Name: _____ ( ) Class: _____

WHITLEY SECONDARY SCHOOL

A Caring and Learning Community of Leaders

Perseverance * Respect * Integrity * Discipline *Empathy

END-OF-YEAR EXAMINATION 2022

SUBJECT	**: GEOGRAPHY**
LEVEL	**: SECONDARY ONE (G3)**
DATE	**: 06 OCT 2022**
DURATION	**: 1 hour 30 minutes**
TOTAL MARK	**: 50 marks**
SETTER	**: Miss Tifany Tay / Miss Ho Shi Yun**
VETTER	**: Mr Edward Nathan**

READ THESE INSTRUCTIONS FIRST
Do not turn the page unless you are told to do so.
Write in dark blue or black ballpoint pen.
You may use a soft pencil for any rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer all the questions.

Candidates are encouraged to support their answers with the use of relevant examples.
Diagrams should be drawn whenever they serve to illustrate an answer.
At the end of the examination, fasten all your work securely together with Insert.
The number of marks is given in brackets [ ] at the end of each question or part question.

This paper consists of 16 printed pages.

Section A: Short Answer Questions

1. **(a)** Study Fig. 1, which shows a map of Egypt.

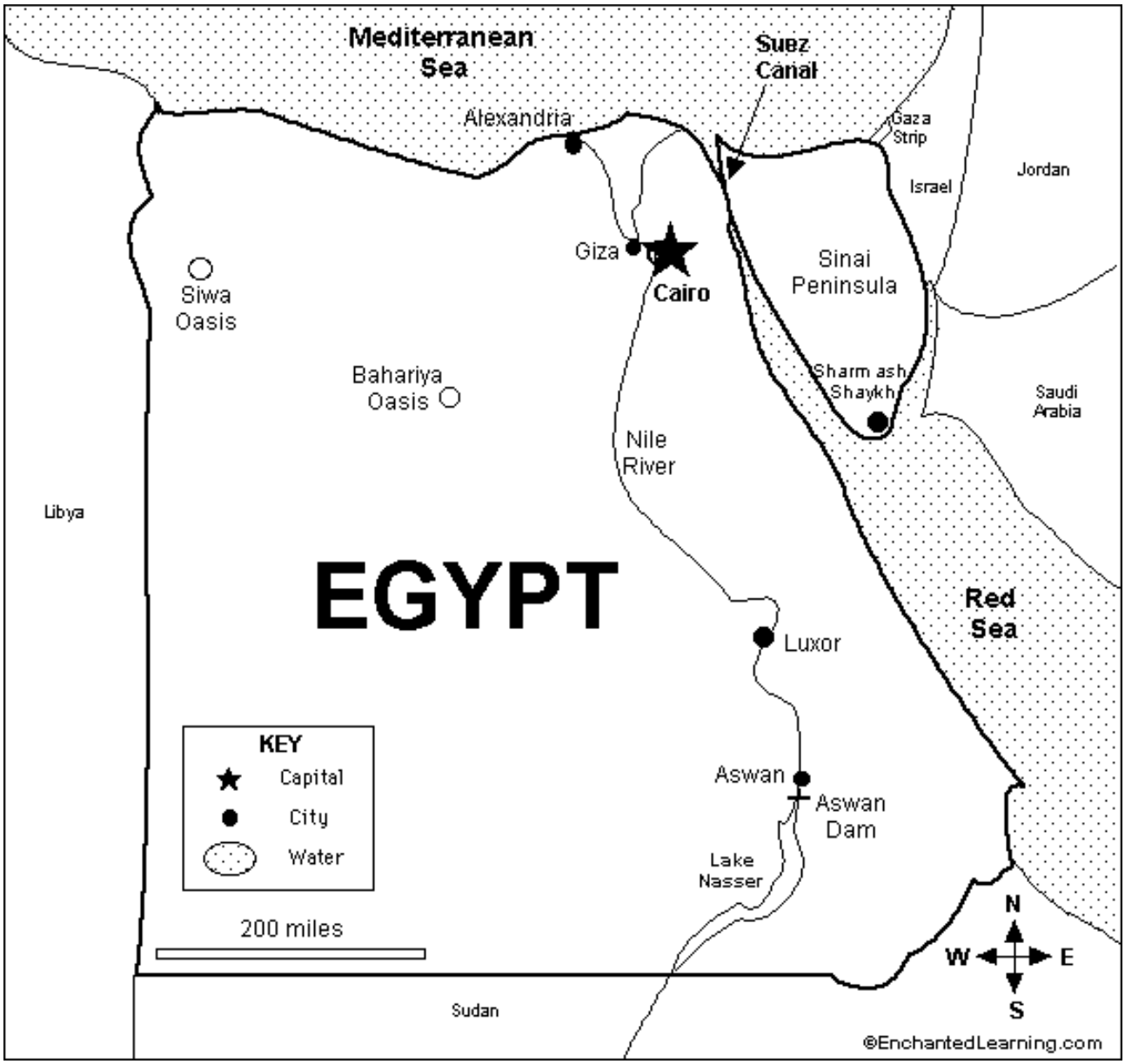

Fig. 1

Using Fig. 1, name **two** water stores found in Egypt. [2]

Water Store 1 - _____

Water Store 2 - _____

(b) Study Fig. 2, which shows the hydrologic cycle.

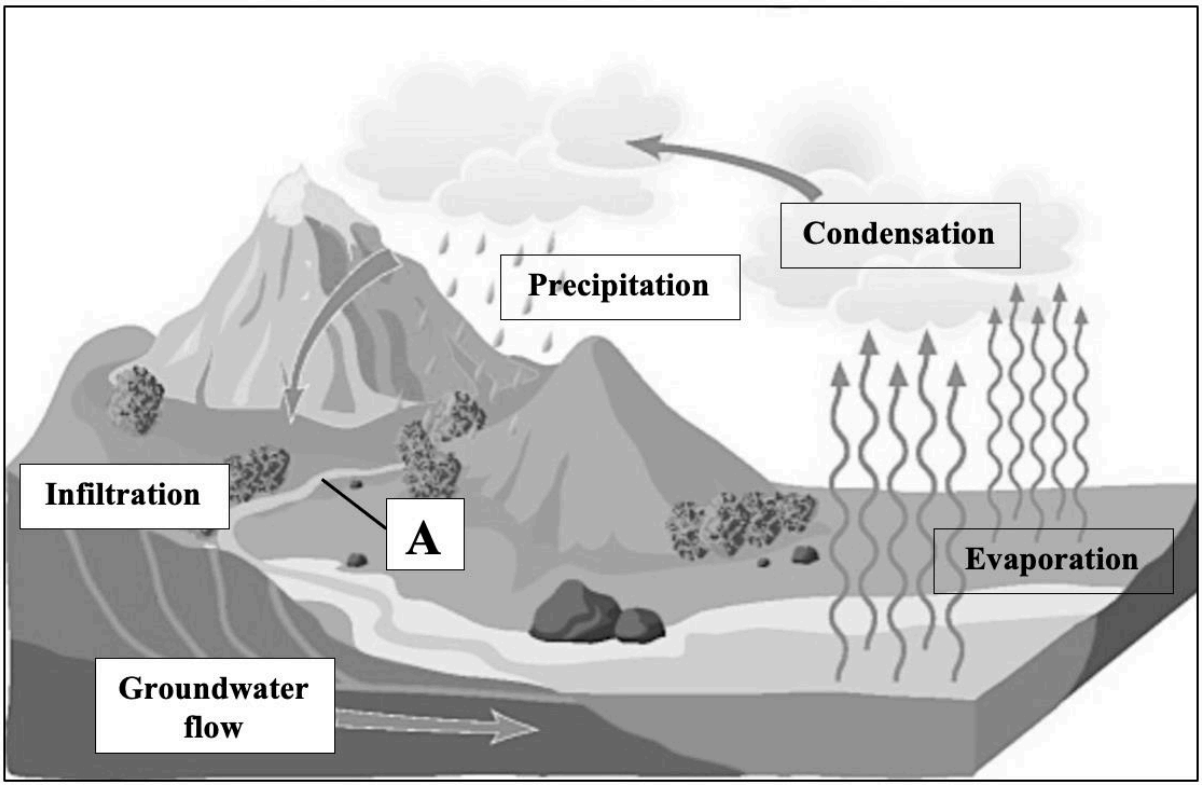

Fig. 2

(i) Identify the **process** labelled A in Fig. 2. Tick **one** option. [1]

Process	Tick one option
Groundwater flow	☐
Soil moisture	☐
Surface runoff	☐

(ii) During a drought, how will the amount of precipitation and A (identified in part **i**) be affected? Circle **one** option.

Process	Change during a drought
Precipitation	Increase / Decrease / Remain constant
A	Increase / Decrease / Remain constant

[2]

(c) Table 1 shows the average daily water consumption per person in Singapore from 2010 to 2020.

Table 1

Year	Average daily water consumption per person (litres)
2010	154
2011	153
2012	152
2013	151
2014	150
2015	151
2016	148
2017	143
2018	141
2019	141
2020	154

Using Table 1, complete the bar graph in Fig. 3. [2]

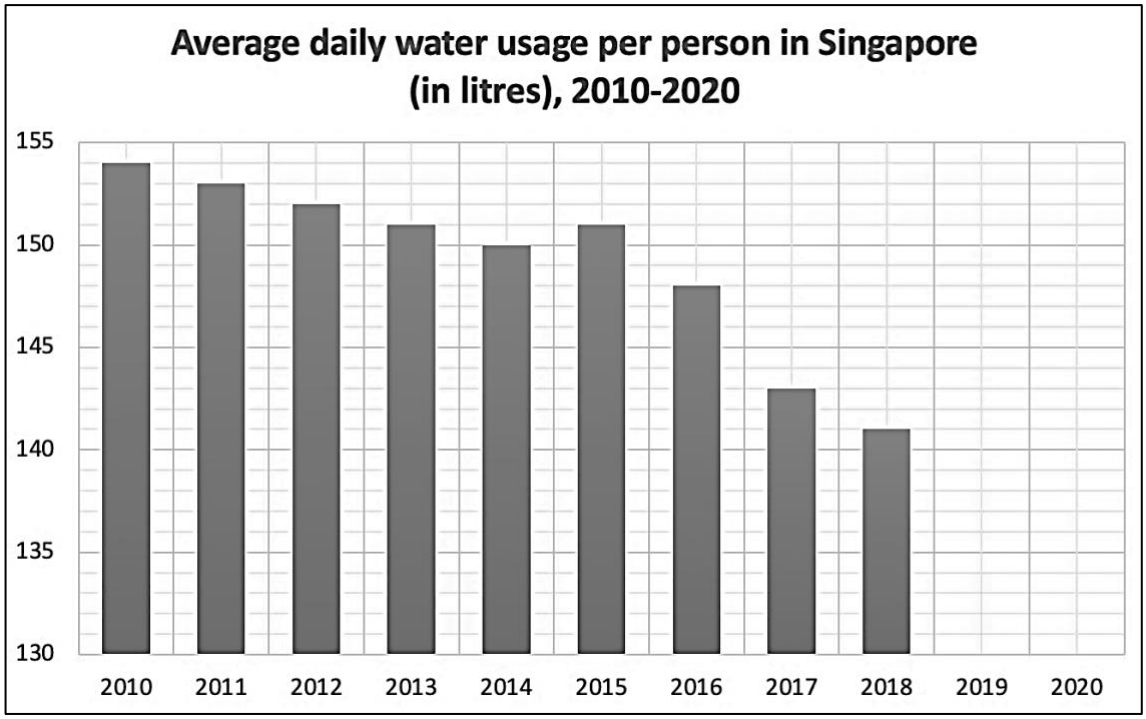

Fig. 3

(d) Study Fig. 4, which shows tourists on a beach in Thailand.

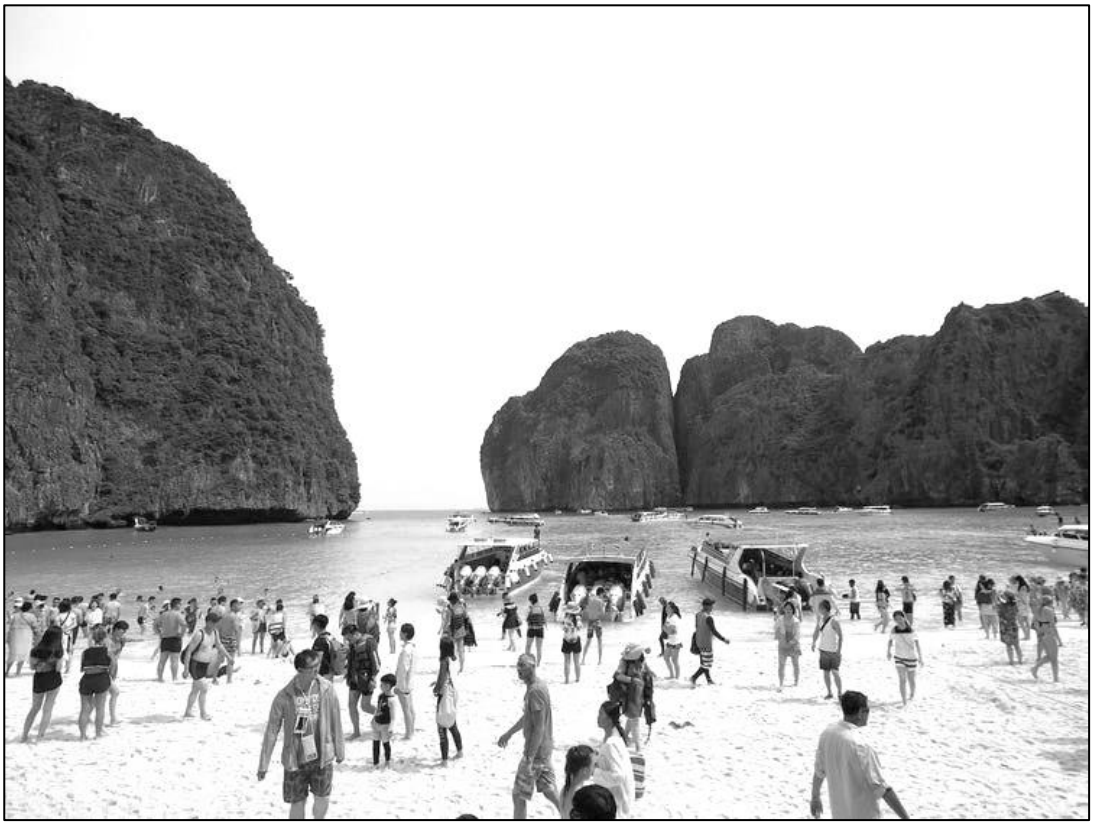

Fig. 4

(i) Using Fig. 4, describe **two** ways in which tourism can cause water pollution. [2]

_____

_____

_____

(ii) State **one** impact of water pollution on the environment. [1]

_____

_____

2 **(a)** **(i)** What is renewable energy? [1]

_____

_____

(ii) Study Fig. 5, which shows U.S. primary energy consumption by different energy sources in 2019.

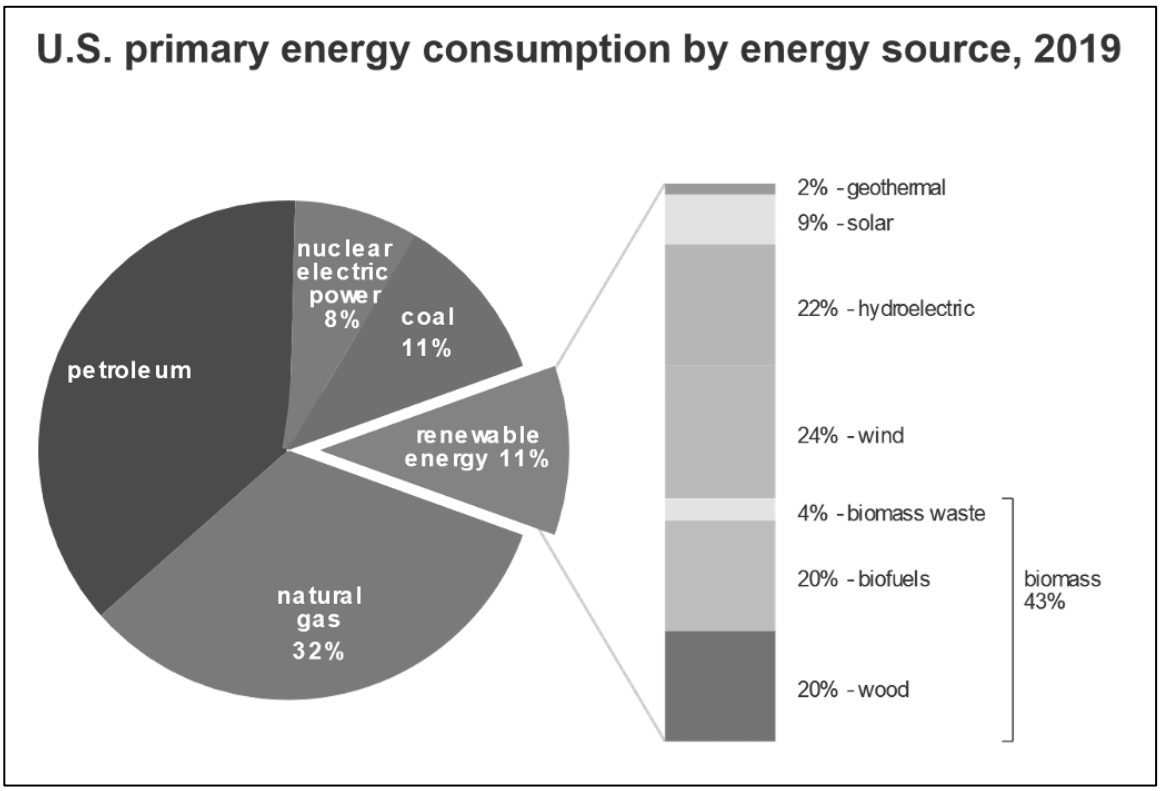

Fig. 5

Using Fig. 5, calculate the following:

Percentage of total primary energy consumption produced by petroleum: _____%

Percentage of total primary energy consumption produced by hydroelectric energy: _____ % [2]

(b) Study Fig. 6, which shows the total global installed power capacity from 2019 to 2025 of different sources of energy.

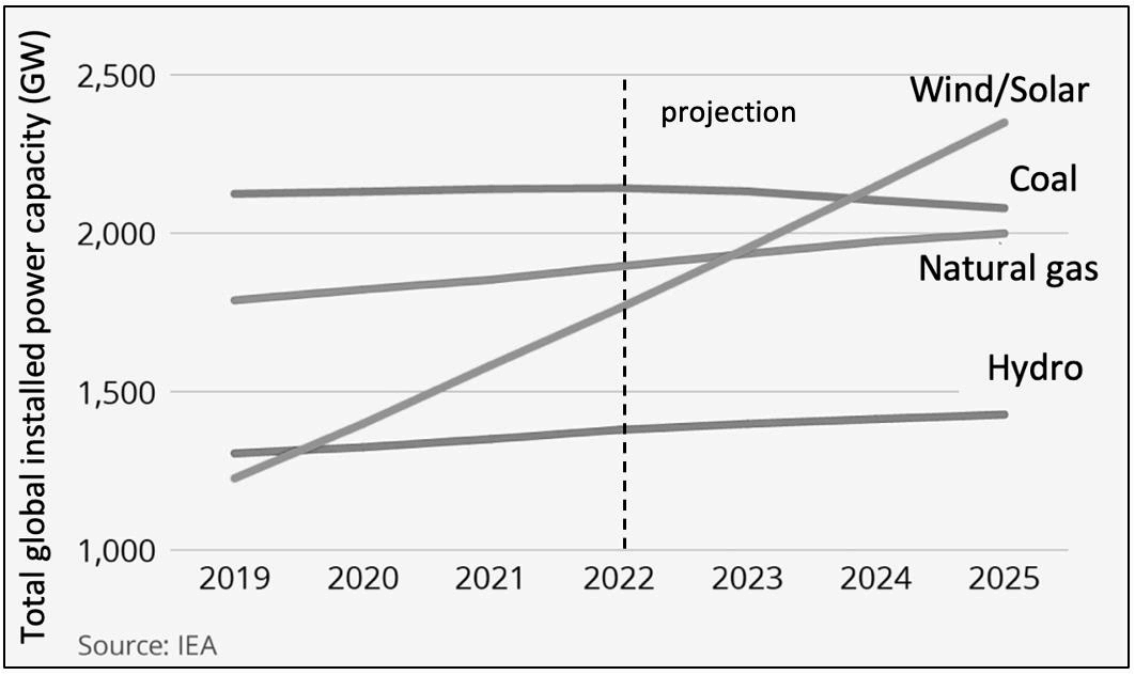

Fig. 6

With reference to Fig. 6, compare the trends in the total global installed power capacity for wind/solar and coal projected for 2022 to 2025. [2]

_____

_____

_____

_____

_____

(c) Study Fig. 7, which shows the benefits of tropical rainforests.

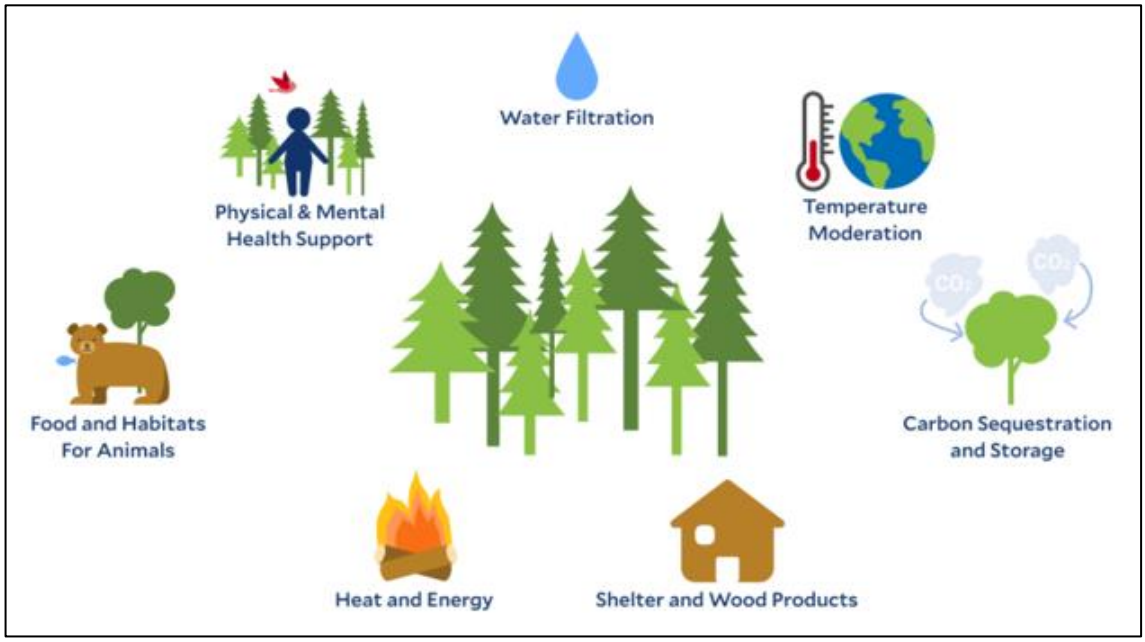

Fig. 7

With the help of Fig. 7, describe **two** benefits of tropical forests for people and the environment. [2]

_____

_____

_____

(d) **(i)** Define deforestation. [1]

_____

_____

(ii) Describe **two** causes of deforestation [2]

_____

_____

_____

_____

_____

[Total marks: 20 marks]

Section B: Structured Questions

3. **(a)** Study Fig. 8, which shows the structure of tropical rainforests.

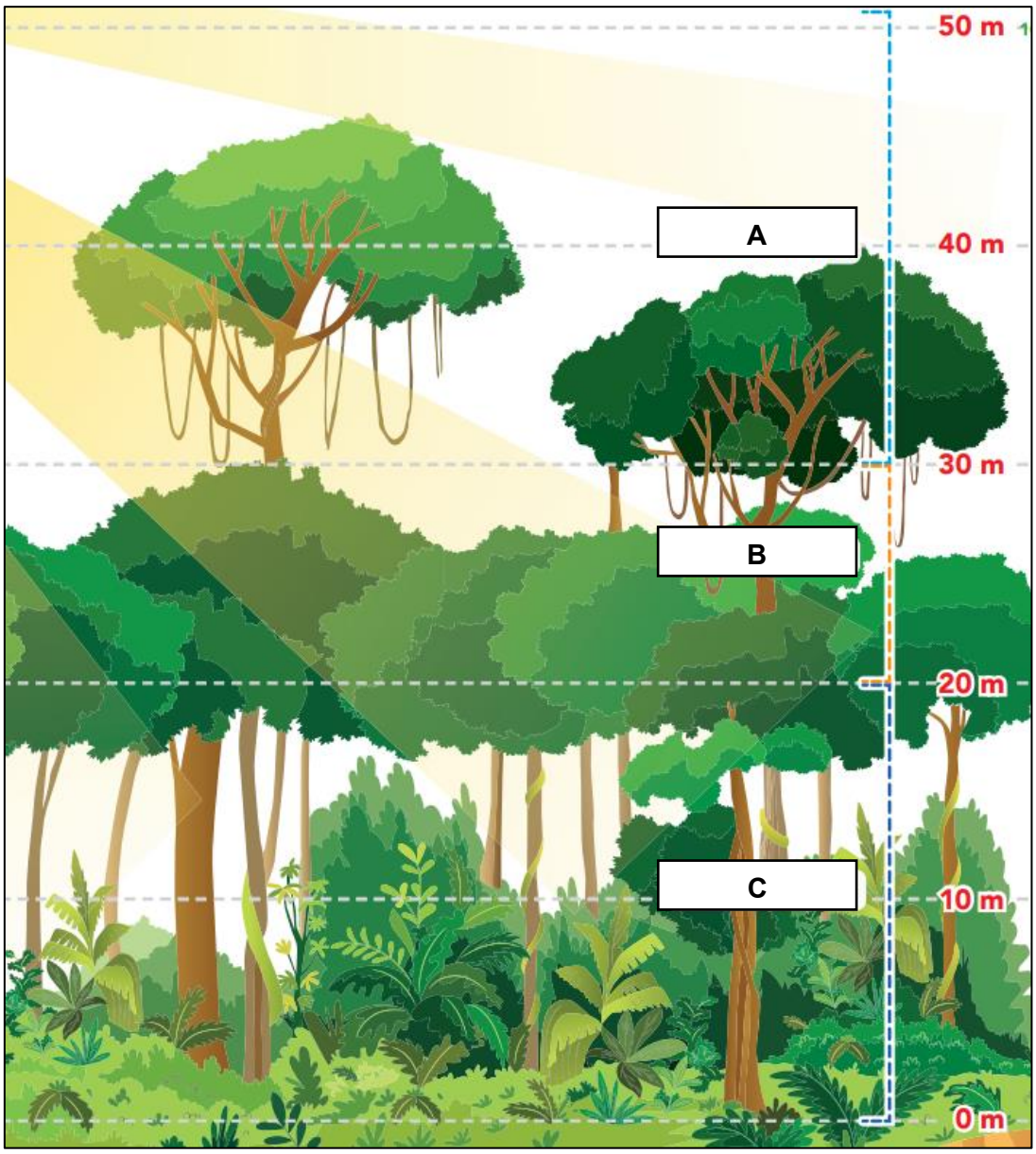

Fig. 8

Identify Layer C and describe the characteristics of this layer. [3]

_____

_____

_____

_____

_____

(b) Fig. 9 shows the distribution of mangroves across the world.

Fig. 9

(i) Using Fig. 9, describe the distribution of mangroves across the world. [3]

_____

_____

_____

_____

_____

(ii) Explain how roots of mangrove plants adapt to the coastal environment. [2]

_____

_____

_____

_____

(c) How do tropical rainforest and mangrove plants contribute to carbon storage? [3]

(d) Explain **one** strategy countries such as Singapore have taken in managing tropical forests. [4]

4. **(a)** With the use of known example(s), explain how a renewable resource can become non-renewable. [2]

_____

_____

_____

_____

(b) Describe how we can use natural resources sustainably. [2]

_____

_____

_____

_____

(c) Study Fig. 10, which shows a flood happening along the Gallatin River.

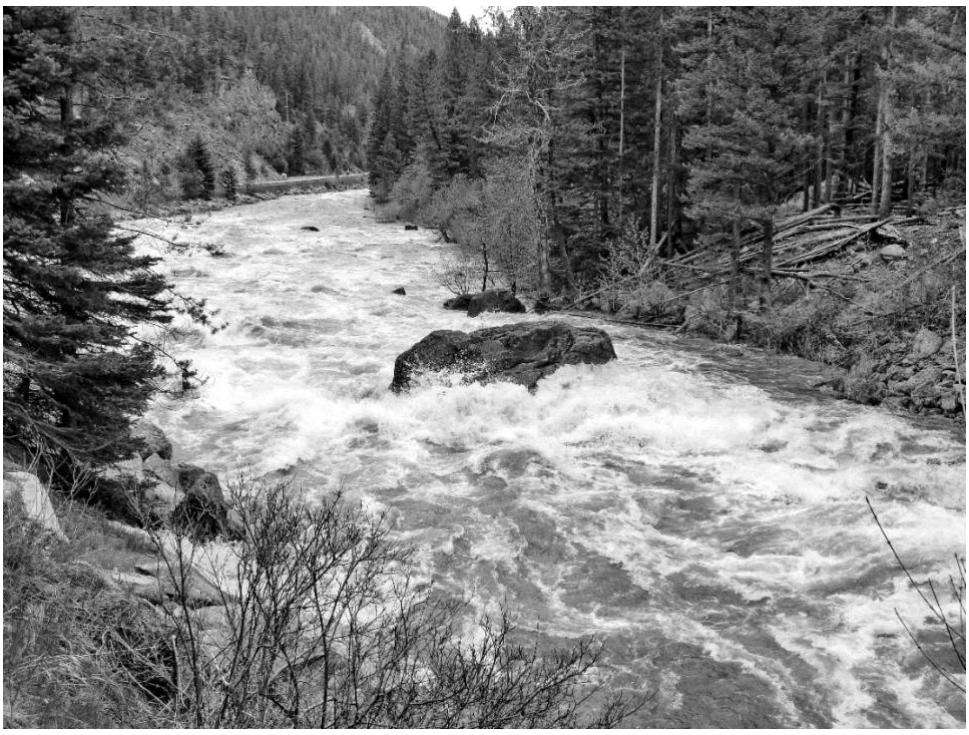

Fig. 10

Identify the type of flood found in Fig. 10 and explain how this type of flood is formed. [4]

_____

_____

(d) Describe how water is used in agriculture and industries. [3]

(e) Explain **one** strategy used to manage water supply sustainably and describe **one** advantage and disadvantage of the strategy. [4]

[Total marks 30 marks]

END OF PAPER

Additional page

If you use the following lined pages to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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END-OF-YEAR EXAMINATION
GEOGRAPHY
MARKING SCHEME

LEVEL: SEC 1 EXPRESS
SETTER: Ho Shi Yun
Assessment Objectives 1+2 (knowledge and explanation) 48%
Assessment Objectives 1+3 (knowledge and use of resources) 52%

TABLE OF SPECIFICATIONS

Question	AO1 + 2	AO1 + 3
Section A		
1a		2
1bi		1
1bii		2
1c		2
1di		2
1dii		1
2ai	1	
2aii		2
2b		2
2c		2
2di	1	
2dii	2	
Sub-Total	4 (20%)	16 (80%)
Section B		
3a		3
3bi		3
3bii	2	
3c	3	
3d	4	
4a	2	
4b	2	
4c		4
4d	3	
4e	4	
Sub-Total	20 (66.7%)	10 (33.3%)
TOTAL	*48%*	*52%*

Qn.	Question / Suggested Answers	Marks	AO

<table>
<tr><td>1a)</td><td>

- Nile River
- Lake Nasser
- Mediterranean Sea
- Red Sea
- Siwa Oasis
- Bahariya Oasis

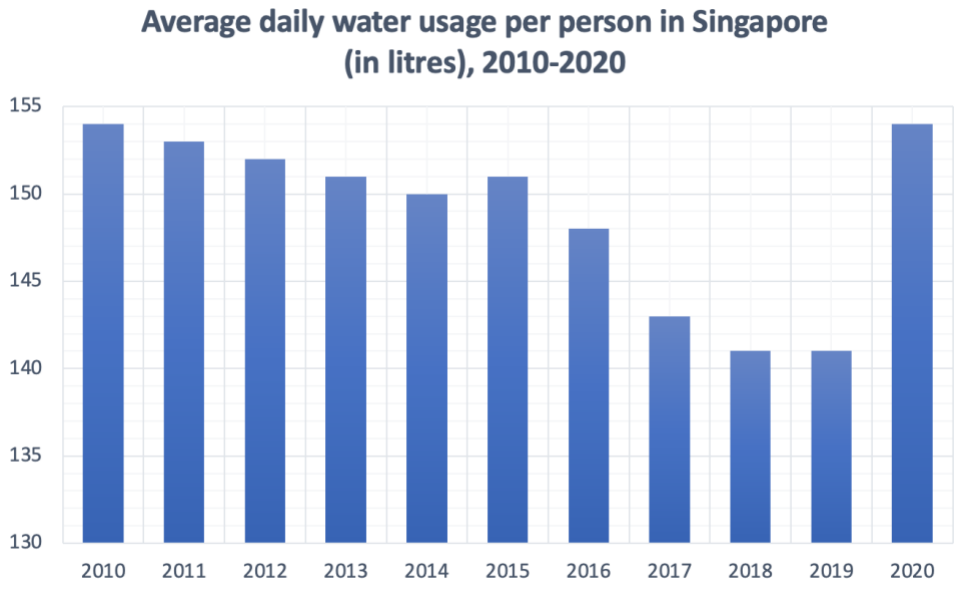
</td><td>Any 2@1m each, max 2m</td><td>AO 1 + 3</td></tr>
<tr><td>bi)</td><td>

- Surface runoff

</td><td>1m</td><td>AO 1 + 3</td></tr>
<tr><td>ii)</td><td>

<table>
<tr><th>Process</th><th>Change during a drought</th></tr>
<tr><td>Precipitation</td><td>Increase / Decrease / Remain constant</td></tr>
<tr><td>A</td><td>Increase / Decrease / Remain constant</td></tr>
</table>

</td><td>2@1m each, max 2m</td><td>AO 1 + 2</td></tr>
<tr><td>c)</td><td>



</td><td>Reserve 1m for accurate plotting of 2019 and 1m for 2020, max 2m</td><td>AO 1 + 3</td></tr>
<tr><td>di)</td><td>

- Tourists may leave their litter behind on the beach and it may get washed into the sea.
- Tourist boats may spill oil and other pollutants into the sea.
- *Any other plausible answers*

</td><td>Any 2 @1m each, max 2m</td><td>AO 1 + 3</td></tr>
<tr><td>dii)</td><td>

- Marine creatures may be poisoned by the pollutants in the sea / by consuming the litter disposed in the sea and die.

</td><td>1m</td><td>AO 1 + 2</td></tr>
</table>

2ai)	● Energy that can be replenished naturally more or less within the same time period when they are used OR ● Energy that is considered to be unlimited as natural processes continually occur to replenish it	1m	**AO 1 + 2**
ii)	Percentage of total primary energy consumption produced by petroleum: 38% Percentage of total primary energy consumption produced by hydroelectric energy: 2.42%	2@1m each, max 2m	**AO 1 + 3**
b)	● Total global installed power capacity for wind/solar will **continue increasing steadily** from 2022 to 2025. ● **On the other hand**, total global installed power capacity for coal is projected to remain constant until 2023 and then **gradually decline**.	2@1m each, max 2m	**AO 1 + 3**
c)	**Benefit for people (any 1 @1m)** ● Shelter and wood products: ● Forests provide a home for indigenous communities. ● Forests are a rich source of raw materials like wood, which can be used for building and carpentry. ● Heat and energy: ● Wood from forests can be burned to provide heat and energy. ● Physical and Mental support ● Forests provide a place for recreation where people can engage in physical activities to improve their health. ● Visiting forests can be calming and have a positive effect on people's wellbeing. **Benefit for environment (any 1 @1m)** ● Food and habitats for animals: ● Forests provide habitats for many species of animals / support rich biodiversity ● The plants in forests provide abundant food sources that support a wide variety of animals ● Carbon storage: Forest plants absorb carbon dioxide from the atmosphere during photosynthesis and store the carbon. ● Temperature moderation: By removing carbon dioxide in the atmosphere, forests help to keep carbon dioxide levels and, hence, the Earth's temperatures lower.	Any 1@1m, max 2m	**AO 1 + 3**
di)	● The **permanent removal** / **large-scale** clearance of forests.	1m	**AO 1 + 2**

ii)	Trees are cleared: ● To provide land to build homes for a growing population to stay ● To clear land for agriculture and/or aquaculture ● To obtain wood that is used to build houses, furniture and other objects for human use ● To mine the valuable raw materials like gold and oil found underneath them to make profits	Any 2 @1m each, max 2m	**AO 1 + 2**

Qn.	Question / Suggested Answers	Marks	AO
3a)	Layer C: Undergrowth [1] ● Found beneath the canopy layer ● Can be found between 0m to 20m of the tropical rainforest ● Very little sunlight can access this layer ● Amount of vegetation here, therefore, is relatively sparse exc3ept for areas where there are gaps in the canopy	Reserve 1m for identification ot layer Any 2@1m each, max 2m	**AO 1 + 3**
bi)	● Mangroves are distributed **between the tropics of Cancer and Capricorn** ● Most of mangroves are distributed **near the equator** ● They are distributed **near the coastlines**. ● They are also distributed **near** the coastal margins of **continents e.g. Southern region of North America, South America, Africa, Southeast Asia and Australia**	3m	**AO 1 + 3**
bii)	● Aerial roots stick out of the soil surface to take in oxygen directly from the air when they are exposed during low tide. ● Roots anchor mangrove plants to the soft soil, thus preventing them from being uprooted and washed away by strong waves	2m	**AO 1 + 2**
c)	● During photosynthesis, rainforest and mangrove plants absorb carbon dioxide from the atmosphere and hence contribute to carbon storage. ● Absorbed carbon dioxide is stored in solid form in parts of the plant (leaves, branches, stems and roots) while dead leaves and branches which fall to the ground add carbon to the soil	3m	**AO 1 + 2**

	● This, therefore, helps to balance the amount of carbon dioxide being added to the atmosphere through processes e.g. respiration and decomposition		
d)	**Establishing protected areas** ● By setting aside tropical forests as protected areas, ● human activities are restricted to prevent plant and animal life from being negatively affected. ● Governments implement laws to ensure people do not damage protected areas e.g. illegally cutting down trees or poaching exotic animals ● E.g. Singapore has a total of four protected areas known as nature reserves: Bukit Timah Nature Reserve, Central Catchment Nature Reserve, Sungei Buloh, Wetland Reserve and Labrador Nature Reserve **Rehabilitating disturbed areas** ● Forest rehabilitation aims to re-introduce at least some of the plant and animal species which were originally found there ● Reforestation helps to rehabilitate a deforested area through the planting of new trees ● This saves flora and fauna from extinction and reduces the impact of soil erosion ● For instance, rehabilitation of mangrove forests has been carried out on Pulau Semakau where the Ministry of the Environment and Water Resources replanted a large number of mangrove seedlings, some of which have managed to survive and grown into a large and dense mangrove forest **Public education** ● Teaches the public to appreciate the importance of tropical forests so that they will become concerned about their conservation and be more likely to play a part in helping reduce deforestation ● Seeks to make people more aware of the role that they play in the destruction of tropical forests so that they will take steps to lead more sustainable lives ● Teach people the causes of deforestation as well as the specific actions they can take to help to reduce deforestation e.g. only buy wooden products sourced from sustainablymanaged forests / recycle waste paper ● For instance, National Parks Board (NParks) in Singapore regularly organises exhibitions, festivals and workshops for people to learn more about tropical forests / Nature Society (Singapore) also organises guided walks and tours to	4m	**AO 1 + 2**

	places like Pulau Ubin and Mandai mangrove forest for people to learn about the rich plant and animal life in our tropical forests **Regulating forestry activities** ● Logging activity is either restricted to only older trees / particular species or small patches of forest ● Helps to limit overall damage and allow vegetation to recover quickly ● Allows people to continue to extract and use valuable timber for industrial purposes à strikes a balance between conserving forests and obtaining economic benefits from them ● For example, controlled logging is practised in Malaysia where they limit logging to older trees/ particular species and Columbia where they limit logging to small patches of forest at a time		
4a)	● Renewable natural resource can become non-renewable if we use it at a faster rate than it can be naturally replenished. ● For example, wood from tropical rainforest trees is useful for many purposes e.g. the manufacture of furniture and paper products. To meet people's demand for wood, trees are being cut down at a much faster rate than they can be naturally grown back. ● If this continues, its availability become changes from unlimited to limited and tropical rainforests may become non-renewable.	Reserve 1m for example Any 2@2m each, max 2m for explanation	**AO 1+2**
b)	Reduce: -We can consider reducing our consumption/ use of products, and hence reducing the amount of natural resources used -We can also consider reducing our consumption of products with smaller environmental footprint to reduce our impact on the physical environment OR Reuse: -We can consider reusing a product or material to buy new/additional pieces -For example, cardboard boxes can be repurposed to store household items -This way, we use fewer natural resources such as wood from trees Any two of the three points above OR Recycle: -Turns used materials into new and useful ones	Any 2@1m each, max 2m	**AO 1+2**

	-As Aluminium is extracted from the mineral Bauxite, reusing aluminium drink cans reduces the need for bauxite OR Recover: -Recover useful materials from the waste we produce -Composting can help reduce the amount of waste that needs to be incinerated or disposed of in landfills		
c)	**Type of flood:** River flood [1] **Explanation:** ● River floods are caused by **sustained heavy rainfall, or meltwater produced** when snow and ice start to melt in the spring season ● Large amounts of rainwater and meltwater enter streams and tributaries, which then **flow into rivers** ● **Water level in the rivers rises rapidly** and it eventually **overflows the banks**, flooding the surrounding areas	Reserve 1m for identification Max 3m for explanation Max 4m	**AO 1+3**
d)	Agriculture ● Water is used to grow crops. ● Water is used to rear animals. Industry ● Water is used to cool equipment in factories and power plants. ● Water is used to generate electricity when passed through turbines installed in dams. ● Water is used as a cleaning agent in wafer fabrication.	Reserve 1m for other use Max 3m	**AO 1+2**
e)	**Improve quality through implementation of laws.** ● Industries are not allowed to release wastewater into water bodies without permission from authority. ● These laws prevent water pollution and protect our supply of clean water. ● Law enforcement needs to be rigorous with strict monitoring in place to ensure that regulations are followed. OR **Reduce water consumption** ● Raise awareness and promote water conservation with various stakeholders. I.e. Water Efficiency Labelling Scheme (WELS).	Reserve 1m for advantage and 1m for disadvantage Max 4m	**AO 1+2**

	● By reducing water consumption, we help to ensure that our supply will not be used faster than it can be replenished. ● Water consumption may still increase with population growth and increasing affluence. OR **Improve water technologies. (Desalination/ NEWater)** ● Desalination helps to increase water supply through process that removes salts and minerals from saltwater to produce drinkable water. ● Improved water technologies allow us to develop new ways of generating water so that our water supply can be increased to better meet our growing demands. ● Advanced water technologies are very energy-intensive and expensive to sustain. Building desalination/ NEWater plants is also land-intensive and land-scarce Singapore may not be able to spare the land to continually build them. OR **Import water.** ● International water agreements help to manage conflicts that may arise due to sharing of scarce water resources and ensure provision of water supply. ● Imported water helps to supplement our supply of water as local catchment does not supply enough water to meet our growing demands. ● The supply of water from Malaysia may be threatened in the event of political tensions. Conflicts may arise over the sharing of water resources and countries will likely prioritise the protection of water resources for their own populations.		