



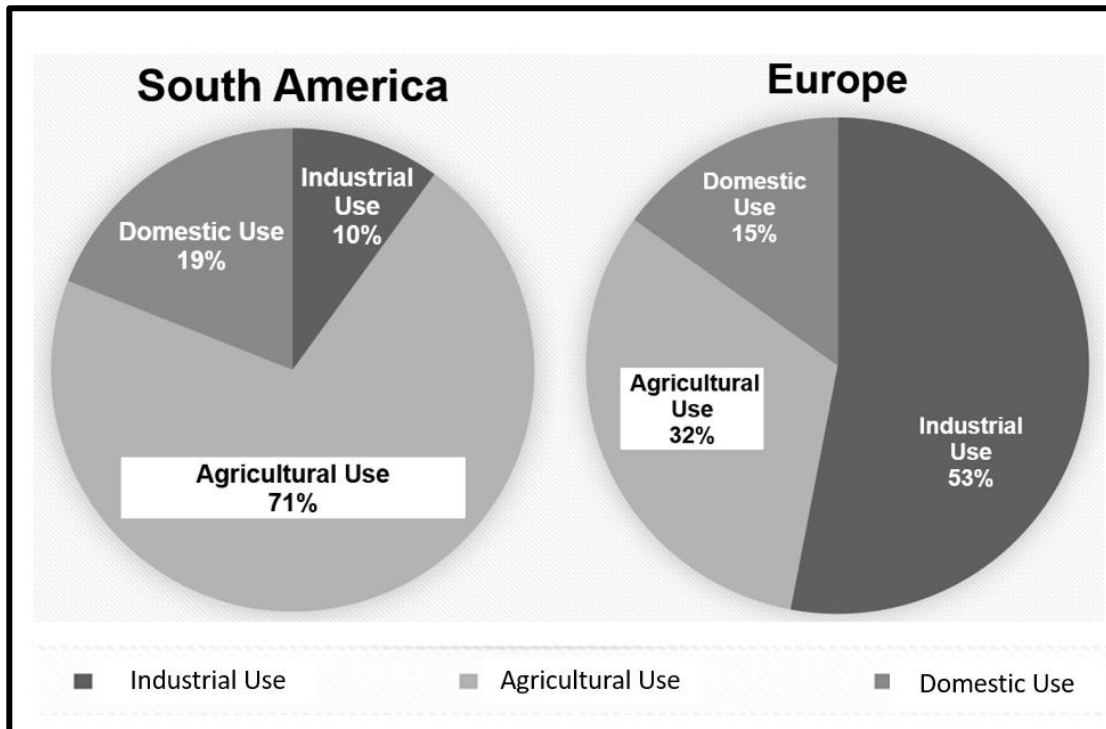
Paya Lebar Methodist Girls' School (Secondary)
End-of-Year Examination 2024
Secondary 1

Subject : **Geography G3**

ANSWERS

Section A: Water (20 marks)

1 (a)



Study Fig. 1 which shows the different uses of water in South America and Europe.

Fig 1

(i) With reference to Fig. 1, identify the use of water which has the highest percentage in South America

[1]

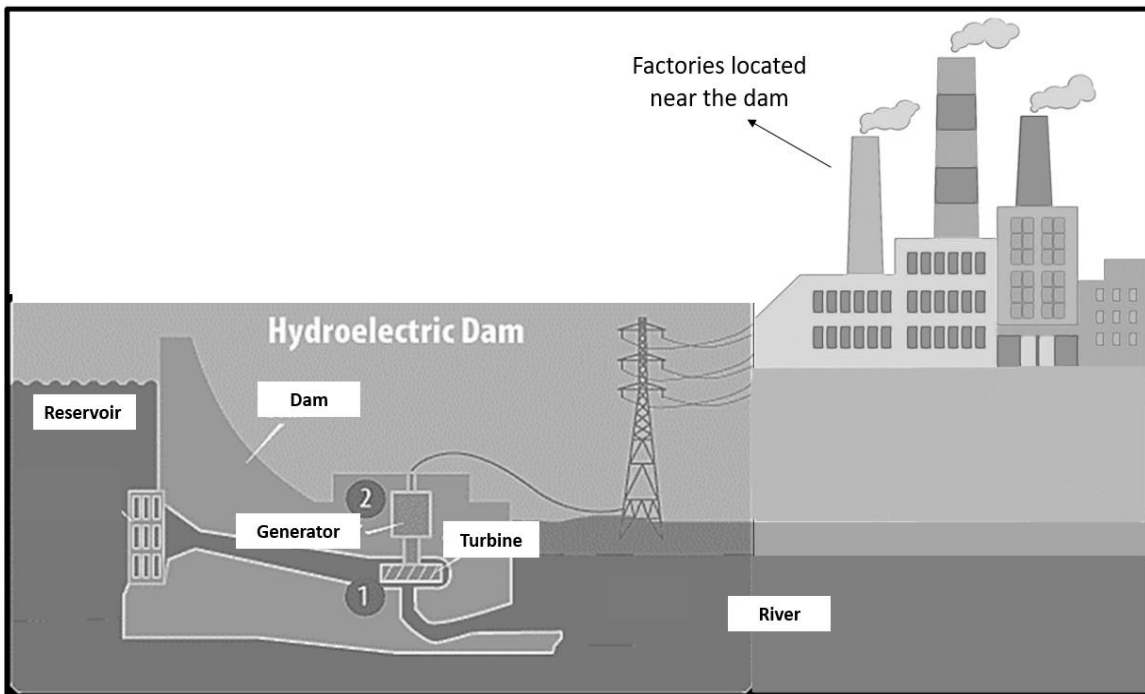
- The use of water which has the highest percentage in South America is Agricultural Use which uses 71%.

Answer needs to state the type of use and the percentage

(ii) With reference to Fig.1 describe the difference in percentage of water used for industrial use between South America and Europe.

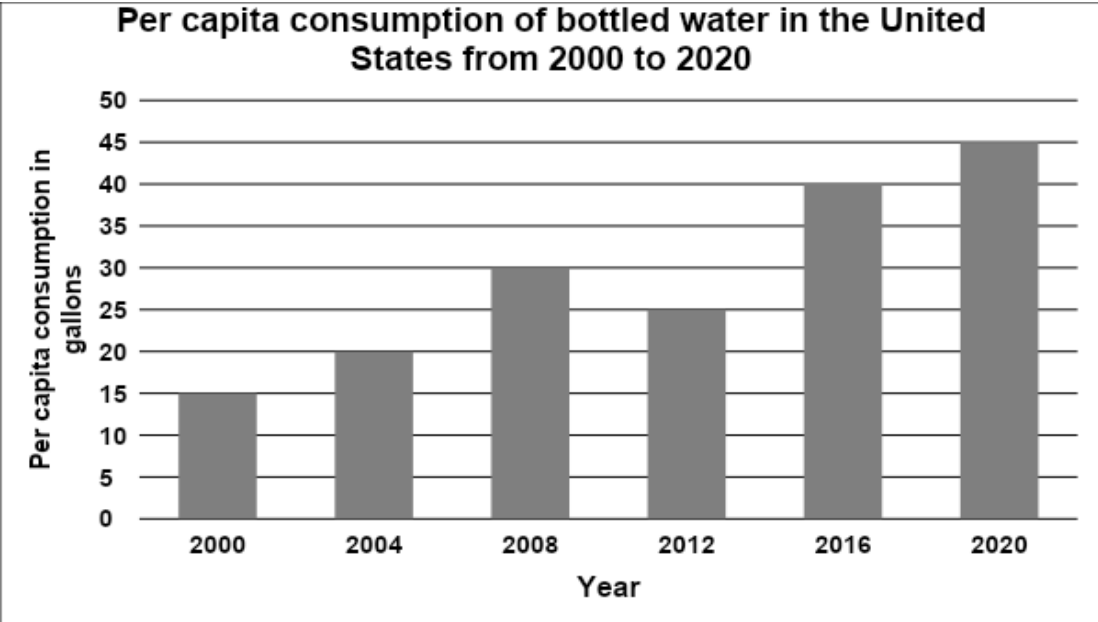
[2]

	• In South America industrial water uses 10% while in Europe industrial water use is 53% [1] • In South America Industrial water use is used the least while in the Europe industrial water use is used the most [1] Award 1 mark for each point up to 2 marks. Cap @ 1 mark is no difference	
	(iii) Suggest one reason for this difference.	[1]
	As South America's level of development is lower than Europe, they have more agriculture rather than industries as they have fewer resources Need to have a reason Eg Europe has more factories compared to South America this will use more water. Note Europe and South America are not countries.	

1 (b)	Fig. 2 shows how water is used for industries	
	 The diagram illustrates a hydroelectric power system. On the left, a 'Reservoir' is shown. Water flows from the reservoir through a 'Dam' structure. Below the dam, the water passes through a 'Turbine' (labeled with a circled '1') and a 'Generator' (labeled with a circled '2'). The water then flows into a 'River'. To the right of the river, there are 'Factories located near the dam', indicated by an arrow. The entire system is labeled 'Hydroelectric Dam'.	
	Fig 2	
	Using Fig. 2 and other information studied, suggest two ways how water is used for industries.	[2]

	• Water is used for cooling equipment in factories and power plants because they generate a lot of heat when they operate. • Water is used to generate electricity when it passes through turbines installed in dams. <i>Award 1 mark for each point up to 2 marks</i> <i>Cap @ 1 mark if no reference is made to Fig. 4. Must have at least 1 reference made</i>	
(c)	Using an example, describe how water is used for recreational activities.	[2]
	Eg Canoeing [1] or Sailing [1] or Sport Fishing [1] • Water enables people to carry out recreational activities such as water sports which is highly dependent on water conditions and water quality [1] <i>Award 1 mark for each point up to 2 marks</i> <i>Cap @ 1 mark if no example given. Must have at least 1 example</i>	

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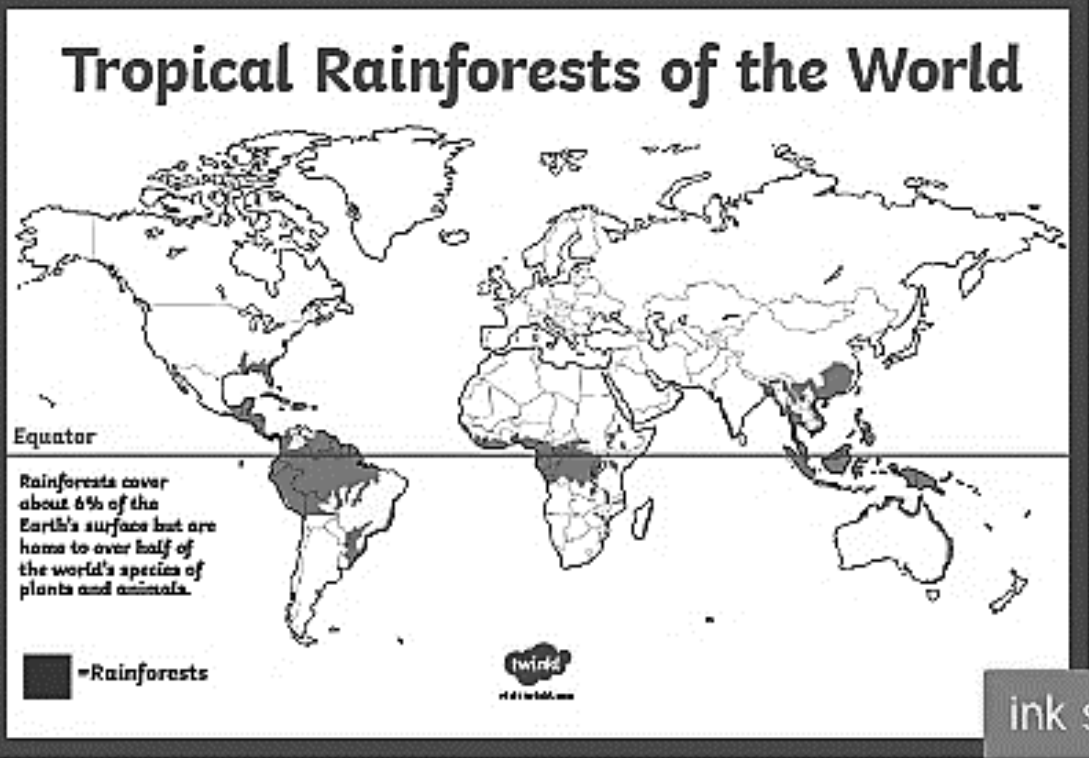
1	(d) Study Fig. 3, which shows the per capita consumption of bottled water in the United States from 2000 to 2020.															
	Per capita consumption of bottled water in the United States from 2000 to 2020 <table><thead><tr><th>Year</th><th>Per capita consumption in gallons</th></tr></thead><tbody><tr><td>2000</td><td>15</td></tr><tr><td>2004</td><td>20</td></tr><tr><td>2008</td><td>30</td></tr><tr><td>2012</td><td>25</td></tr><tr><td>2016</td><td>40</td></tr><tr><td>2020</td><td>45</td></tr></tbody></table>	Year	Per capita consumption in gallons	2000	15	2004	20	2008	30	2012	25	2016	40	2020	45	
Year	Per capita consumption in gallons															
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	Fig. 3															

	Using Fig. 3, describe the trend of per capita consumption of bottled water in the United States from 2000 to 2020.	[3]
	- The per capita consumption of bottled water in the United States has been increasing from 15 gallons in 2000 to 45 gallons in 2020. [1] - However, the per capita consumption decreased gradually from 30 gallons in 2008 to 25 gallons in 2012. [1] - The per capita consumption then increased sharply from 25 gallons in 2012 to 40 gallons in 2016. [1] - The per capita consumption was highest in 2020 at 45 gallons. [1] - The per capita consumption was lowest in 2000 at 15 gallons [1] <i>Award 1 mark for each point up to 3 marks.</i> <i>Reserve 1 mark for the overall trend.</i> <i>Cap @ 2 marks without data with units or rate of change.</i> <i>Cap @ 1 mark if students describe all years</i>	

1 (e)	Study Fig. 4, which shows a polluted Nairobi River in Kenya.	
	 Fig. 4	
	(i) Using Fig. 4, describe the human activities that cause water pollution along the Nairobi River.	[3]

	• The cause of water pollution as shown in Fig. 3 is due to people throwing their garbage directly outside their house. [1] • In the left foreground, there is a makeshift toilet that releases human waste into the river. [1] • People may carry out domestic activities such as cooking or washing dishes/clothes by the river. [1] <i>Award 1 mark for each point up to 3 marks.</i> <i>Cap @ 1 mark if no reference is made to Fig. 3. Must have at least 1 reference made</i>	
	(ii) Describe how people and environment living by the river would be affected by such water pollution.	[3]
	• Water pollution would cause harmful substances to enter water bodies and cause water quality to fall. • As the water is contaminated/contains harmful substances, this would reduce the amount of water that is clean enough to use/ safe to drink. • Aquatic lives/ Fish will not be able to live/survive in the polluted river <i>Award 1 mark for each point up to 3 marks</i>	
(f)	Identify one type of flood that may affect areas and briefly explain how they are formed.	[3]
	• Flash floods [1]– exceptionally heavy rainfall over a short period of time [1] • Floods often occur in dry areas where there is not enough soil or vegetation to allow rainwater to infiltrate the ground. [1] • Most of the rainwater that falls onto the ground becomes surface runoff which quickly floods low-lying areas. [1] OR • River floods [1] caused by sustained heavy rainfall or meltwater produced when snow and ice start to melt in spring season. [1] • Large amounts of rainwater and meltwater enter streams and tributaries which flow into river rises rapidly and eventually overflows the banks and floods and the surrounding areas [1] <i>Award 1 mark for identification, 2 marks for description</i> <i>Cap @ 1 marks if no name of flood is given</i>	

Section B : Tropical Forests

2(a)	Study Fig. 5, which shows a map on the locations of tropical rainforests.	
		
	Fig 5	
	(i) Using Fig. 5, describe the distribution of tropical rainforests	[3]
	• Places with tropical climate or high temperature/high rainfall (or warm climate) • Between Tropic of Cancer and Tropic of Capricorn. • Central and South America, West and Central Africa, Southeast Asia [Regions accepted, no marks given for countries] • Near Equator. All 1 mark each max 3m	
	(ii) Give an example of a country which has tropical rainforests	[1]

	Brazil or Malaysia or Singapore [No mark given for continents and regions] Africa is a continent not a country <i>Award 1 mark for 1 example</i>	
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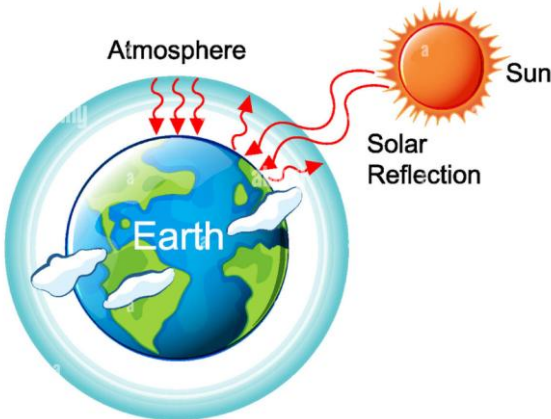
2(b)	Study Fig 6 which shows an area where mangroves are found	
		
	Fig 6	
	With reference to Fig 6, describe the conditions needed for mangroves to grow	[3]
	• Areas with water with higher salinity than freshwater - less competition for plants. (note: competition is only accepted as elaboration of salinity) • Tropical climate with air and water temperature that do not fall below 20 degree Celsius. • Calm water conditions • Sheltered coasts • Near coastal areas • Muddy/moist <i>Award 1 mark for each point up to 3 marks</i> • Not accepted: "shade/shady water/ salt water" • Not accepted : near water bodies as water bodies include lakes, reservoirs and mangroves are not found there. Students who mainly STATED their points without any description will be awarded 1m max.	

2 (c)	Study Fig. 7A and 7B which show the characteristics of leaves in tropical rainforests and in mangroves	
	Tropical Rainforest  Drip Fig 7A Tropical Mangroves  Salt Crystals Fig 7B	
	Using Fig. 7A and 7B, compare the adaptation of leaves between the tropical rainforests and tropical mangroves.	[4]
	Similarity - Both have adapted to their environment – tropical rainforest to the high rainfall and tropical mangroves to the high salinity water condition[1] [No marks will be given for stating both have adapted] Difference - Tropical rainforest has drip tip leaves while tropical mangrove has leaves that are salt-secreting [1] - In tropical rainforests these drip tips allow rainwater that falls onto them to flow off easily and thus prevents growth of fungi or bacteria on them while in Tropical mangroves have salt secreting leaves that enable them to remove salt from the saline water that their roots have absorbed.[1]	

	• Tropical rainforest has leaves with small narrow <i>tips that point downwards</i> while Tropical mangroves have salt secreting leaves that <i>enable them to remove salt from the saline water that their roots have absorbed</i>. [1] <i>Most students did not COMPARE the adaptation of the leaves. They mainly stated the differences without making references to the question ie adaptation.</i> <i>Answers like both are green in colour. Both contains chrolophyll. 1 is bigger than the other will get 0 mark.</i> <i>False match= 0 mark</i> <i>E.g: Leaves in tropical mangroves can remove salt, while leaves in tropical rainforests cannot = 0 mark.</i> <i>Students who merely stated the points without comparing in a set/use of connectors “while, but” = get a maximum of 2m</i> <i>Students need to address BOTH similarity and difference to attain 4m</i> <i>A well-explained difference paragraph/point, = max of 3m</i>	
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2d)	Study Fig. 8A and Fig 8B, which show how resources from tropical rainforests can be used.	
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	Fig 8A	
		
	Fig 8B	
	Using Fig. 8A and 8B, describe how tropical rainforests can be used by people.	[2]
	• Tropical rainforests can be recreational sites for people who live in towns and cities to get close to nature. As seen in Fig 8A, rainforest is used as a bridge for trekking, nature walk, or bird watching [1] • Tropical rainforests provide building resources to construct their huts/home/shelter[1] like the one shown in Fig. 7B • Timber is used for the structure and dried leaves for the roof as shown in Fig.8B [1] Students need to refer and use both Fig 8A and 8B to get maximum 2 marks. Max 1m is given for using one Fig. only. General answers like sightseeing/tourism will not be accepted. Question requires students to describe, hence 0 mark will be given for stating points like “recreation” or no reference made to Fig. 8A and 8B.	

2 (e)	Study Fig. 9 which shows the greenhouse effect	
	The Greenhouse Effect  Fig 9	
(i)	With reference to fig 9 and your studies, state what is the enhanced greenhouse effect.	[1]
	- Enhanced greenhouse effect refers to the increase in the average temperature of the Earth's surface due to more /excessive greenhouse gases (like carbon dioxide) in the atmosphere trapping heat. [1] Accept - 'refers to the increase greenhouse gases in the atmosphere' [1] Not accepted - 'global warming' or 'increase in earth's temperature' or 'more heat trapped' without mentioning it is caused by more greenhouse gases in the atmosphere. - More carbon - Temperature goes up - Ozone gas/layer	
(ii)	Describe how deforestation contributes to the enhanced greenhouse effect.	[2]
	Trees release its stored carbon as carbon dioxide into atmosphere when it is burnt/ removed/ deforested, hence there is more carbon dioxide in the air [1] OR Deforestation is the cutting down or removal of forested areas [1]	

	• Deforestation means fewer plants left behind to absorb the increased amount of carbon dioxide from the atmosphere [1] • More carbon dioxide in the air will trap more heat and this warms up the atmosphere, leading to the average global temperature to increase. [1] <i>1m for defining deforestation, 1m for describing how deforestation leads to enhanced greenhouse effect, Total = 2m</i>	
(iii)	Using an example describe one strategy that can sustainably manage tropical rainforests.	[4]
	• Rehabilitating disturbed areas aims to allow species of trees and plants to be reintroduced or regenerated. [1] • This is known as reforestation which is the planting of flora and reintroducing of fauna in an area which was previously cleared of its forest. [1] • During reforestation, a mixture of tree species is planted. Sometimes, tree species which are not native to the area may be planted because they are able to grow easily and quickly. [1] Example: Singapore • Rehabilitation of mangrove forests has been carried out on Pulau Semakau, which was partially converted into an offshore landfill. [1] • Similar efforts were also carried out in Sungei Buloh, Pulau Tekong and Pulau Ubin. [1] <u>Acceptable strategies</u> • Protect areas which contain tropical forests • Regulate forestry activities via controlled logging • Rehabilitate disturbed areas (reforestation) • Promote public education 2m for describing the strategy 1m for a located example 1m for link [how it can sustainably manage tropical rainforests] <i>General answers [not related to management strategies] like cutting down paper usage, 3R, stop printing worksheets(online),max 1m</i> <i>No additional mark given for combining 2/3 strategies together.</i>	

	<i>For e.g, we can educate the public on deforestation (public education) and plant new trees = 1m</i>	
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Acknowledgements	
Fig 1	https://www.ielsessaybank.com/wp-content/uploads/2021/03/water-use.jpeg
Fig 2	https://www.statista.com/statistics/183377/per-capita-consumption-of-bottled-water-in-the-us-since-1999/
Fig 3	https://theconversation.com/i-looked-at-how-polluted-nairobi-river-is-what-i-found-123533
Fig 4	https://www.researchgate.net/figure/Hydroelectric-Dam-Diagram_fig3_350334903
Fig 5	https://www.khanacademy.org/science/biology/ecology/biogeography/a/tropical-rainforest-biomes
Fig 6	https://en.wikipedia.org/wiki/Ecological_values_of_mangroves
Fig 7a	https://www.rainforestcruises.com/guides/
Fig 7b	https://www.rainforestcruises.com/guides/
Fig 8	https://www.dreamstime.com/illustration/forest-canopy-structure.html
Fig 9	https://www.alamy.com/the-greenhouse-effect-diagram-image445372166.html