the relevance and limitation of the strategy and evaluate its importance at the global platform.

Higher level responses should look at other strategies at varying scales to have an integrated approach to manage climate change.

- 6 (a) Explain how the concept of *urban metabolism* is important in understanding sustainable urban development in cities of countries at varying levels of development. [12]**

Indicative content

Candidates should be able to explain the concept of urban metabolism; the characteristics of both linear and circular urban metabolism and the idea of it being linear and circular is linked to the cities' achieving SUD.

A higher level response will offer detailed examples of how cities in varying levels of development are doing waste management hence differ in urban metabolism.

- (b) “The best strategy to manage non-hazardous solid waste in cities is reducing waste generation.” How far do you agree with this statement? [20]**

Indicative content:

Candidates should be able to develop an argument related to the view presented in the question and use BPs to support the argument rather than to evaluate strategies alone. Answers should draw on cities at different levels of development to analyse the effectiveness of strategies. Reference should be drawn to context of cities to depict why reducing waste generation is a central concern in achieving sustainability; i.e. achieving circular urban metabolism.

A higher level response would look at the spatial variations when managing waste sustainably and challenges faced as cities at different levels of development are likely to face differing issues/concerns.

End

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JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2019

GEOGRAPHY Higher 2

9751 / 02

September 2019

Paper 2 Data Response Questions

3 hours

Additional materials: Writing Paper
 1 Insert
 World outline map (upon request)

READ THESE INSTRUCTIONS FIRST

Write your name and civics class 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 or correction fluid.

Answer **ALL** the questions.

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.
Diagram and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

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.

This document consists of 4 printed pages.

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Section A

Theme 4: Geographical Investigation

- 1 A team of 12 students were tasked to carry out a geographical investigation on two contrasting sites along Kallang River to ascertain the flood risk in these locations.

The team decided to focus their investigation on river discharge in differing land use in influencing flood risk. The team was divided into two groups of six to measure river velocity and cross-sectional area of each site. Site A was in a nature reserve. Site B was in an urban residential neighbourhood.

The team took measurements on two consecutive Saturdays in September and were given 4 hours between 10 a.m. and 2 p.m. at each site to complete the river velocity and cross-sectional area measurements. Discharge is calculated by multiplying the cross-sectional area of the channel by the velocity of the water.

Each group was each given the following equipment to gather the primary data on river velocity (see Resource 3):

- Oranges (floating object)
- Tape measure
- Stop watch

Whilst measuring river velocity at Site A, the group found that the floating object often became stuck in fallen trees or debris in the river. The data collected was recorded using a data collection sheet (see Resource 4).

To measure the river's cross-sectional area, the group used the following equipment:

- Tape measure
- Ranging poles
- Meter rulers

Resource 1 shows land use in drainage basins associated with Sites A and B. Resource 2 shows two photographs, Site A in a nature reserve and Site B in an urban neighbourhood. Resource 3 shows students measuring river velocity and cross-sectional area. Resource 4 shows the data collected by the team to calculate the river velocity along the channels at Sites A and B.

- (a) With reference to Resource 1, suggest a suitable hypothesis for the investigation. [1]
- (b) Explain how the team would minimise the impact of the investigation differently at the two sites shown in Resource 2. [5]
- (c) Describe how the team can collect data on cross-sectional area at Site B as shown in Resource 3. [4]
- (d) The team concluded that the discharge data collected may not be completely reliable and/or accurate. Explain how the process of data collection could be improved. [6]
- (e) Evaluate the usefulness of the river velocity data shown in Resource 4 in helping to ascertain the flood risk at each of the two sites. [9]

Section B

Theme 1: Tropical Environments

2 Ganges and Brahmaputra River Basins in South Asia

Resource 5 shows a map of the Ganges and Brahmaputra River Basins in India and Bangladesh. Resource 6 shows a map of rivers in Asia, including Ganges River and Brahmaputra River, and the annual run-off from each source (rainfall, meltwater from snow and ice, and groundwater). Resource 7 shows a section of the Brahmaputra River in the upper course in Assam and Resource 8 shows a section of the Ganges River in the lower course in India.

- (a) With reference to Resource 6, compare the contribution of different sources to the annual run-off between the Ganges River and the Brahmaputra River. [3]
- (b) With reference to Resources 5 and 6, explain possible reasons for the variation in rainfall runoff between the Ganges River Basin and the Brahmaputra River Basin. [5]
- (c) Describe the channel characteristics of the Brahmaputra River and the Ganges River as seen in Resources 7 and 8. [4]
- (d) Explain **two** possible reasons that can account for the formation of mid channel bars as seen in Resource 7. [4]
- (e) Using Resources 6, 8 and your own knowledge, evaluate the factors affecting the channel pattern as seen in Resource 8. [9]

Theme 2: Development, Economy and Environment

3 Apple Inc.'s Global Production Network (GPN)

Apple Inc. is a transnational corporation (TNC) which operates globally via its extensive production network. Resource 9 shows the global production network of Apple Inc. in 2019. Resource 10 is a Factfile about Brazil. Resource 11 shows the share of global mining production of battery components (lithium, cobalt, nickel, manganese and graphite) for the year 2016.

- (a) With reference to Resource 9, describe the spatial distribution of Apple Inc.'s final assembly locations and component suppliers. [4]
- (b) As shown in Resource 9, explain possible reasons for the location of Apple Inc.'s Research and Development (R&D) centres. [5]
- (c) Explain the variation in the distribution of retail stores between US and China as shown in Resource 9. [5]
- (d) Using evidence from Resources 9 and 10, suggest **two** reasons why Apple continued its assembly facility in Brazil in 2018. [4]
- (e) Using Resources 9, 11 and your own knowledge, explain the possible impacts on D.R. Congo as a result of Apple Inc.'s Global Production Network (GPN). [7]

Theme 3: Sustainable Development

4

Urban Reimaging in Swansea (United Kingdom)

Resource 12 shows the Swansea Dock area in the United Kingdom before and after urban renewal. Resource 13 shows future plans for St David's Shopping Centre, located in Swansea Central. Resource 14 shows the possible development proposals for Area X shown in Resource 12.

- (a) Describe the changes in landuse patterns in Resource 12 before and after urban renewal in the Swansea Dock area. [3]
- (b) With reference to Resource 12, explain the possible reasons for changes to distribution of residential areas in the Swansea Dock area. [5]
- (c) Account for the particular strategy of urban reimaging as seen in Resource 13. [5]
- (d) Imagine you are the chief planning officer for Swansea Dock Area tasked to decide between Proposals 1 and 2 for the development of the area marked X as shown in Resource 12. Using Resources 12 and 14, explain your considerations for the choice of your proposal. [6]
- (e) With reference to Resources 12 and 13 and your own knowledge, explain how changes in the landuse patterns in the Swansea Dock Area can improve liveability for the residents. [6]

End

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JURONG PIONEER JUNIOR COLLEGE

JC2 Preliminary Examination 2019

GEOGRAPHY
Higher 2

Paper 2 Data Response Questions

INSERT

9751 / 02

September 2019

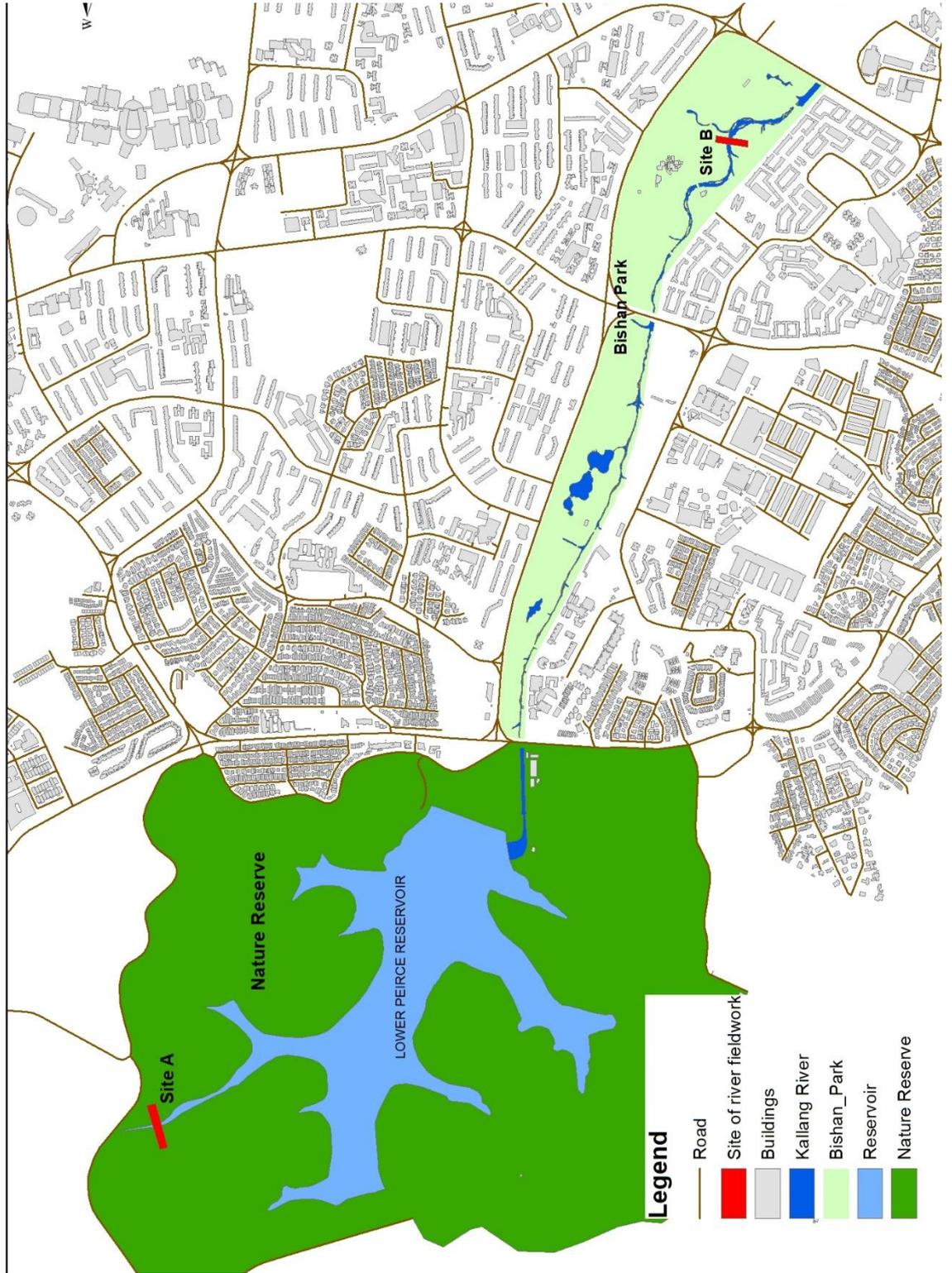
3 hours

READ THESE INSTRUCTIONS FIRST

This insert contains all the Resources referred to in the questions.

This document consists of **10** printed pages.

[Turn over]





Site B



Resource 3 for Question 1

Students measuring river velocity and cross-sectional area at Site B

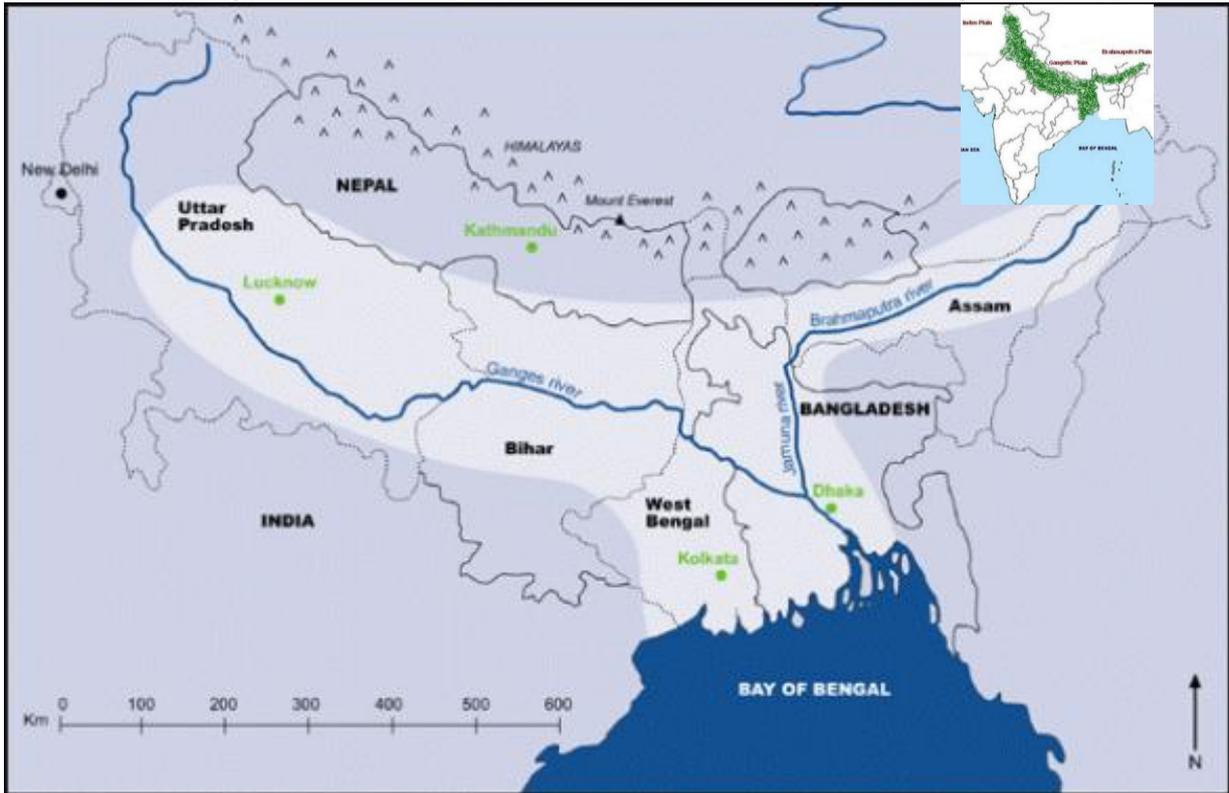


Resource 4 for Question 1

Data collected for river velocity of Sites A and B

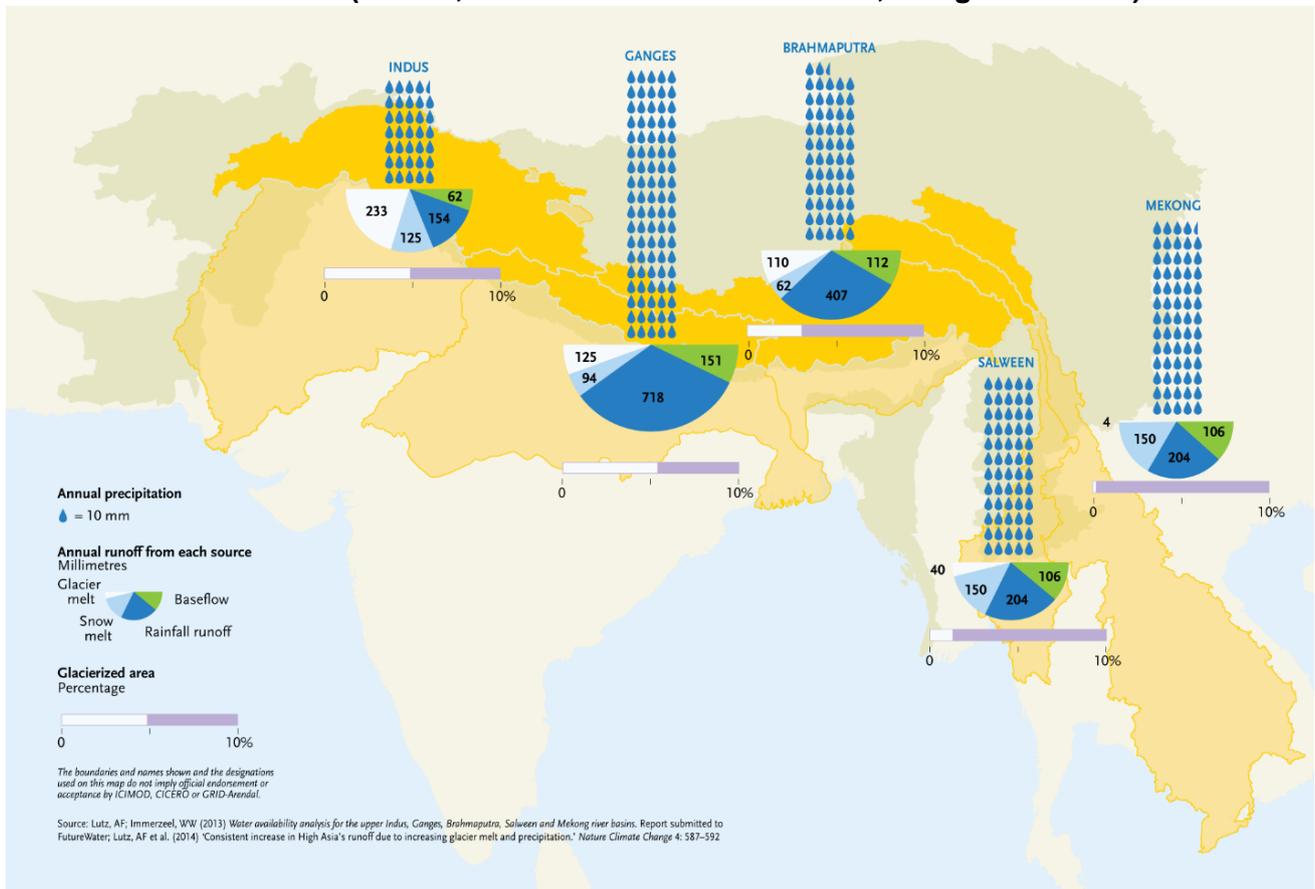
Site A – Velocity (m/s)					Site B – Velocity (m/s)			
Time	1 st Reading	2 nd Reading	3 rd Reading	Average Reading	1 st Reading	2 nd Reading	3 rd Reading	Average Reading
10:00	0.42	0.48	0.46	0.45	0.36	0.40	0.45	0.40
11:00	0.50	0.50	0.48	0.49	0.52	0.58	0.56	0.55
12:00	0.56	0.58	0.55	0.56	0.62	0.63	0.66	0.67
13:00	0.53	0.52	0.54	0.53	0.51	0.53	0.56	0.53
14:00	0.48	0.46	0.45	0.46	0.48	0.49	0.50	0.49

Resource 5 for Question 2
Ganges and Brahmaputra River Basins in India and Bangladesh



Resource 6 for Question 2

Map of rivers in Asia, including Ganges and Brahmaputra Rivers, and the annual run-off from each source (rainfall, meltwater from snow and ice, and groundwater).



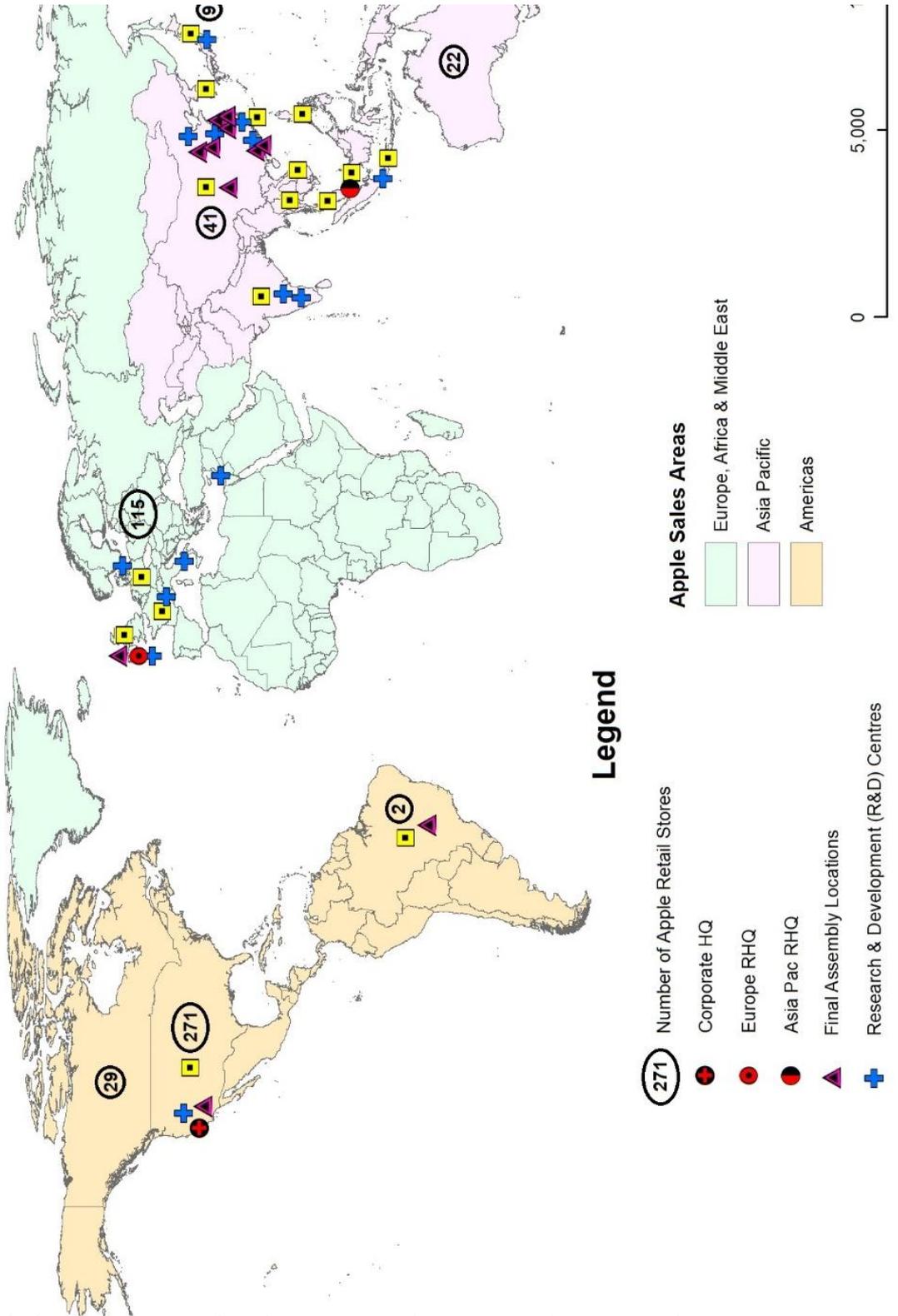
Resource 7 for Question 2
A section of the Brahmaputra River at the upper course in Assam



Resource 8 for Question 2
A section of the Ganges River at the lower course in India

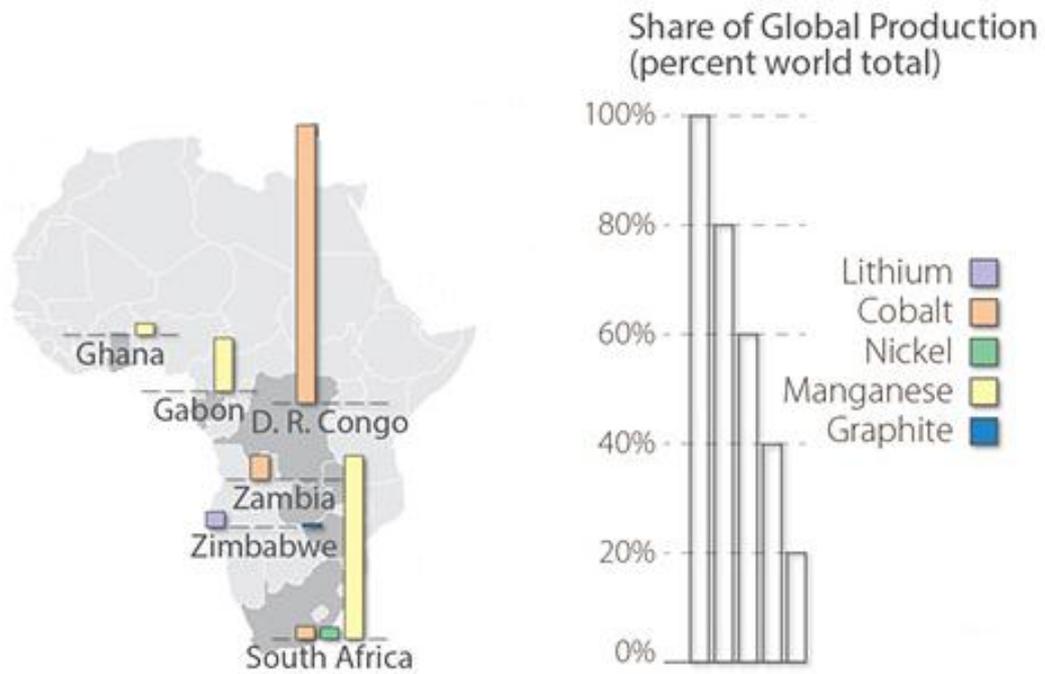


Year			
Tota			
Rate of natural increase (%)	2.9	1.1	0.9
GDP per person (US\$)	4,739	10,978	8,968
Employment in industry (%)	13.2	17.4	20.4



Resource 11 for Question 3

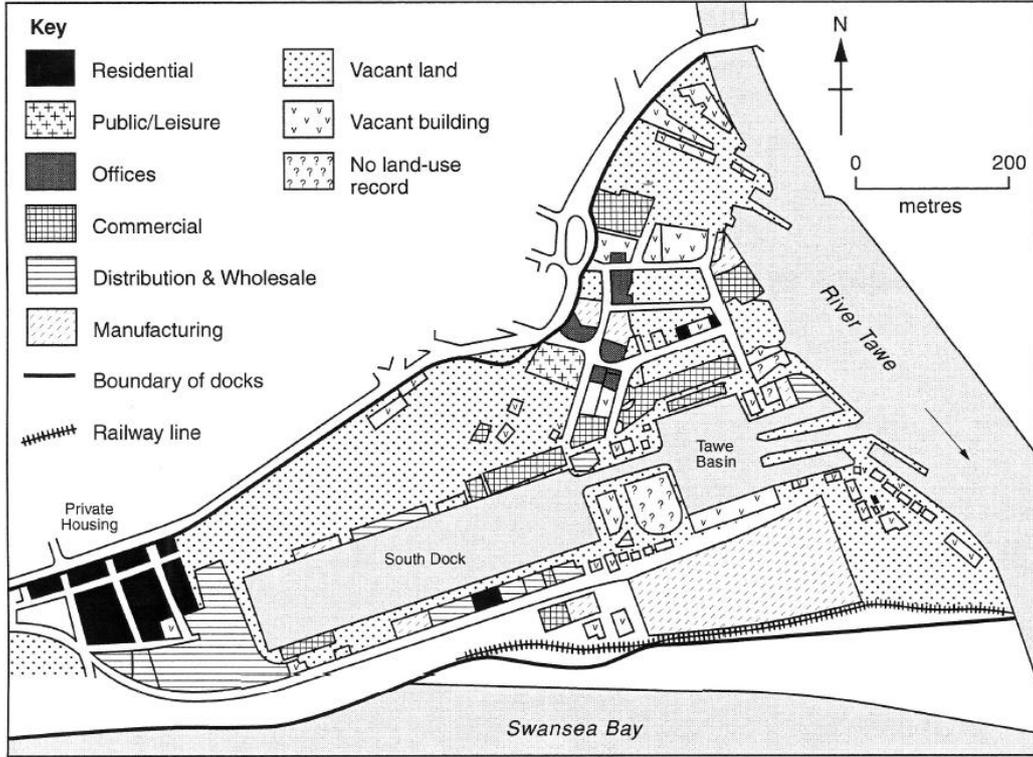
Share of Global Mining Production of Battery Components, 2016



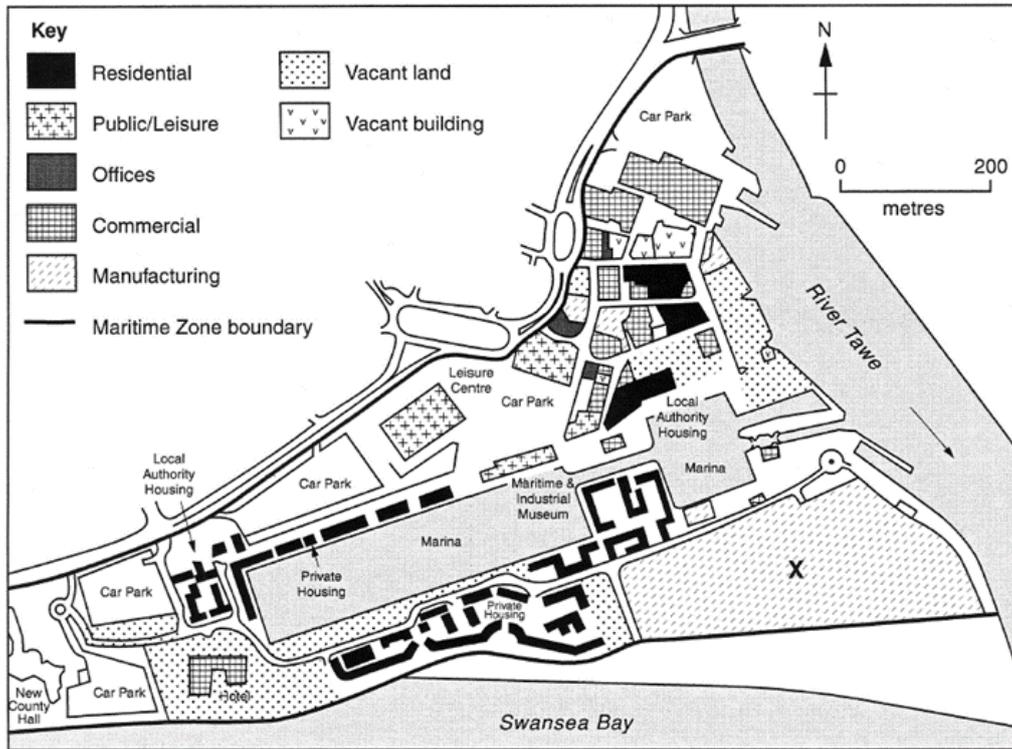
Note: Lithium-ion batteries used in smartphones comprise minerals such as cobalt, nickel, manganese or graphite.

Resource 12 for Question 4

Swansea Dock Area in the United Kingdom before and after urban renewal



Before urban renewal



After urban renewal

(Note: Local Authority Housing is public housing)

Resource 13 for Question 4

Plan for St David's Shopping Centre located in Swansea Central



Plans for the St David's Shopping Centre, which is going to be one of the landmarks for Swansea Central by the Swansea Council. The plans for the north site include seven buildings - the tallest just seven storeys - and a maximum floor space of 84,050m² made up of shops, offices, residential and leisure space. The south site plans feature a hotel or residential building of up to 13-storeys in height, and a new arena of up to 40,700m².

Resource 14 for Question 4

Possible development proposals for Area X in Resource 1

Proposal 1 24-hour City Concept	Proposal 2 Cultural Heritage Centre
<ul style="list-style-type: none"> • Mainly a food and beverage (F&B) area infused with pubs and cafes • The existing manufacturing buildings can be renovated and reimaged to be a hip café area in the daytime and exciting night life area with pubs. 	<ul style="list-style-type: none"> • An exhibition of the cultural heritage of Swansea Dock Area • Green open space, landscaping with trees, grass and seating • Recreation and play area

End

1 (a) With reference to Resource 1, suggest a suitable hypothesis for the investigation. [1]

Award 1 mark for any testable and sensible hypothesis related to flood risk associated with nature of channels.

Possible responses include:

- River Site B has a higher flood risk than River Site A.
- An area with a higher proportion of vegetation (Site A) is less prone to flooding than an area with lower proportion of vegetation (Site B).

Point Marked

(b) Explain how the team would minimise the impact of the investigation differently at the two sites shown in Resource 2. [5]

Indicative Content:

- Do not leave litter – River B student could suggest using litter bins; River A student could suggest bagging litters and taking it away with them.
- Avoid unnecessary damage to trees and plants such as cutting down overhanging branches at River A.
- Avoid unnecessary disturbance to wildlife at River A such as disturbance of riverside nesting sites, river banks and the river channel itself.
- Avoid making excessive noise at River B due to close proximity to residents

Levels Marked

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of geographical investigation methods and potential damage they might cause at both sites with a thorough explanation of strategies used to alleviate these. Reflects a good understanding of the context of the investigation and of work in the field.
2	3 – 4	Response demonstrates good knowledge of geographical investigation methods and their potential damage to the fieldwork sites. Provides an explanation of ways to minimise this damage, which may be limited in depth and detail or apply mostly to only one site. Some of the response may address generic fieldwork problems not relevant to the context of the investigation.
1	1 – 2	Response shows some knowledge of relevant geographical investigation methods and the ways in which they may cause damage at the two fieldwork sites. Strategies mentioned in the response may be generic to fieldwork but of limited relevance to the given context.
0	0	No creditworthy response.

(c) Describe how the team can collect data on cross sectional area ~~wetted perimeter~~ [4]

at Site B as shown in Resource 3.

To measure cross-sectional area:

- Firstly, **measure the width** of the River at Site B (Resource 3) of the cross-section perpendicular to the main flow direction with a tape measure. Anchor both ends of the tape on the opposite banks using ranging poles so that the tape is suspended about 30cm above the water.
- Secondly, decide on the number of points where readings would be taken from at that cross-section. Divide the cross-section into equal distance (though not necessary) for **sample points** for easy measurement.
- Thirdly, **measure the channel depth** at each sample point by using a ranging pole or meter rule starting from one side of the bank to the other. Plot the height of the water in the river on a graph paper.
- From the plotted graph, find the average depth. This is the sum of all the dept readings divided by the number of readings (n) plus 1. To **calculate the cross-sectional area**, multiply the average depth with the total width.

(d) The team concluded that the discharge data collected may not be completely [6] reliable and/or accurate. Explain how the process of data collection could be improved.

Indicative Content

- Due to frequent obstruction by debris in the river and of float being stuck in fallen trees, repeated measurements and taking averages can reduce the margin of error.
- With depth measurements ensure that the tape measure is weighted so that it sinks in to just touch the river bed and take care to record any anomalies in depth caused by irregularities in the river bed.
- Students' position by the river may change due to movements and hence is not an accurate way of determining the start and end points for the floating object. students could fix the start and finish lines using tape measures to help to minimise errors

Levels Marked

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of river discharge data collection methods, issues with both accuracy and/or reliability of these and relevant improvements. Reflects a good understanding of the context of the investigation and of data collection techniques.
2	3 – 4	Response demonstrates good knowledge of river discharge data collection methods. Provides an explanation of issues relating to reliability and/or accuracy with some reference to possible improvements. Description may be limited in depth and detail or apply mostly to only one set of measurements (i.e. velocity) without referring to wetted perimeter/depth. Some of the response may focus on generic river fieldwork issues and improvements and not be relevant to the context of the investigation.
1	1 – 2	Response shows some knowledge of relevant data collection methods. Some reference is made to issues with accuracy and reliability but may recommend inappropriate or irrelevant improvements or provide incorrect explanation of methods. Response may be of limited relevance to the given context.
0	0	No creditworthy response.

- (e) Evaluate the usefulness of the river velocity data shown in Resource 4 in helping to ascertain the flood risk at each of the two sites. [9]

Indicative Content

Usefulness points could include the fact that the data gives some idea of river response to rainfall event. They could also include the relative difference in response between River Site A and River Site B. Response could also recognise that there are limitations related to the methods involved in the collection of velocity data.

A higher level response will present evaluation of usefulness of resource and of knowledge of river velocity measurements as well as a detailed discussion of other information that is useful in being able to assess flood risk.

Levels marked using H2 generic level descriptors for 9m open-ended DRQ for Theme 4

Level	Marks	Descriptors
3	7 – 9	Response demonstrates accurate knowledge and understanding of geographical investigation skills and methods relevant to the given context. Provides a logical and well-developed evaluation, which may include perceptive insights for the strongest responses. Reflects strong critical thinking skills and a good understanding of the requirements of the question.
2	4 – 6	Response demonstrates good knowledge and understanding of geographical investigation skills and methods relevant to the given context. Provides an evaluation, which may be limited in depth and detail. Response reflects critical thinking skills in general but may not always be relevant to the question.
1	1 – 3	Response shows inadequate knowledge and understanding of geographical investigation skills and methods relevant. Response has some, though limited, relevance to the given context. Provides little or no evaluation. May include material that is irrelevant to the question.
0	0	No creditworthy response

Ganges and Brahmaputra River Basins in South Asia

Resource 5 shows a map of the Ganges and Brahmaputra River Basins in India and Bangladesh. Resource 6 shows a map of rivers in Asia, including Ganges River and Brahmaputra River, and the annual run-off from each source (rainfall, meltwater from snow and ice, and groundwater). Resource 7 shows a section of the Brahmaputra River in the upper course in Assam and Resource 8 shows a section of the Ganges River in the lower course in India.

- (a) With reference to Resource 6, compare the contribution of different sources to the annual run-off between the Ganges River and the Brahmaputra River. [3]**

Possible responses include:

- The source with the largest difference is rainfall runoff: 718mm in Ganges vs 407mm in Brahmaputra
- Both snowmelt and baseflow are similar in variations
- The source with the smallest difference (can be a similarity) is glacier melt: 125mm in Ganges vs 110mm in Brahmaputra

Point marked.

- (b) With reference to Resources 5 and 6, explain possible reasons for the variation in rainfall runoff between the Ganges River Basin and the Brahmaputra River Basin. [5]**

Indicative content

- Responses to consider both natural and human factors that result in the variation in rainfall runoff with 718mm in Ganges vs 407mm in Brahmaputra. Reasons should include natural reasons such as amount/intensity of rainfall received in both regions and human factor such as different land-use in both regions that can cause rainfall runoff to differ.
- A higher level response would explain the reasons with reference to the context of Ganges and Brahmaputra River Basin.

Levels marked.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of the possible reasons that can account for the variation in rainfall runoff. Explanation is detailed, thorough and relevant. Reference made to resources in response.
2	3-4	Response demonstrates adequate knowledge of the possible reasons that can account for the variation in rainfall runoff. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible reasons that can account for the variation in rainfall runoff. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

- (c) Describe the channel characteristics of the Brahmaputra River and the Ganges River as seen in Resources 7 and 8. [4]**

Possible responses include:

- Res 7 shows a braided river that is wide, relatively straight, multi thread with many mid-channel bars.
- Res 8 shows a meandering river that has sinuosity index more than 1.5, single thread, wide.

Point marked. Award 1m for each description for braided and meandering rivers.

(d) Explain two possible reasons that can account for the formation of mid channel bars as seen in Resource 7. [4]

Possible responses include:

- Responses to explain factors that can account for the formation of mid-channel bars when the river is having low level of discharge. Possible reasons include seasonal rainfall/discharge, bank erodibility, availability of coarse sediment load.

Award 2m for 1 well-explained reason.

(e) Using Resources 6, 8 and your own knowledge, evaluate the factors affecting the channel pattern as seen in Resource 8. [9]

Indicative content

- Candidates should weigh the factors such as climate, discharge, sediment load in influencing the formation of meandering river as seen in Resource 8.
- Resource 6 shows that Ganges river receive 900mm annual precipitation and 1088mm runoff annually from various sources. This suggests that the area is considered humid tropics that can result in the Ganges River having high level of discharge.
- Higher level response would weigh the factors according to scale.

Level	Marks	Descriptors
3	7-9	<p>Response demonstrates a clear knowledge and understanding of the context in the question. Uses relevant, detailed and accurate factual information and conceptual understanding. Reflects strong critical thinking skills and may include perceptive insights for the strongest responses. Source (s) is well used to support the response.</p> <p>Provides a logical and well-developed evaluation well founded on evidence and/or different viewpoints.</p> <p>OR</p> <p>Makes a decision which clearly addresses different elements of the issue and/or interest of different stakeholders.</p>
2	4-6	<p>A satisfactory response which is generally sound and contains relevant points, but may not always focus on the context in the question. Uses factual information and conceptual understanding that is generally appropriate to the given context but lacks details and may contain some inaccuracies. Displays general critical thinking skills. Source (s) is used to support parts of the response.</p> <p>Provides an evaluation, which may be limited in depth and sufficient elaboration in some parts.</p> <p>OR</p> <p>Shows some attempt to address different elements of the issue and/or views of different stakeholders when making a decision but is not well-developed.</p>
1	1-3	<p>Response shows a poor understanding of the context in the question. Uses basic factual information and conceptual understanding which has some, but limited relevance to the question. Source (s) is not used or not accurately used to support the response.</p> <p>Provides little or no evaluation.</p> <p>OR</p> <p>Evidence of decision-making, if present is simple and may be flawed.</p>
0	0	No creditworthy response.

3

Apple Inc.'s Global Production Network (GPN)

Apple Inc. is a transnational corporation (TNC) which operates globally via its extensive production network. Resource 9 shows the global production network of Apple Inc. in 2019. Resource 10 is a Factfile about Brazil. Resource 11 shows the share of global mining production of battery components (lithium, cobalt, nickel, manganese and graphite) for the year 2016.

(a) With reference to Resource 9, describe the spatial distribution of Apple Inc.'s final assembly locations and component suppliers. [4]

- The final assembly locations can be found in every world-region: 2 in Americas, 1 in Europe, Africa & Middle East and 8 in Asia Pacific.
- The greatest concentration of Apple Inc.'s final assembly locations is found in China with a total of 8.
- Similarly, component suppliers of Apple Inc. can be found in every world-region: 2 in Americas, 3 in Europe, Africa & Middle East and 11 in Asia Pacific.
- The greatest concentration of component suppliers is found in the Southeast Asia with a total of 6.
- No component suppliers and final assembly locations are found in Africa, Russia and Australia.

Point marked (1m for each point)

(b) As shown in Resource 9, explain possible reasons for the location of Apple Inc.'s Research and Development (R&D) centres. [5]

Possible responses for reasons of Apple Inc.'s R&D centres include:

- Access to highly skilled labour – applied to most centres particularly DCs and relatively lower cost high-skilled labour in LDCs (India, Indonesia, China)
- Proximity to other R&D centres and related industries/support services or tie-ins with local universities.
- Customisation for regional consumer markets. – applied to most centres especially LDCs such as Indonesia, China and India.

Data from Resource 9 should be used where appropriate to support responses.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of the factors influencing Apple Inc's R&D location. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the factors influencing Apple Inc's R&D location. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the factors influencing Apple Inc's R&D location. Explanation lacks detail. Overall the response does not address the context of the question. No reference made to resource.
0	0	No creditworthy response

(c) Explain the variation in the distribution of retail stores between US and China as shown in Resource 9. [5]

Possible reasons for the variation can include:

- Large customer market / base in the US

- Consumers are very affluent in purchasing 'upscale' and expensive Apple products
- US has very good relationship with its US consumers – Apple's notable brand loyalty among its US consumers is very high
- Apple Inc's in the US has very few competitors in the market – high geographical coverage in the US to ensure its market dominance
- China has relatively fewer retail stores because of lower customer market / base
- There are many competitors to Apple in China such as Huawei, Oppo, Xiaomi etc
- Appeal of operating system (iOS) is low in China, as it uses WeChat which can outdo what Apple does in terms of chatting, ordering or paying. So very little benefits to invest in many retail stores in China.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of the variation in the distribution of retail stores between US and China. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the variation in the distribution of retail stores between US and China. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the variation in the distribution of retail stores between US and China. Explanation lacks detail. Overall the response does not address the context of the question. No reference made to resource.
0	0	No creditworthy response

- (d) Using evidence from Resources 9 and 10, suggest two reasons why Apple [4] continued its assembly facility in Brazil in 2018.

Award 1 mark for each reason without supporting evidence to a maximum of 2 marks.
Award 2 marks for each reason with supporting evidence to a maximum of 4 marks.

Possible reasons include:

1. Availability of low-skilled labour
2. Availability of component suppliers
3. Large potential market

- (e) Using Resources 9, 11 and your own knowledge, explain the possible impacts on [7] D.R. Congo as a result of Apple Inc.'s Global Production Network (GPN).

Students to identify and explain both positive and negative impacts on D.R. Congo as a result of Apple's Inc. GPN.

High level response will consider impacts of different aspects (social, economic and environment) at different scales. Students should use resources to support their responses.

Level	Marks	Descriptors
3	6-7	Response demonstrates accurate knowledge of the possible impacts of Apple's GPN on D.R. Congo. Three aspects of impacts (economic, social and environment) are explored. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	4-5	Response demonstrates adequate knowledge of the possible impacts of

		Apple's GPN on D.R. Congo. At least two aspects of impacts are explored. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-3	Response demonstrates limited or no knowledge and understanding of the possible impacts of Apple's GPN on D.R. Congo. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

Urban Reimaging in Swansea (United Kingdom)

Resource 12 shows the Swansea Dock area in the United Kingdom before and after urban renewal. Resource 13 shows future plans for St David's Shopping Centre, located in Swansea Central. Resource 14 shows the possible development proposals for Area X shown in Resource 12.

(a) Describe the changes in landuse patterns in Resource 12 before and after urban renewal in the Swansea Dock area. [3]

Possible responses include:

- There is an increase in residential areas, particularly the new stretch of private housing area along the Swansea bay, South of the Swansea Dock Area
- There is also an addition of a cluster of public housing with the Local Authority Housing at the northeast part of the Swansea Dock Area
- Several land uses have been removed, i.e. the Railway line, distribution and wholesale
- Commercial land use remained but it has increased after urban renewal

Point marked. Award 1m for 1 valid description.

(b) With reference to Resource 12, explain the possible reasons for changes to distribution of residential areas in the Swansea Dock area. [5]

Indicative content

- Candidates should explain **two** valid reasons for the changes to distribution of both private and public residential areas in the Swansea Dock Area.
- A higher level response would explain the reasons with reference to Swansea Dock Area by making good references to Res 12.

Levels marked.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of the possible reasons for changes to distribution to the residential areas in the Swansea Dock Area. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the possible reasons for changes to distribution to the residential areas in the Swansea Dock Area. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible reasons for changes to distribution to the residential areas in the Swansea Dock Area. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

- (c) **Account for the particular strategy of urban reimaging as seen in Resource 13.** [5]
Indicative content

Candidates should identify features in Res 13 and account for the use of such reimaging strategy.

A higher level of response would make good references to Resource 13 to support response.

Levels marked.

Level	Marks	Descriptors
3	5	Response demonstrates accurate knowledge of the features of flagship development and reasons for adopting this strategy. Explanation is detailed, thorough and relevant. Reference made to resource in response.
2	3-4	Response demonstrates adequate knowledge of the features of flagship development and reasons for adopting this strategy. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the features of flagship development and reasons for adopting this strategy. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

- (d) **Imagine you are the chief planning officer for Swansea Dock Area tasked to decide between Proposals 1 and 2 for the development of the area marked X as shown in Resource 12. Using Resources 12 and 14, explain your considerations for the choice of your proposal.** [6]

Indicative content

- Response has to identify a proposal and clearly explain the considerations/reasons for the choice.
- Explain how the proposal will achieve the outcome and also boost liveability for various stakeholders.
- A higher level response would have good use of both Res 12 (e.g. relate to the other land uses) and Res 14 to support choice of proposal.

Levels marked.

Level	Marks	Descriptors
3	5-6	Response demonstrates accurate knowledge of the possible reasons for choice of proposal. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the possible reasons for choice of proposal. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible reasons for choice of proposal. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

- (e) **With reference to Resources 12 and 13 and your own knowledge, explain how changes in the landuse patterns in the Swansea Dock Area can improve liveability for the residents.** [6]

Indicative content:

- Candidates should explain how changes in the landuse patterns in Swansea Dock Area can see an improvement in liveability for the different groups of residents.

- Higher level responses will look all 3 aspects of liveability and the use of different social groups to illustrate the point.

Levels marked.

Level	Marks	Descriptors
3	5-6	Response demonstrates accurate knowledge of the possible reasons for choice of proposal. Explanation is detailed, thorough and relevant. Reference made to resource in response and information from resource used to substantiate response.
2	3-4	Response demonstrates adequate knowledge of the possible reasons for choice of proposal. Explanation is valid but may be somewhat limited in relevance and detail. Some of the response may not fully address the context of the question. Limited reference made to resource.
1	1-2	Response demonstrates limited or no knowledge and understanding of the possible reasons for choice of proposal. Explanation lacks detail. Overall the response does not the address the context of the question. No reference made to resource.
0	0	No creditworthy response

End
