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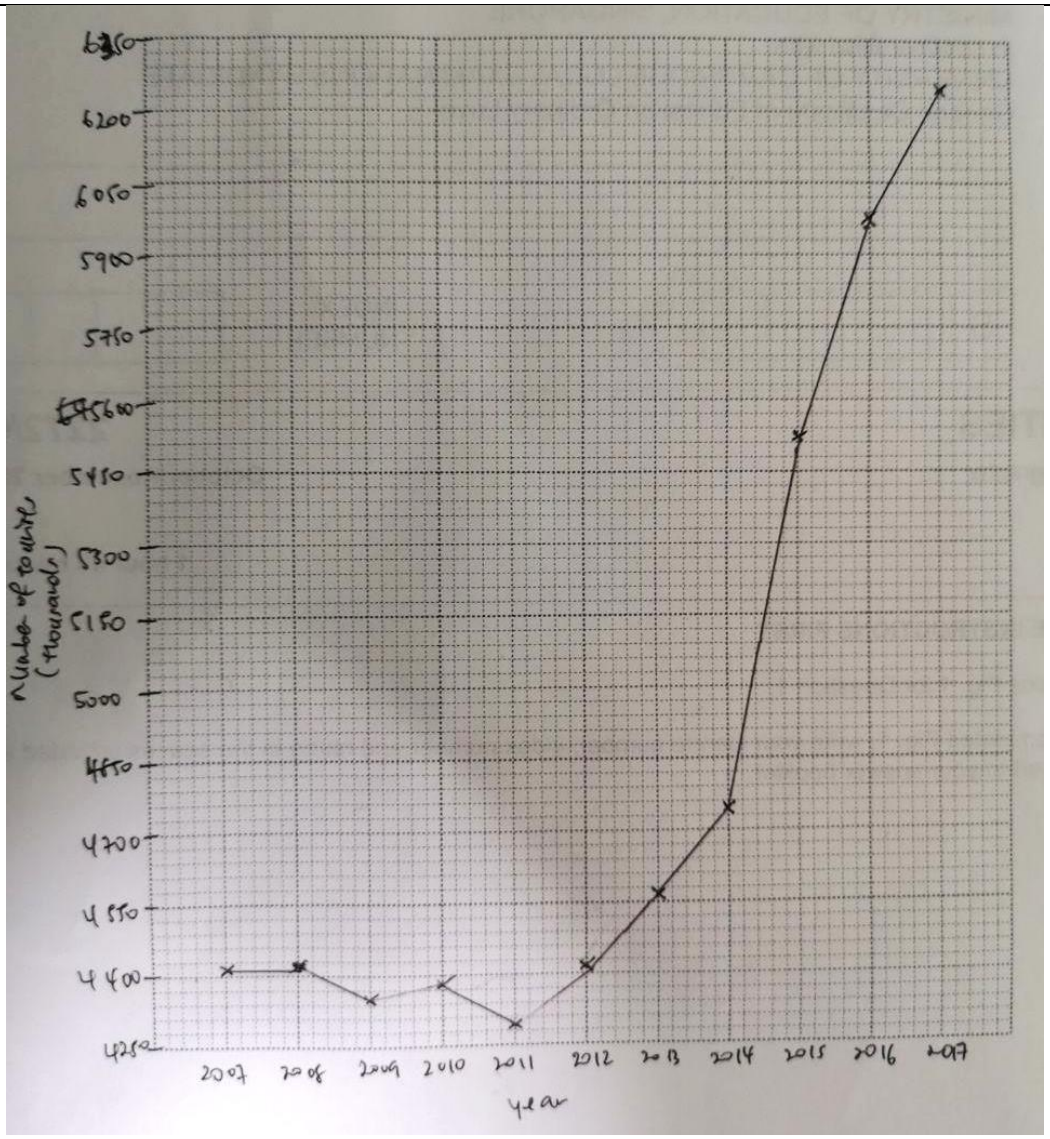
Suggested Answers to 2019 O level Geography (Elective) 2272/ Paper 2

Section A

1(a)	
1(b)i)	The closer the distance to the visitor centre, the higher the number of tourists.
1(b)ii)	The students could do a traffic count at points 1 to 6. The students could count how many people passing by the site for 5 minutes. They should start the count at the same time and end at the same time. They will do it for 5 to 6 times, and average out the number of visitors passing by the area. They will then tabulate the scores in a scatter graph, with y-axis showing number of visitors and x-axis indicating the site, from nearer to furthest from the visitor centre. They then figure out if there is a positive correlation between distance from visitor centre and number of visitors.

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1(c)	The conclusion is valid as the overall score of the environment perception survey is +1, which means that the area is well maintained. However, the environment perception survey is only carried out at one site, which means that it may not be representative of the entire GCNP, especially since the site is huge. On top of that, the area may be well-maintained as indicated by the environment perception survey, but it does not show that tourism had minimal impact. It could be very well due to the fact that it is a popular site, and hence, the area is well maintained as the government would want to further promote tourism in that area. Also, the students only carried out the investigation during sunset, which is one duration and hence, it may not be valid as there is insufficient data to ensure the validity and accuracy of the data collected. It could be due to the fact that it was late and the cleaners had already cleaned the area, and hence there was little presence of litter.

2(a)(i)	Fig. 1 show that there is a day with the wind direction being northeast. However, Table 2 shows zero days with such prevailing wind direction.
2(a)(ii)	The students should stand a site high enough to avoid wind interference from other objects, buildings and trees. The students should do it over an extended period of more than 12hours to ensure that the prevailing wind direction is indeed the one that they have recorded. Also, students should read the wind vane at eye level to ensure there is no parallax error when recording the direction.
2(b)(i)	The further the distance from the sea, the lower the wind speed. / The nearer the distance from the sea, the lower the wind speed.
2(b)(ii)	The data collection method is reliable as the students have collected wind speed data at multiple sites at locations X and Y. Locations X and Y are both large areas, and hence wind speeds may differ due to varying locations. Especially so in location X, where wind speed in some location may be interfered by the presence of buildings. Collecting data at multiple sites and calculating the average of X and Y will make the data more representative of the entire area. Additionally, the students took data at the same time of the day at all sites. This makes data more representative and conclusive as it diminishes any error that could have been made as they will be taking the average of the data collected. Also, wind speeds may vary across the day due to pressure differences, and hence by taking data at the same time, they are diminishing the margin of error, thus making the data more conclusive and reliable.
2(c)	From Table 3a and 3b, we can conclude that there is a relationship between relative humidity and distance from sea. The tables show that X has a larger wet-bulb depression of 5 to 6 degrees Celsius compared to Y's 3 to 4 degrees Celsius. This shows that Y has a lower higher relative humidity as compared to Y hence leading to the conclusion that the closer the location is to the sea, the higher the relative humidity.

Section B

3(a)	When the prevailing wind blows across a water body and meets an area of higher relief, air is forced to rise over a mountain range. It then cools, and the moisture within it condenses. Clouds are then formed and this causes rain to fall on the windward side of the mountain.
3(b)	One of the threats posed by climate change is sea-level rise. It refers to the increase in mean height of the sea's surface between the high and low tide relative to land. Higher temperatures cause the melting of glaciers and expanding of waters in the seas, resulting in the result of sea level. It is a serious threat to human settlements that are located at or around sea level as properties and infrastructure would be lost of the sea levels continue to rise. It will result in more floods occurring which would cause properties to be damaged and for economic activities to be halted, which will result in economic decline. Additionally, it will also result in deaths as people drown or people suffer from the lack of proper sanitation due to destruction of their homes. For example, rising sea levels are likely to cause coastal flooding that will affect 300 million homes by 2050, with the greatest threat facing mainland China, Bangladesh, India, Vietnam, Indonesia and Thailand. Other threats posed by climate change include the spread of infectious insect-borne diseases. Heavy rainfall brought about by climate change, as a result of rising temperatures increasing rates of evaporation, has created more habitats for mosquitoes due to the increasing presence of stagnant puddles of water. This has allowed for the breeding of mosquitoes such as Aedes, which could be carriers of diseases such as malaria and dengue. This will result in higher rates of dengue and malaria which can also result in higher rates of mortality, coupled with lower productivity. For instance, in Nepal there has been nearly 11000 cases of dengue fever in 2019, which is five times higher than the previous year. In addition, climate change can also alter the length of the growing season available. Climate change is a result of enhanced greenhouse effect due to the increase in greenhouse gases. This leads to the increase in global temperatures, which may cause growing season to be shortened. For instance, Yunnan had an optimum temperature to grow strawberries. However, due to global warming, the growing season has shortened thus resulting in fewer strawberries produced thus reducing income and jobs for farmers which may lead to economical problems for the region. In sum, I agree that the greatest threat posed by climate change is rising sea levels. This is because rising sea levels produce the greatest scale of impacts (i.e. deaths) and requires a lot to prevent it, especially if an area is located near the coast, or at lower sea levels. This is unlike spread of borne infectious diseases, where consistent effort can be placed by the government to ensure that there is a low count of stagnant pools. Furthermore, growing seasons can be altered with the help of man-made greenhouses, and hence do not prove to be significant detrimental impact.

4(a)	The higher the latitude, the lower the temperature. This is because, at higher latitudes, the sun's rays strike the earth at a lower solar angle resulting in the solar radiation spreading over a larger area. Hence, there will be lower concentration of radiation resulting in lower temperatures.
4(b)	Developments in technology have led to great improvements in safety, shorter travelling time and lower travelling costs for the average person. It has also become more affordable. Commercial air travel has revolutionised global tourism due to ongoing developments in jet aircraft since the 1950s. For instance, in 1950s, a commercial flight from Singapore to London would take two to four days. However, presently aeroplanes can fly nonstop for 15,000km. A commercial flight from Singapore to London now takes only 14 hours. Hence, it has enabled more people to travel internationally and more frequently as it does not require so much time to fly anymore. Apart from development in technology, demand factors such as an increase in disposable income worldwide have also led to the growth of global tourism. Disposable income refers to the amount of income left to an individual after taxes have been paid. The growth in disposable income has allowed people to spend more on goods, services and activities that improve people's quality of life. One of these activities is travelling for leisure. Disposable income has been increasing globally because of rapid economic growth. Countries such as China and India have experienced rapid economic growth, resulting in the growth of global tourism. In addition, the changing lifestyle of people has also led to the growth of tourism. The pace of life today is much faster. Many people in the workforce find themselves spending long hours at the workplace beyond the official working hours. Therefore, travelling has become a way for people to relax and take a break from their fast-paced lifestyle at work. In addition, due to advances in medical technology and knowledge, people now have a longer life expectancy and are more physically fit to travel frequently. Travelling has therefore also become a way for retirees to spend the remainder of their healthy years productively. For example, cruises are popular with retirees. Many of them go on cruise ships in the Caribbean and the Mediterranean. Thus, there has been a growth in global tourism. In conclusion, I disagree with the statement that development in technology is the main reason for the growth of tourism. This is because even with the advancement in technology and a lack of demand for tourism, there would not be a growth in tourism. It is a combination of all three factors that have led to the growth of tourism.

Section C

5(a)	Generally, the risk of financial loss is greatest in Japan at US$21-30 billion as compared to other regions which generally have about US$1-20 billion such as Guatemala, Italy and Indonesia. All countries have about 12.5% of the economic loss insured, such as Japan and Italy. However, Iceland proves to be an exception with 100% of its property insured.
5(b)	The benefits of living in a volcanic area as shown in Photograph B is such that there will be fertile soil in the region. This will help to increase the crop yield in the region, thus increasing the amount of money that can be earned by the farmers. In addition, volcanoes attract millions of visitors each year due to the impressive sights that it can offer. Locals can take up jobs such as tour guiding, thus increasing their income which will lead to also result in an improvement in their standards of living.
5(c)i)	Generally, rates of wasting in the world are higher closer to the equator and get lower as we move away from it. This is evident through the highest rates of wasting of more than 15% found in India and Sudan. This can be contrasted by less than 2.5% of wastage found in Australia and South America. In addition, wastage tends to be the highest in the African continent, with many regions of it within the 6-10% range of wastage.
5(c)ii)	Inadequate food consumption can lead to malnutrition which is a condition which occurs when the body does not get the sufficient nutrition it needs to maintain healthy tissue and organ functions. For example, the lack of calcium can lead to early-onset osteoporosis. In addition, it can also lead to starvation which results in organs being permanently damaged. With starvation, people fall sick more often resulting in lower productivity as people are unable to go to work or go to school, which will result in lower economic growth for the country. In addition, the government will also have to spend a large part of their income on providing healthcare for its people which can otherwise be spent on other parts to develop their economy, thus incurring an opportunity cost.
5(d)	Political factors such as poor government and civil strife can lead to food shortage. Civil strife is a situation in which a country faces internal conflicts, which may include riots, unrest or civil war. It may lead to disputes over the control of resources that affect food production, such as land. For example, landmines planted on farmlands can reduce or completely stop food production during and after a conflict. Sometimes, the lack of food supply is the root cause of conflict. Due to the lack of food, disputes over the control of resources can occur, resulting in lesser food, which would then start a vicious cycle of civil strife and shortage of food. Other reasons resulting in food shortage include rising demand for meat and dairy products from emerging economies. Several LDCs have developing economies that grow at rates that allow them to contribute significantly to the global economy. In particular Brazil, Russia, India and China. These countries, especially India and China have demonstrated high increase in

	food demand, especially for food products such as meat and dairy products. This is due to rising disposable incomes in LDCs which allow people to afford these products. The sustained growth in demand for food from these countries is believed to be depleting global food inventories, especially grain. This is mainly caused by a rapidly growing urban middle class with more purchasing power and changing food preferences. This may result in food shortages in poorer countries. The lack of accessibility to food can also result in food shortage. Transport facilities such as roads and rail links must be made available so that food can be reached even by people who live far away from shops. However, even when food is available within a country, how accessible it is may depend on the number and the location of food outlets. For example, in LDCs food outlets may be few and far apart from each other. As a result, people in these areas are unable to obtain fresh produce and thus have a lower food intake. In conclusion, I agree that political reasons are the main reasons for which why food shortage occurs. This is because accessibility to a place can be fixed and it is not a supply problem, it is more of a transportation problem. However, with political reasons, it can affect the supply of food as people will not be able to farm, and hence the depletion of supply can result in a larger issue than transportation. In addition, as for growing demand for food in LDCs due to increasing disposable income, these people are unlikely to face food shortages. Hence, it is not as big an issue, as even without grains, they can feed on other sources of food.

6(a)	The rift valley shown in Photograph C is a rocky, linear depression which has vegetation grown above of the rocks.
	Rift valleys are formed when two continental plates diverge. When two continental plates diverge, tensional forces cause fractures to form. The middle block then sinks, resulting in a linear depression known as a rift valley.
6(b)	The effects of the earthquake in Nepal in 2015 could have led to the destruction of properties as evident through the half-broken brick houses. This could have resulted in economic damages as the owners would need money to rebuild the houses. In addition, the damage resulted in the destruction of the roads which would have obstructed traffic and may have prevented rescue missions to occur efficiently. In addition, the electric power cables are also seen to have fallen over, thus resulting in a power down in the country. This would result in the disruption of businesses as well.
6(c)i)	Some parts of Nepal suffered more damages than others due to its distance from the epicentre. Typically, the closer an area is to the epicentre, the greater the intensity of the earthquake. This is because the closer an area is to the epicentre, the less earth there will be available to absorb the seismic shocks of the earthquake, thus resulting in much greater vibration. Another reason why some parts of Nepal suffered more damage than others is due to the population density. Generally, urban areas have higher population density thus resulting in more deaths because there will be more people in a square unit area.
6(c)ii)	Short term responses such as search and rescue help to locate and free people who are trapped under collapsed buildings. Some survivors are found after being trapped for a couple of weeks without food. For example, after the Tohoku earthquake in Japan in 2011, sniffer dogs and heat sensors were deployed, and this has successfully rescued many who were trapped. However, rescue workers only have a limited time of 72 hours, or 3 days to find trapped survivors, without food and water, trapped people are unlike to survive after 3 days. For example, rescue workers had a limited time of 3 days to rapidly search through two towns after the earthquake in Tohoku in 2011. Long term responses such as the rebuilding of infrastructure can also help to mitigate losses during an event of earthquake. Infrastructures and amenities are rebuilt and improved upon after a disaster. Authorities often develop stricter building codes to ensure infrastructure is restored at a higher safety level than before. For example, after the earthquake in Kobe, Japan in 1995, Japan spent billions developing technology to build more earthquake-resistant buildings. However, reinforced buildings, which are built to protect against earthquakes are not necessarily protected against tsunami. Additional protection could be in the form of coastal protection structures such as breakwaters. For example, although many of Chile's

	buildings are earthquake resistant, the coastal areas suffered massive damage from a tsunami when an earthquake struck in 2010. In sum, both short-term and long-term measures are equally important because they cater to different needs. Both measures help to reduce the number of casualties in the event of an earthquake or its aftermath, the tsunami. Hence, both are equally important. Without one or the other, the number of casualties would increase regardless.