PASIR RIS CREST SECONDARY SCHOOL
End-of-Year Examination 2022
Secondary One Express

CANDIDATE NAME	

CLASS		/		INDEX NUMBER	

Geography

6 October 2022
1 hour 30 minutes

READ THESE INSTRUCTIONS FIRST

Write your name, class and index number on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue, highlighters or correction fluid.

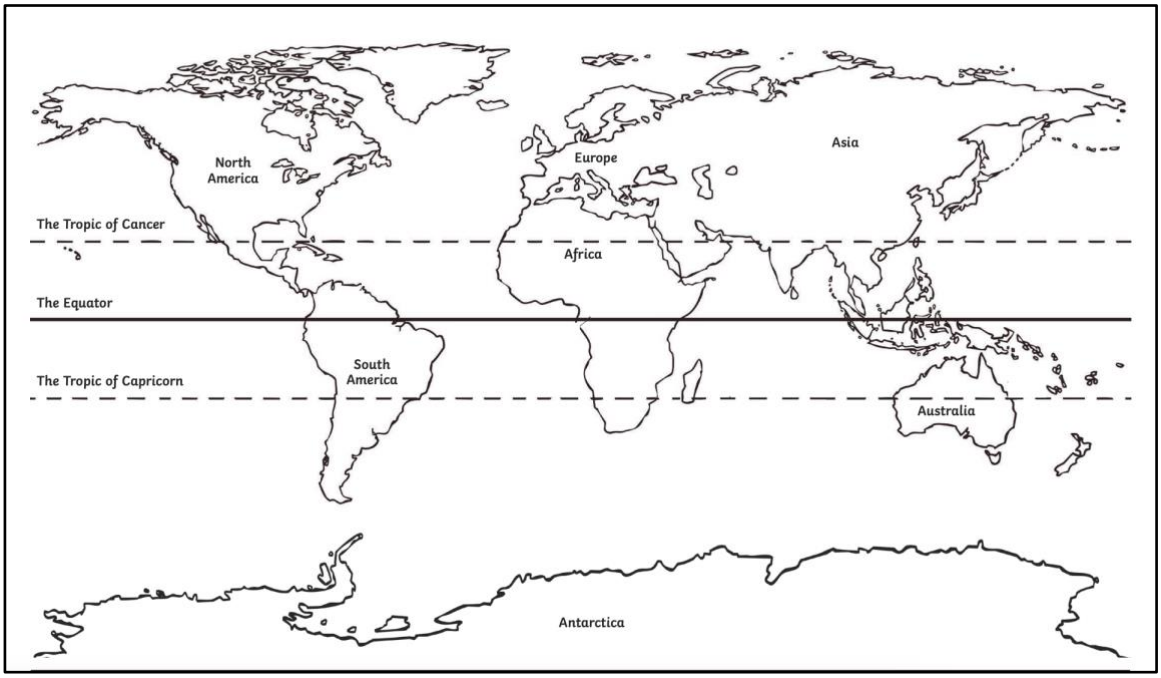
Answer **ALL** questions.

Candidates should support their answers with the use of relevant examples.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 45.

For Examiner's Use
45
Parent's Signature

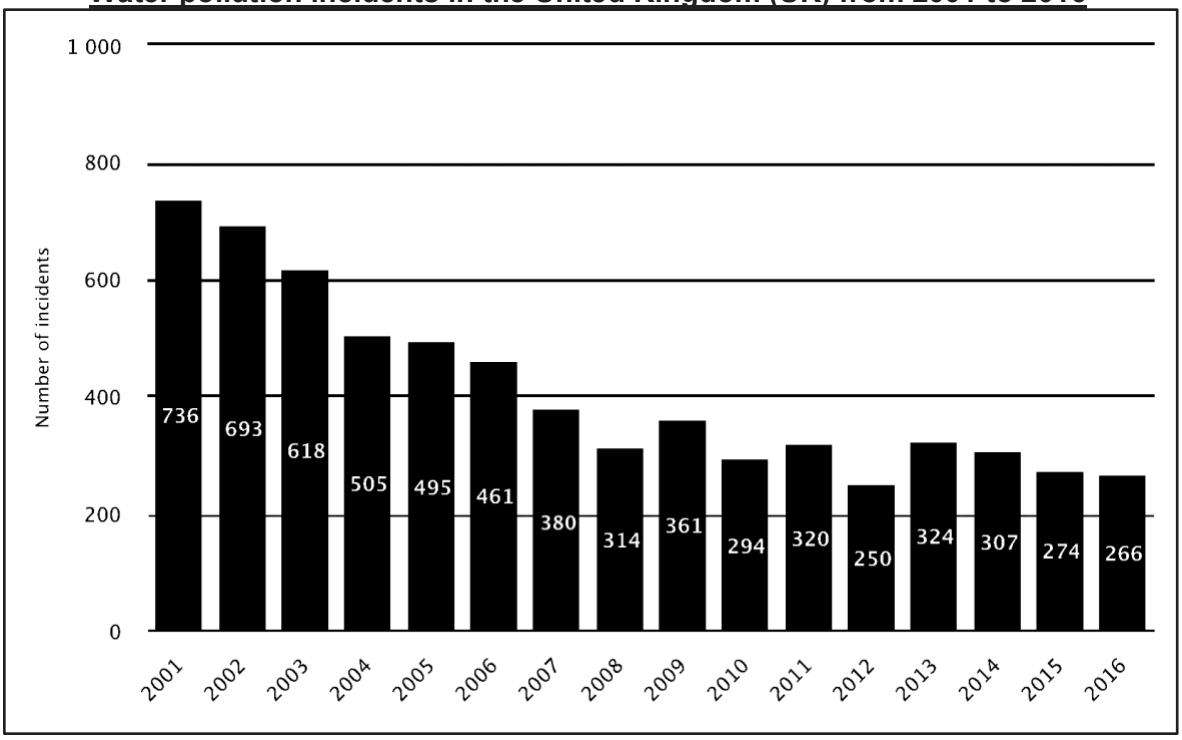
This document consists of **10** printed pages.

Section A: Response to Geographical Issue [10m]

1.	Study the article in Fig. 1 and answer the questions that follow.	
	Fighting Deforestation in the Congo Basin The Congo Basin is home to the world's second largest tropical forest after the Amazon. It is home to rich biodiversity, with over 400 species of mammals, 1,000 species of birds, and 10,000 species of plants. This huge forest covering 286 million hectares is currently suffering deforestation due to more trees being cleared for plantations, mining and illegal wood trade. To deal with this situation, the France Development Agency (FDA) and other agencies are setting rules to manage the clearing of trees in the Congo Basin. However, government agencies do not always have the ability to enforce responsible logging, monitor the actions of loggers, and reduce the demand for agricultural land in these large forested areas. Hence, to ensure that the logging of forests within the Congo Basin is regulated, FDA has supported a project to provide the government agencies with the technology to monitor forest cover using satellite images. In some areas, they have provided the Ministry of Forestry, Environment and Protection of Natural Resources with equipment and training on how to prevent illegal logging. **Fig. 1**	
a)	Locate and circle the Congo Basin Rainforest on the map in Fig. 2.  **Fig. 2**	[1]

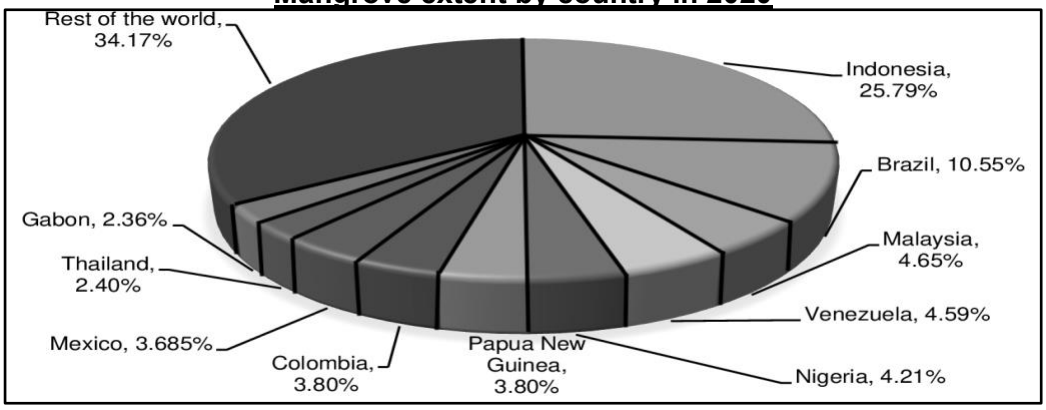
b)	Identify the key geographical issue discussed in the article.	[1]
	_____ _____	
c)	Evaluate the strength and limitation of the strategy used to manage the Congo Basin Rainforest.	[4]
	_____ _____ _____ _____ _____ _____ _____ _____	
d)	After learning about the challenges in the Congo Basin, suggest and describe **TWO** actions that you can take as an individual to address the issue.	[4]
	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____	

Section B: Structured Questions [35m]

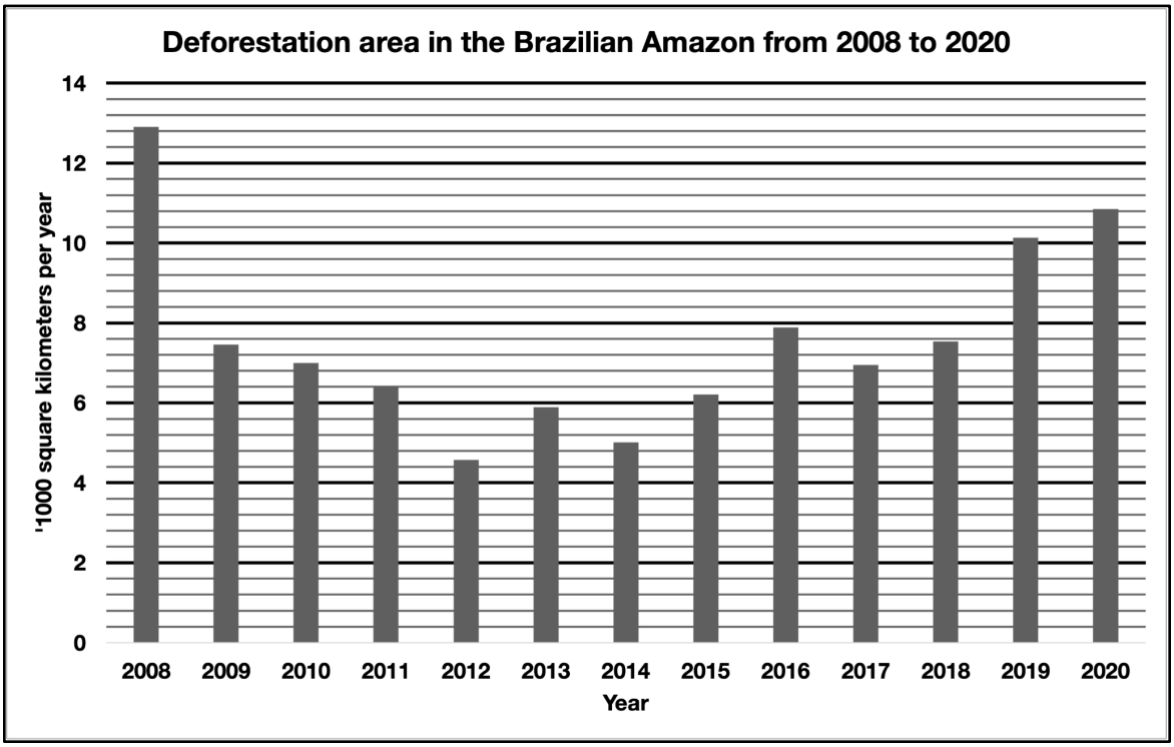
2.	Fig. 3 shows the number of water pollution incidents in the United Kingdom from 2001 to 2016.	
	Water pollution incidents in the United Kingdom (UK) from 2001 to 2016  **Fig. 3**	
a i)	With reference to Fig. 3, describe the overall trend of water pollution incidents in the UK from 2001 to 2016.	[1]
	_____ _____	
ii)	With reference to Fig. 3, suggest why government officials were concerned about the number of water pollution incidents in 2013.	[1]
	_____ _____	

b)	Using an example, describe how governments have reduced water pollution incidents in their countries.	[3]
	_____ _____ _____ _____ _____ _____	
c)	Explain how river floods occur.	[3]
	_____ _____ _____ _____ _____ _____	

3.	Fig. 4 shows the root of a tree in a tropical rainforest.	
	 **Fig. 4**	
a i)	Identify the type of root shown in Fig. 4.	[1]
	_____ _____	
ii)	With reference to Fig. 4, explain why such roots are necessary for trees found in a tropical rainforest.	[2]
	_____ _____ _____ _____	
b)	Describe one way in which the leaves of plants in the tropical rainforest have adapted to their natural environment.	[2]
	_____ _____ _____ _____	

c)	Sketch the structure of a tropical rainforest in the box below. Include a title and label the layers.	[4]
4a)	Fig. 5 shows the mangrove extent by country in 2020. **Mangrove extent by country in 2020**  **Fig. 5**	
	With reference to Fig. 5, describe the difference between the mangrove extent in Brazil and Thailand.	[1]
	_____	

	_____	
b)	Describe the distribution of mangroves.	[2]
	_____ _____ _____ _____	
c)	Explain how mangroves help to prevent coastal erosion.	[4]
	_____ _____ _____ _____ _____ _____ _____ _____	
d)	Describe how mangroves are an ideal habitat for wildlife.	[2]
	_____ _____ _____ _____	

5.	Fig. 6 shows the deforestation in the Brazillian Amazon from 2008 to 2020.  **Fig. 6**	
a)	With reference to Fig. 6, describe the deforestation area in the Brazilian Amazon from 2008 to 2020.	[1]
	_____ _____	
b)	Describe a strategy that the Brazilian government could have implemented to achieve the sharp decline in deforestation area from 2008 to 2009.	[2]
	_____ _____ _____ _____	

c)	Describe two ways in which tropical rainforests are useful for people.	[4]
	_____ _____ _____ _____ _____ _____ _____ _____	
d)	Explain how deforestation results in the enhanced greenhouse effect.	[2]
	_____ _____ _____ _____	

<<END OF PAPER>>

Acknowledgements:

Fig. 1	https://www.afd.fr/en/actualites/combating-deforestation-congo-basin
Fig. 2	https://worldmapwithcountries.net/2018/08/07/pdf/
Fig. 3	https://www.statista.com/statistics/820359/serious-water-pollution-incidents-united-kingdom-uk/
Fig. 4	https://travel.mongabay.com/colombia/images/co07-0326.html
Fig. 5	https://www.semanticscholar.org/paper/Mangroves-of-Sri-Lanka%3A-Distribution%2C-status-and-Priyashantha-Taufikurahman/9e837dc4e6749124e0f35df69a21901b33336369
Fig. 6	https://www.statista.com/statistics/940696/brazil-amazon-deforestation-rate-area/

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Geography

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SUGGESTED ANSWERS

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Parent's Signature

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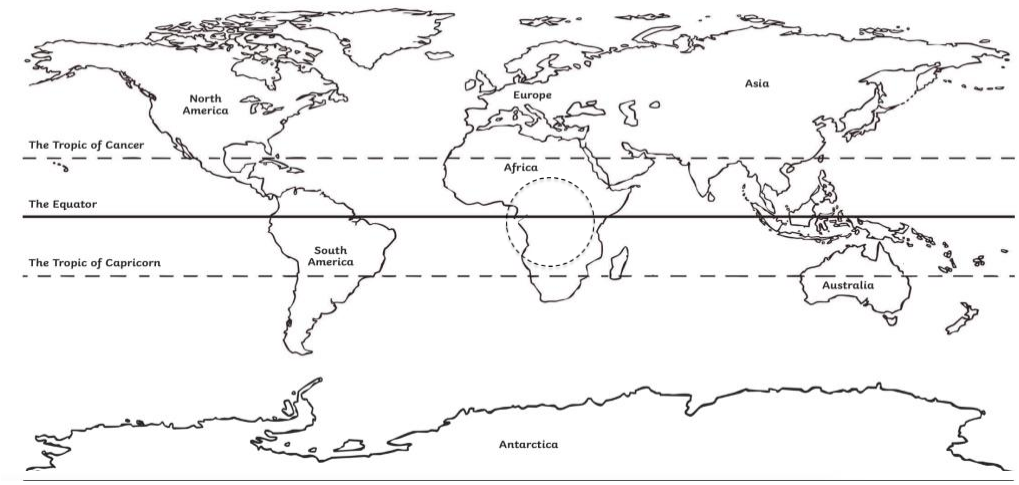
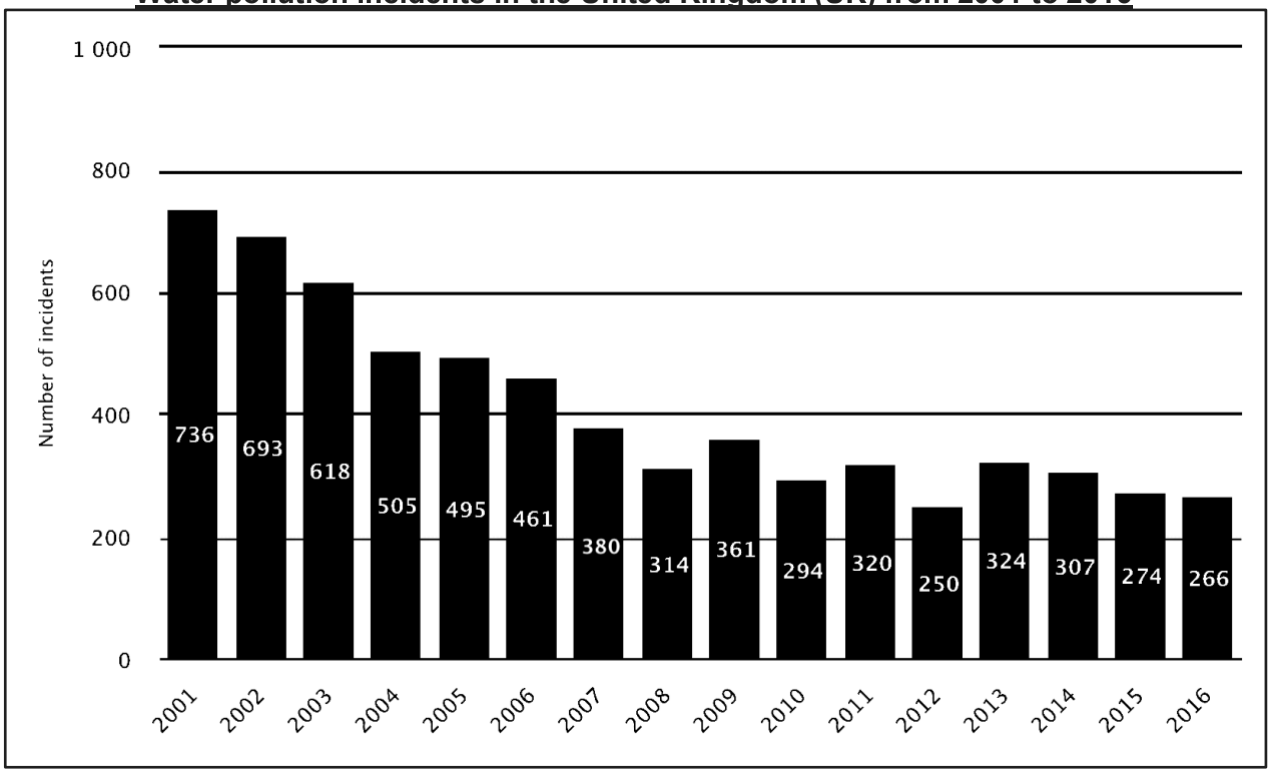
Section A: Response to Geographical Issue [10m]

1.	Study the article in Fig. 1 and answer the questions that follow.	
	Fighting Deforestation in the Congo Basin The Congo Basin is home to the world's second largest tropical forest after the Amazon. It is home to rich biodiversity, with over 400 species of mammals, 1,000 species of birds, and 10,000 species of plants. This huge forest covering 286 million hectares is currently suffering deforestation due to more trees being cleared for plantations, mining and illegal wood trade. To deal with this situation, the France Development Agency (FDA) and other agencies are setting rules to manage the clearing of trees in the Congo Basin. However, government agencies do not always have the ability to enforce responsible logging, monitor the actions of loggers, and reduce the demand for agricultural land in these large forested areas. Hence, to ensure that the logging of forests within the Congo Basin is regulated, FDA has supported a project to provide the government agencies with the technology to monitor forest cover using satellite images. In some areas, they have provided the Ministry of Forestry, Environment and Protection of Natural Resources with equipment and training on how to prevent illegal logging. **Fig. 1**	
a)	Locate and circle the Congo Basin Rainforest on the map in Fig. 2.	[1]

	 **Fig. 2** ***Circled area:** **- should not exceed the Tropic of Cancer and Tropic of Capricorn latitudes** **- must cover the equator** **- cannot cover too small an area**	
b)	Identify the key geographical issue discussed in the article.	[1]
	The France Development Agency (FDA) is <u>setting rules/regulating/controlling logging in the Congo Basin</u> OR <u>There is increasing deforestation in the Congo Basin.</u>	
c)	Evaluate the strengths and limitations of the strategy used to manage the Congo Basin Rainforest.	[4]
	1m for identifying the strength of using satellite imagery: ● **Satellite imagery covers a large area [1]** ● **Allows for 24/7 monitoring [1]** ● **Increases surveillance [1]** ● **Helps officials to detect or identify illegal activities [1]** ● **Clear consequences/punishment is defined [1]** **1m for explaining the impact of the strength:** ● **People will fear punishment and not conduct illegal deforestation [1]** ● **Illegal loggers will be arrested swiftly/held responsible [1]** ● **The setting of rules/consequences will show people that the government is taking illegal deforestation very seriously.** **1m for identifying the limitation of using satellite imagery:** ● **Satellite technology is expensive** ● **The monitoring system may be difficult to maintain**	

	• **Satellite imagery may be unclear/blocked by clouds** • **There may not be enough manpower to enforce the rules** **1m for explaining the impact of the limitation:** • **The government may not be able to afford maintaining the monitoring system for a long period of time** • **There may be a lag time in responding/arresting illegal activity (due to lack of manpower)** *No marks awarded for **lifting** from the article	
d)	After learning about the challenges in the Congo Basin, suggest and describe **TWO** actions that you can take as an individual to address the issue.	[4]
	2m awarded for each suggestion (Identify + Describe/Explain impact). Possible answers include: • I can reduce my consumption of beef from thrice a week to once a week since cattle ranching is one of the main causes of deforestation. [1] As the demand for beef falls, hopefully there will be a lesser need for farms and the Congo Basin can be left to heal and regenerate. [1] • I can post about the issue on social media/ conduct assembly talks in school [1] to spread awareness about what is happening in the Congo Basin [1]. [X] No marks will be awarded for **repeated** descriptions/explanations. Example: I can post about the issue on social media [1] to spread awareness…[1] I can also conduct assembly talks [1] to spread awareness…[X – no marks awarded for this repeated explanation] [X] Suggestions that were not accepted – donation to the cause/ volunteer in the Congo Basin/ start a petition (*not feasible)*	

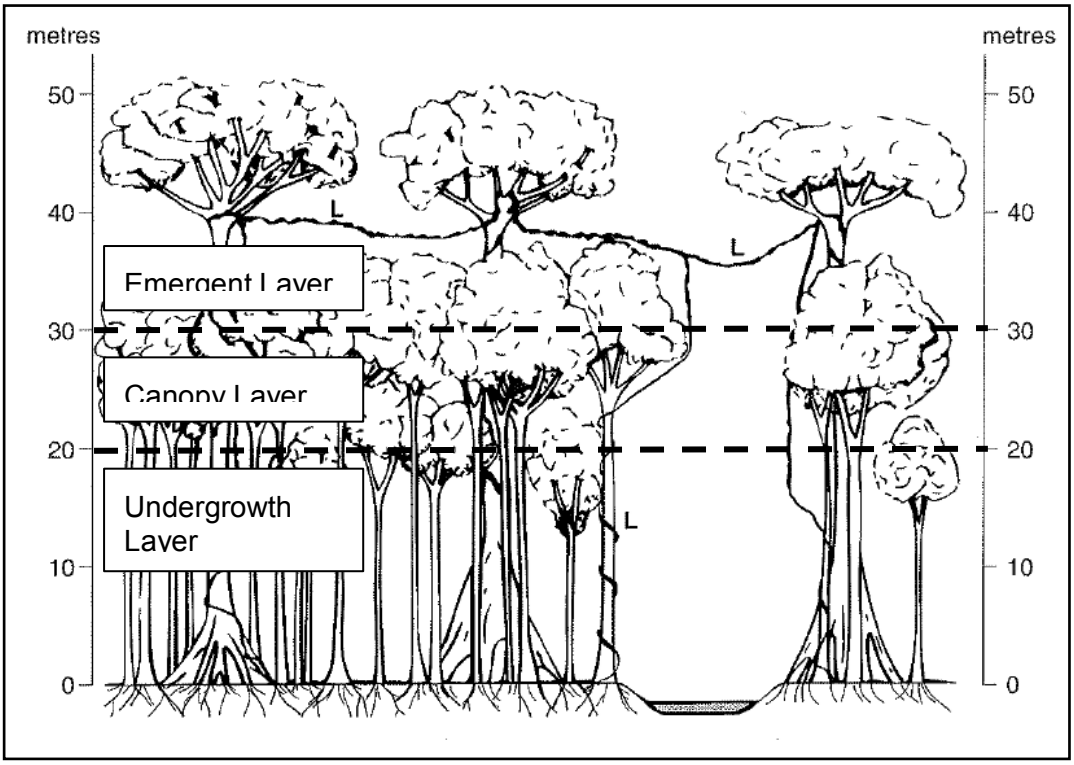
Section B: Structured Questions [35m]

2.	Fig. 3 shows the number of water pollution incidents in the United Kingdom from 2001 to 2016.	
	 **Fig. 3**	
a i)	With reference to Fig. 3, describe the overall trend of water pollution incidents in the UK from 2001 to 2016.	[1]
	The number of water pollution incidents has <u>decreased</u> from <u>736 incidents to 266 incidents</u> OR <u>by 470 incidents</u> from 2001 to 2016. ***No trend/data = zero marks**	
ii)	With reference to Fig. 3, suggest why government officials were concerned about the number of water pollution incidents in 2013.	[1]
	There was a (significant/sharp) <u>increase</u> in pollution incidents in 2013.	
b)	Using an example, describe how governments have reduced water pollution incidents in their countries.	[3]

	In Xixiang River, China [1], A law has been set up such that officials who achieve the clean water standards are awarded [1] while those who do not meet the standards face fines and loss of promotion opportunities. [1] **OR** **Under Singapore's Environmental Protection and Management Regulations [1], industries are not allowed to release wastewater into water bodies [1] without permission from the National Environmental Agency (NEA) [1]. OR** **The governments of Switzerland, Germany and France decided to work together [1] to manage pollution in the Rhine. Monitoring stations were installed along the river, enabling water quality to be measured continuously every six minutes [1]. Industries found responsible for polluting the river were also fined [1].**	
c)	Explain how river floods occur.	[3]
	River floods are typically caused by sustained heavy rainfall or meltwater [1]. The <u>large amounts of water enter</u> streams/rivers OR when <u>water is no longer able to seep into/infiltrate</u> soils [1], water levels rise rapidly and eventually <u>overflow</u> the banks [1], flooding surrounding areas.	
3.	Fig. 4 shows the root of a tree in a tropical rainforest.	
	 **Fig. 4**	

a i)	Identify the type of root shown in Fig. 4.	[1]
	Buttress Roots [X] Emergent Layer	
ii)	With reference to Fig. 4, explain why such roots are necessary for trees found in a tropical rainforest.	[2]
	Tropical rainforest trees that grow to <u>great heights [1]</u> OR <u>are very heavy/large</u> [1] in order to reach for as much sunlight as possible usually have buttress roots to <u>keep them upright/prevent them from toppling over [1].</u>	
b)	Describe one way in which the leaves of plants in the tropical rainforest have adapted to their natural environment.	[2]
	Any one adaptation: ● **The leaves are <u>broad/have a large surface area</u> [1] to enable the plant to <u>absorb as much sunlight as possible</u> in order to make food [1].** ● **The leaves are <u>waxy</u> [1] to help the plant to <u>reduce the amount of water vapour it loses through transpiration</u> [1].** ● **The leaves have <u>drip tips/small narrow tips that point downwards</u> [1], which <u>allow rainwater that falls onto them to flow off easily</u> [1].**	
c)	Sketch the structure of a tropical rainforest in the box below. Include a title and label the layers.	[4]

Structure of a Tropical Rainforest



Title - 1m
Axis (height) - 1m
Label layers - 1m*
Accuracy - 1m

***No marks awarded for labelling of layers (undergrowth, canopy, emergent) if there is not height reference/ accuracy in drawing to show features of these layers.**

4a) Fig. 5 shows the mangrove extent by country in 2020.

Mangrove extent by country in 2020

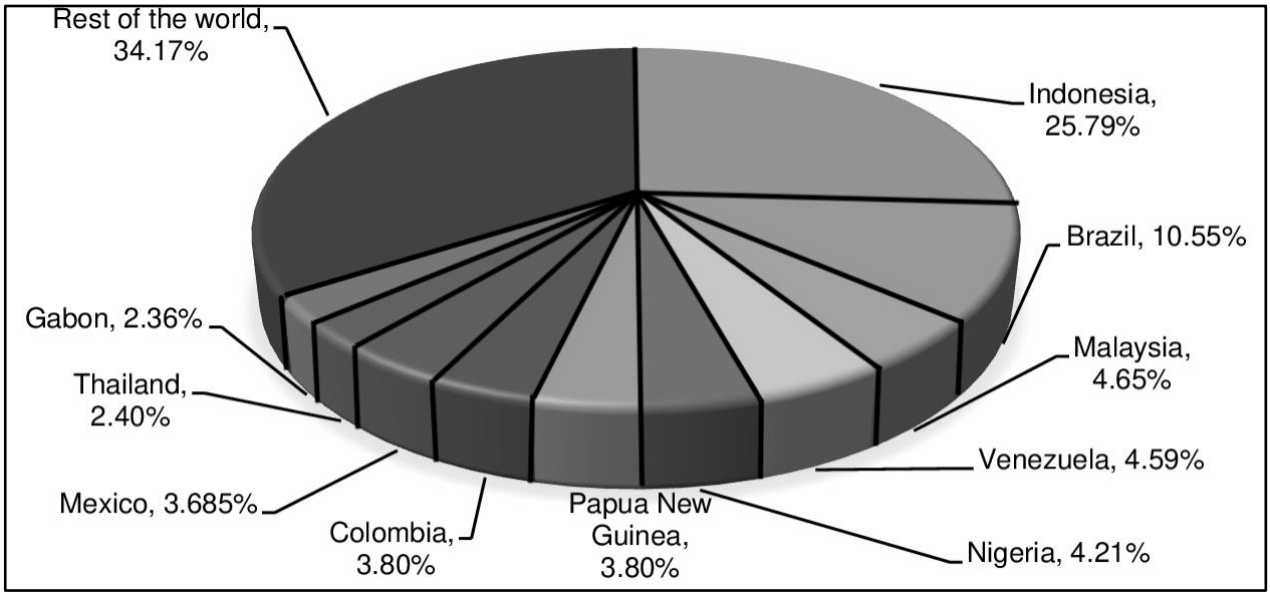
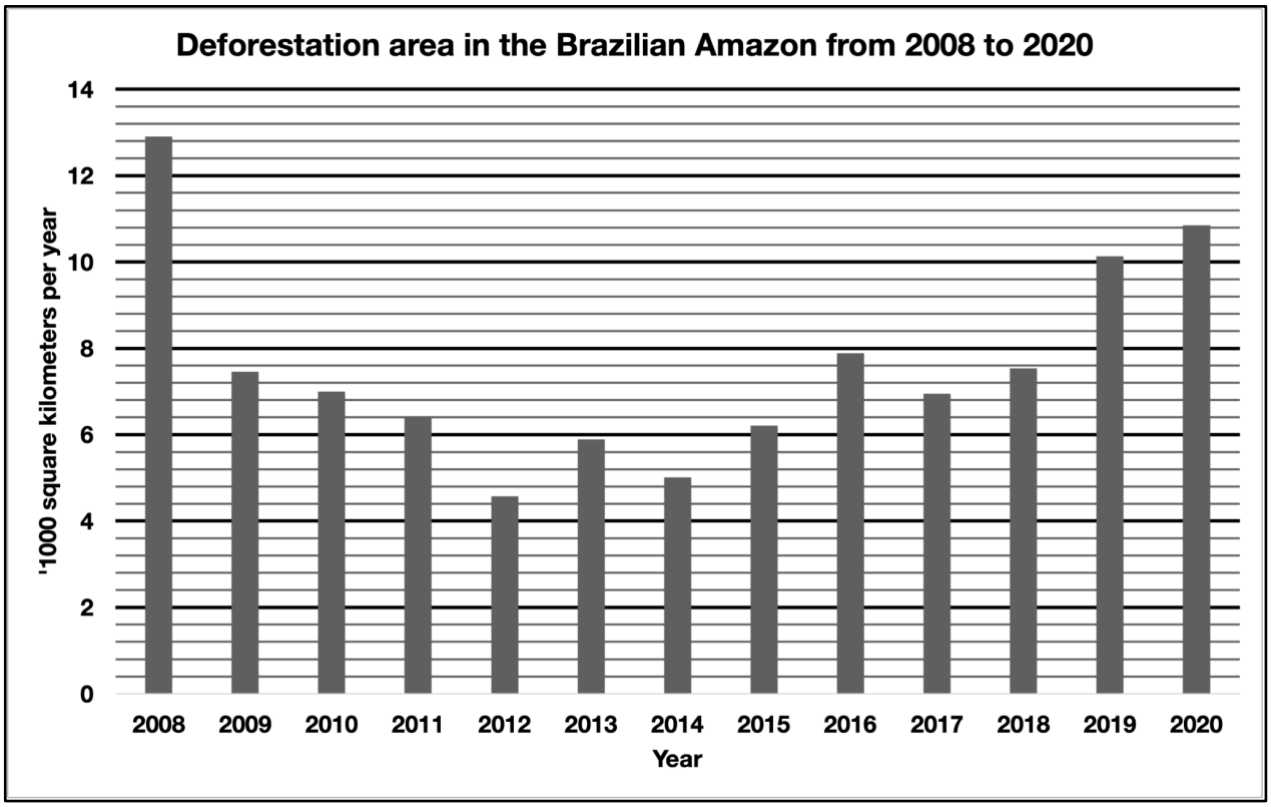


Fig. 5

	With reference to Fig. 5, describe the difference between the mangrove extent in Brazil and Thailand.	[1]
	Brazil (10.55%) has a <u>higher</u> mangrove extent than Thailand (2.40%) OR Brazil has 8.15% <u>more</u> mangrove coverage than Thailand [1].	
b)	Describe the distribution of mangroves.	[2]
	They are located along <u>coasts</u> [1] near the equator OR between the Tropic of Cancer and Tropic of Capricorn [1]	
c)	Explain how mangroves help to prevent coastal erosion.	[4]
	The dense <u>root</u> systems of mangroves help to <u>trap and stabilise loose sediments</u> on the coast [1]. Hence, sediments are <u>less likely to be washed away</u> by waves, currents and tides [1]. The roots, trunks and branches <u>cause friction with waves hitting the coast</u> [1]. The waves <u>lose a significant amount of energy</u>, thus reducing coastal erosion [1].	
d)	Describe how mangroves are an ideal habitat for wildlife.	[2]
	Any one description: ● **The <u>dead leaves and branches</u> that fall from mangrove plants [1] are broken down by bacteria into tiny particles which <u>fishes, shrimps and crabs feed on</u> [1] OR** ● **Mangroves serve as <u>breeding grounds for young fishes</u> [1], as their <u>dense root networks provide shelter</u> from larger predators [1].** ● **Branches of <u>mangroves</u> [1] provide <u>nesting sites</u> [1] for many species of birds.**	

5.	Fig. 6 shows the deforestation in the Brazilian Amazon from 2008 to 2020.  **Fig. 6**	
a)	With reference to Fig. 6, describe the deforestation area in the Brazilian Amazon from 2008 to 2020.	[1]
	The deforestation area has <u>decreased</u> from <u>12800 (+/-100) square kilometers</u> in 2008 to <u>10800 (+/-100) square kilometers</u> in 2020 OR **The deforested area has <u>decreased</u> by <u>2000 square kilometers</u> from 2008 to 2020.**	
b)	Describe a strategy that the Brazilian government could have implemented to achieve the sharp decline in deforestation area from 2008 to 2009.	[2]
	The Brazilian government could have: ● **<u>Established protected areas</u> [1] by <u>putting laws in place/sending military enforcement</u> to ensure that people do not damage these protected areas [1]. OR** ● **<u>Regulated forestry activities</u> [1] by <u>implementing controlled logging/ controlling resource extraction</u> [1].**	

	• **<u>Promoted public education</u> [1] to encourage people to <u>purchase their products from sustainable sources</u> [1].** **[X] 'Rehabilitate disturbed areas' (not a strategy to REDUCE deforestation)**	
c)	Describe two ways in which tropical rainforests are useful for people.	[4]
	Accept any TWO descriptions: • **Indigenous people [1] who inhabit rainforests depend on the physical environment to meet their basic needs [1] such as food, water, shelter and clothing.** • **Tropical rainforests are recreational sites [1] for people who live in towns and cities to get close to nature [1].** • **Visiting rainforests for recreation [1] is also a way for people to exercise and to lead an active lifestyle [1].** • **Many common types of food [1] come from plants that grow in tropical rainforests [1].** • **People may harvest fruits [1] like bananas and mangoes/ vegetables like cucumbers and egg plants/ nuts like Brazil nuts/ spices like pepper and cinnamon [1].** • **Indigeneous people also often hunt wild animals such as fish, deer and wild birds [1] for food [1].** • **Wood obtained from rainforest trees [1] are used for different products including flooring, doors and furniture [1].** **[X] Do not accept uses of mangrove trees.**	
d)	Explain how deforestation results in the enhanced greenhouse effect.	[2]
	Firstly, deforestation causes carbon that is stored in the plants and soil to be released as carbon dioxide [1]. Secondly, there are fewer plants left to absorb carbon dioxide from the atmosphere [1].	

END OF PAPER

Acknowledgements:

Fig. 1 https://www.afd.fr/en/actualites/combating-deforestation-congo-basin

Fig. 2 https://worldmapwithcountries.net/2018/08/07/pdf/

Fig. 3 https://www.statista.com/statistics/820359/serious-water-pollution-incidents-united-kingdom-uk/

Fig. 4 https://travel.mongabay.com/colombia/images/co07-0326.html

Fig. 5 https://www.semanticscholar.org/paper/Mangroves-of-Sri-Lanka%3A-Distribution%2C-status-and-Priyashantha-Taufikurahman/9e837dc4e6749124e0f35df69a21901b33336369

Fig. 6 https://www.statista.com/statistics/940696/brazil-amazon-deforestation-rate-area/