

## Candidate 2 evidence

Paper 1

1 A meander is a bend in the river, and they are most commonly found in the middle and lower courses of the river. Rivers rarely flow in a straight line and this is because water itself rarely moves in a straight line - like rain on a windowpane.

Meanders appear to form in the relatively straight sections of the river, where the straight section is at least five times the width of the river. This is where pools and riffles develop. Pools are areas of deeper water, and riffles are areas of shallower water. The pools have greater erosion because the energy in the river builds up because there is less friction. In the riffles there is more friction and thus the energy of the river is used up in fighting this friction to keep the water moving.

In order to avoid the riffles the water starts to move from side to side in a sinuous motion. The maximum discharge and velocity are directed at one side of the river which is eroded and becomes the outside bend of the river. On the opposite side of the bend deposition occurs as there is less water and velocity to carry materials in the water. Over time the meander will become more pronounced.

Meanders have an asymmetrical cross section - at the outside bend it is deeper, and shallower on the inside bend.

Material from the outside bend moves down the river in a corkscrew motion, leaving a river cliff sometimes. It deposits some of this on the inside bend forming a river beach or a point bar. The rest of the material

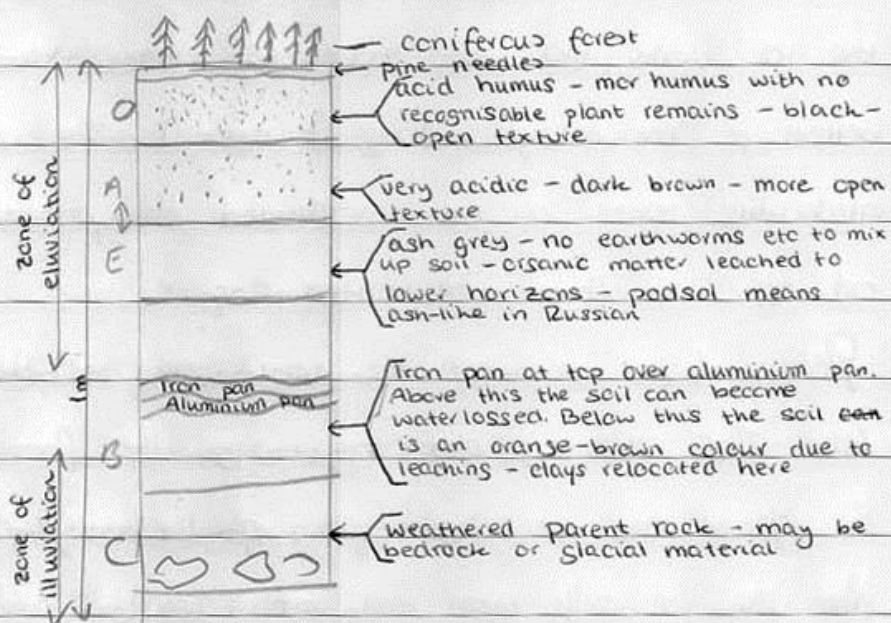
is carried along the river to the sea.

Meanders gradually move downstream.

- 2 The discharge of the river begins at a base flow of about 2 cumecs at 06:00. The discharge begins to rise at 10:00 as can be seen from the rising limb gradually getting steeper. This could be due to the high amount of rainfall at 09:00 of 10mm which would have saturated the soil around the river and therefore increased surface runoff, in turn increasing river flow. At 13:00 the rising limb is still increasing but not as steep as before, until 15:00 where it rapidly increases until peak discharge at 18:00 with over 100 cumecs. This is due to the peak rainfall at 13:00 of 14mm. Surfaces like concrete will allow the water to reach the river more quickly.

After this, the discharge decreases to about 10 cumecs, not quite returning to base flow. There is no rainfall after 15:00 so the recession limb is steep. The lag time is 5 hours, from 13:00 - 18:00.

3



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A ribbon lake formed during the ice age. Snow would collect in a north facing hollow above a V-shaped valley. The snow would become compressed and air expelled to form firn. This ice

could the move down the valley due to the force of gravity acting on its weight. As this moves a glacier is formed. The glacier widens and deepens the v-shaped valley through plucking (ice freezes on to the valley sides and pulls bits of rock off as it moves), and abrasion (material carried under the ice works like sand paper and erodes the bottom of the valley making it deeper). The interlocking spurs of the v-shaped valley are cut off to form truncated spurs.

Glaciers do not move at the same speed all the time. This extending and compressing the flow of the glacier can over deepen parts of the valley floor. When the ice melts, water will remain in the over deepened part. Sometimes there is a change in rock type along a valley and the ice will wear away the softer rock more easily - again over deepening the valley. Most river valleys had rivers in them before the ice came and after

the ice age those rivers continued to feed the ribbon lake so they continue to exist today.

Another way that a ribbon lake can form is behind a terminal moraine. This is material deposited as the ice melts. This becomes a dam and the water for the ribbon lake builds up behind the dam.

Windermere and Coniston Water in the Lake District are ribbon lakes.

5a Tropical means coming from a warm area.

Maritime means coming from the sea, and

Continental means coming from the land.

The Tropical Maritime air mass comes from the Atlantic Ocean off West Africa. This is warm air which carries a lot of moisture. It will be hot, humid and there will be a lot of rainfall as the hot air rises.

The Tropical Continental air mass comes from

the Sahara Desert. This is hot air that is dry. It will be hot, dry and have low humidity. This air will be sinking.

5b The ~~ITCZ~~ ITCZ is the boundary between the Tropical Maritime air (TM) and the Tropical Continental air (TC). It is where the North East and South West Trade winds meet. This boundary moves North and South following the apparent movement of the sun during the year. The TM air rises over the TC air causing it rain. As the ITCZ moves, the band of rain moves with it.

Abidjan has rainfall all year. There is a peak of 350mm in June and only 20mm in January. The total rainfall is about 1400mm. It has more rainfall than Ouagadougou (730mm) and Nioro (300mm).

Ouagadougou has rain from February until

November. The peak of 200mm is ~~in~~ August and least in February at 5mm.

Nioro has rain from May to October. There is a peak of 110mm in August and a low of 5mm in May. The peak rainfall is later than Abidjan.

When Ouagadougou and Nioro have the most rainfall in August, Abidjan has a drop in rainfall giving the graph two peaks.

This means that Abidjan has the wet TM air for most of the year as it has rainfall each month. Nioro only has the TM air from May/June to October and has the dry TC air for the rest of the year.

6a The problems of living in shanty towns affect the people living there. These towns grew up without there being any planning and people building hives/shacks wherever there



was a space. These houses could be made of cardboard and bits of wood, so they look messy and unfinished. They are very close together so people live on top of each other.

Services such as ~~sewage and electricity~~<sup>water,</sup> water, sewerage and electricity did not get put in when the houses were built. This means people can become unwell if they drink unclean water.

There are no shops, factories or schools as there was no planning and no space. This gives high unemployment and low literacy rates.

6b In Rio de Janeiro strategies to combat the housing issues have included building the cable car system in the Complex de Alemão favela. This has helped to reduce

the congestion between houses as more people now travel overhead.

Residents get free tickets each day to get to work. Some people think that this money could have been better spent on things like health care.

To attempt to reduce the crime rate in the slums, more services have been put in place to provide entertainment for people. For example: there are now McDonalds in the Rocinha slum. This provides more revenue for the area so money can be invested into improving it. This also gives jobs to local people improving their income and living standard.

Tourist trips are arranged to some of the favelas, with people paying a fee for the tour. The money from the fee can be invested in improving the slum,

giving better water supply or drains for example. However, some people think this is a disruption of their privacy and that they are being "paraded".

To aid the attempt to reduce crime rates, more police officers now patrol the streets and also a control centre with CCTV is used to monitor the streets so that the police can respond if anything does arise.

To avoid the danger of the electricity systems there were in place when people in slums were stealing it from overhead cables, the government has removed the cables and installed a safer supply.

Sanitation levels have been improved by putting fresh water wells in place so people have clean water. This has helped

to reduce the level of illness for people living there.

7a+b The lake district is a glaciated area in England. It is a National Park and has thousands of visitors a year. This causes conflicts between tourists and the local peoples (like residents /farmers).

In some places there are more litter bins put in place and people who drop litter are fined. This works well in towns/villages where they are easy to empty. In more remote areas, the council have taken away the litter bins because they did not get emptied enough and litter blew away if it was windy. People are encouraged to take their litter home with them. Councils think this is working and have no plans to put the

litter bins back.

The council and farmers have built styles over walls on popular routes.

Walkers can avoid climbing over the wall and it avoids the wall getting damaged.

Traffic is a problem and places like Ambleside and Windermere get very congested in the summer months. Parking restrictions have been put in place so that people can only stop for a short time on road parking. This hasn't had much effect because when one car leaves another arrives. One way streets have also been put in place to keep traffic moving. This works when the traffic is just busy but not when the towns become clogged up with cars. Some farmers are allowing parking

in fields. This gives the farmer some money and does help take some pressure off the streets.

Noise pollution from motor boats is a nuisance and Windermere has put in place speed limits for boats to cut down on the noise and the waves. This has been good for Windermere but sailors just go somewhere else like Coniston.

Erosion of foot paths is a problem on popular routes like Scafell Pike. Footpaths have been strengthened with stone and rock to give a hard wearing surface. This helps to keep the path in good condition for walkers.

8a Countries gather accurate population data using a census. This is a questionnaire.

that is sent out to all inhabitants in a country every ten years. Questions which will help the government build up data about their inhabitants are asked, for example age, ethnicity, religion, job.

The government can also use compulsory registration which is in the form of birth, marriage and death certificates.

This helps them monitor the population between censuses and they can create yearly statistics, like how many people died from flu.

Another way to collect population data is by a mini census. This would happen in between censuses and is sent to a sample of the population.

The government can get information on a particular area or update statistics.

Countries also count the number of immigrants

and emigrants to their country

8b In developing world countries such as India due to high illiteracy rates, many people cannot read and write which means people will have to be sent out to answer the census personally with ~~time~~<sup>them</sup>. This can be expensive and if the government cannot afford this then the data will be inaccurate.

The numbers of shanty towns in India in places like Mumbai make the census hard to fill out. This is because shanty towns are illegal, so they have no legal address and therefore cannot be sent a census form. This may lead to a large chunk of the population being uncounted, which may lead to inaccuracy in the data. They may also not want to answer



the census as they might not want the government to know that they are there. Countries like India have a huge population which makes it very expensive to carry out a census and this can be a problem if a country is poor. These people also speak different languages, approx. twenty. This makes it difficult to get the correct census to people and to have the people counting the data to have the right language to understand the form.

Places like Afghanistan have very remote mountainous regions which makes getting the census form out to everyone in the country a challenge. There are also areas of conflict in Afghanistan with the Taliban, which make it too dangerous for census collectors to go

cut to these areas. People can be moved out of their homes because of conflict and the census collectors will not know where they are as this could be a long way away.

9a1b The change in Scotland's population from 2018 to 2038 will result in the population in some age groups decreasing and others increasing.

The 0-15 year olds is projected to increase 15%. This means the government will need to consider if there is enough capacity in maternity hospitals and schools to cope with the increase and plan ahead for it. This isn't a big rise so the effect may be managed with existing resources.

The 16-29 year olds will decrease by

3% and 33-44 year olds will increase by 1%. This means that the people of working age will be reduced. These people may have to pay more tax for the non-working population, especially the older people whose numbers are increasing a lot. If there are not enough workers, the government might need to increase immigration to make sure there are enough people to do jobs (like work in care homes). The 60-74 year olds will increase by 77% and the 74+ year group will increase by 82%. There will be a huge number more of older people. The government will need to pay out a lot more in pension and may need to increase the age that people get their pension so that the country can

afford it. These people will need to be looked after as they get older and frailer. More money will need to be put into the NHS to pay for hearing aids and hospital treatment from old people falling. More care homes will need to be built to house the older people.