

Candidate Marks Report

Series : 6 2018

This candidate's script has been assessed using On-Screen Marking. The marks are therefore not shown on the script itself, but are summarised in the table below.

Centre No :	Assessment Code :	H481
Candidate No :	Component Code :	01
Candidate Name :		

Total Marks :

In the table below 'Total Mark' records the mark scored by this candidate.
'Max Mark' records the Maximum Mark available for the question.

Question Part

2	a	<p>A glacier can be classified as an open system, which has inputs, transfers and outputs that flow beyond the boundaries of the system. All systems have inputs, and within a glacier this can include precipitation, in the form of snow, sleet or rain. Precipitation mainly falls as snow in high latitude glacial systems. This Glaciers also have input can also be known as accumulation. Additionally, there are transfers/throughputs which can include freezing and movement of material within the glacial system. All systems have outputs, and in the case of glacial systems, this is the melting of ice into meltwater, deposits, which include depositional landforms such as moraine deposits and also other glacial landforms that exist as a result of the glacier. Moreover, systems generally exist in equilibrium, with the glacial system also existing in equilibrium. This means that any changes that occur within the glacier, such as increased precipitation has an effect on the system, and allows it to undergo self-regulation, until dynamic equilibrium (balance) is restored. For example, this could be Overall, there are two types of systems, closed and open, and glaciers are open systems and operate on a variety of scales. Additionally, the processes in the system also depend on the type of glacier and location. For example, high latitude glaciers tend to have less precipitation, whereas high altitude ones tend to be more dynamic with more seasonal variation.</p>
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Question Part

2	bi	11, 14, 18, 20, 23, 24, 44, 49, 74 Median = 23
2	bii	$23 \div 9 = 2.5$ $74 - 11 = 63$ $44 + 49 + 74 = 167$ $\text{total} = 287$ $63 \div 9 = 7$ $11 + 14 + 18 = 43$ $287 \div 9 = 31.8$ $167 - 43 = 124$
2	c	<p>Landform: B can be identified as an arete, which is a sharp ridge normally found in between two parallel glaciers. Landform B is formed by glacial erosion. As glaciers on either side of the ridge advance, the sides of the glaciers erode either side of the ridge, creating slope down from the ridge which can be seen in fig. 2. Additionally further weathering sharpens the ridge, which is often described as knife-edged. Moreover, material embedded in the sides of the glaciers abrade the aretes sides, to create a sharp edge.</p>
2	d	<p>The physical factors influencing a landscape shaped by the action of ice sheets are considered to be extremely important in influencing the landscape, including geology type, and extent of ice sheet.</p> <p>An example of a landscape influenced by the action of ice sheets can be found in North West USA, in Minnesota. A million years ago the Laurentide ice sheet, which was 1km thick, covered Minnesota, influencing the landscape highly. For example, the ice sheet had such erosive power that the highest peaks are only a modest 500m - 700m. Additionally This is due to the fact that the ice</p>



Question Part

sheet was so vast and thick, as it advanced its erosive power had extreme effect on the landscape. Moreover, this is emphasised by the fact that the South East of Minnesota wasn't extensively covered by the ice sheets, and therefore has a more varied landscape of steep hills and deep valleys. This indicates the immense erosive power of the ice sheet, as the comparison of the two areas show the extent to which the ice sheet was able to transform the landscape in the North, with gentler slopes and undulating plains, whereas the South East didn't experience the erosive power and therefore has been less eroded, with higher and steeper ranges and slopes.

Additionally, the geology of a landscape also influences the landscape. The geology beneath the Laurentide ice sheet is made up of belts of volcanic and sedimentary rock, which were formed over 2,700 million years ago. The different belts of rock have different levels of resistance, with the volcanic rock being more resistant made from very hard lava, whereas the sedimentary rock belts are more susceptible to the erosive power of ice sheets.

Moreover, ice sheets are associated with characteristics such as low relief, due to the great depth of ice sheets, indicating the erosive power. Also, as ice sheets tend to have basal temperatures below ^{the} pressure melting point, the ice is frozen to the bedrock below, and as it advances, plucks material from bed rock, creating a smoother appearance and gentler gradient.



Question Part

~~Then conclude, different physical factors primarily~~
 Another physical factor is the climate, as it highly influences landscape. For example: Laurentide ice sheet started to retreat about 11,500 years ago during last glacial, leaving behind depositional landforms such as moraine deposits, as the ice sheet was melting and didn't have enough energy to support and transfer material. These deposits, therefore mark the maximum advance of the ice sheet.

To conclude, a landscape shaped by the action of ice sheets relies on a variety of interdependent physical factors to influence landscape, as ~~with~~ ~~with~~ different type of rock influence shape of landforms, however at the same time the extent of the ice sheet has great power in influencing landscape, as despite the resistant rock under Laurentide ice sheet, it was still able to erode it immensely to peaks only 500-700m high.

4 a) Figure 4 shows how generally the ~~to~~ East of the USA receives greater precipitation levels, particularly in the South East, such as Florida which is shaded very darkly ^(80mm) for example in Florida, due to high precipitation levels there must be increased run off, whereas in the west of America, some areas appear to receive 0mm ~~of~~ precipitation meaning there is little to no run off in these areas. Additionally areas in North East also experience quite a bit of precipitation (150-180mm) ~~to~~ and therefore may experience some run off however not as much as the Southeast.



Question Part

4	a ii	<p>One limitation is that the different shades don't clearly reflect different precipitation rates, making it harder to associate the colour with the correct precipitation level.</p> <p>Additionally, choropleth maps don't show variations either within the time period recorded or spatially, within the region.</p> <p>Moreover, choropleths make a generalisation of temperature rainfall and don't provide exact measurements for each location.</p>
4	b	<p>The carbon cycle is a closed system at the global scale, and the changes to the system can have either a positive feedback effect or negative feedback effect.</p> <p>A positive feedback effect is a change to that causes further change to the system. Whereas a negative feedback effect is a change which has no further effect, and the system is able to restore its balance by altering.</p> <p>For An example of a positive feedback loop in carbon cycle is that if atmospheric CO_2 levels increase, processes such as decomposition will increase, which turns releases more CO_2 into atmosphere as CO_2 is a greenhouse gas, which increases temperatures, allowing for speedy decomposition. More decomposition means more CO_2 released back into atmosphere, which means temperatures rise, and so on. This positive feedback affects the processes of carbon cycle, increasing their speed.</p> <p>An example of a negative feedback loop in the carbon cycle can again be an increase in atmospheric CO_2 levels, which encourages landplants and phytoplankton to</p>



Question Part

increase their photosynthetic activity, which then allows them to grow vigorously, and absorb the excess carbon in the atmosphere through photosynthesis. This therefore shows how the system is able to adapt to changes by increasing its store size to restore balance, equilibrium.

- 4 C The Amazon tropical rainforest covers ~~6~~ 6 million km² of land and is an important part of the carbon and water cycles, absorbing 2.4 billion tonnes of carbon ~~every~~ every year and storing more than 10 billion tonnes of carbon that has been locked up.
- Current anthropogenic activities, such as farming and deforestation are having detrimental effects on the forest, which in turn is affecting the cycles. For example from 1970 - 2013, 30,000 km² of rainforest was deforested every year. Deforestation ~~removes~~ removes trees and vegetation which are vital carbon sinks, and without them more carbon is released into the atmosphere as they are removed, and the excess is unable to be photosynthesised. Without vegetation cover and trees, the amount of precipitation is limited, meaning there is more surface run off, increasing the flood risk, as in the West Andes the slopes are much steeper, meaning that ~~the~~ water is able to ~~flow~~ flow faster, ~~as~~ as there is no vegetation to stop it as well, as they provided canopy cover.
- Deforestation also exposes soil, making it more vulnerable to erosion from precipitation and also means less organic matter is put back into soil.



Question Part

Additionally, transpiration rates are lower, as vegetation isn't able to transpire through its stomata. Moreover, deforestation releases 1.7 billion tonnes of carbon into atmosphere annually, increasing amount of carbon stored in the atmosphere.

Moreover, land use change in Amazon, from rainforest to farmland releases 1 billion ^{tonnes} of carbon into atmosphere annually. Farming contributes to pollutants, as for example methane is a by-product of digestion by livestock. Additionally, in farming little vegetation cover is used limiting the amount of photosynthesis. Additionally, farming uses vast amounts of ~~water~~ water for irrigation, which ~~it~~ raises water table levels, and again can increase risk of flooding as there is little interception and more orland saturated flow. ~~However~~ ~~At the~~ ~~same~~ ~~time~~ this therefore shows that farming does not only effect the stores but also effects the processes, as machinery used in farming emit CO_2 , which means more CO_2 needs to be sequestered however there is not enough vegetation for ~~it~~ all the excess CO_2 to be absorbed.

To conclude farming and deforestation effect the carbon and water cycles in the rainforest immensely primarily due to the fact that over 2000mm of precipitation annually in rainforest is not able to be intercepted or stored similarly to before and both activities contribute to removal of carbon sinks and increase CO_2



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