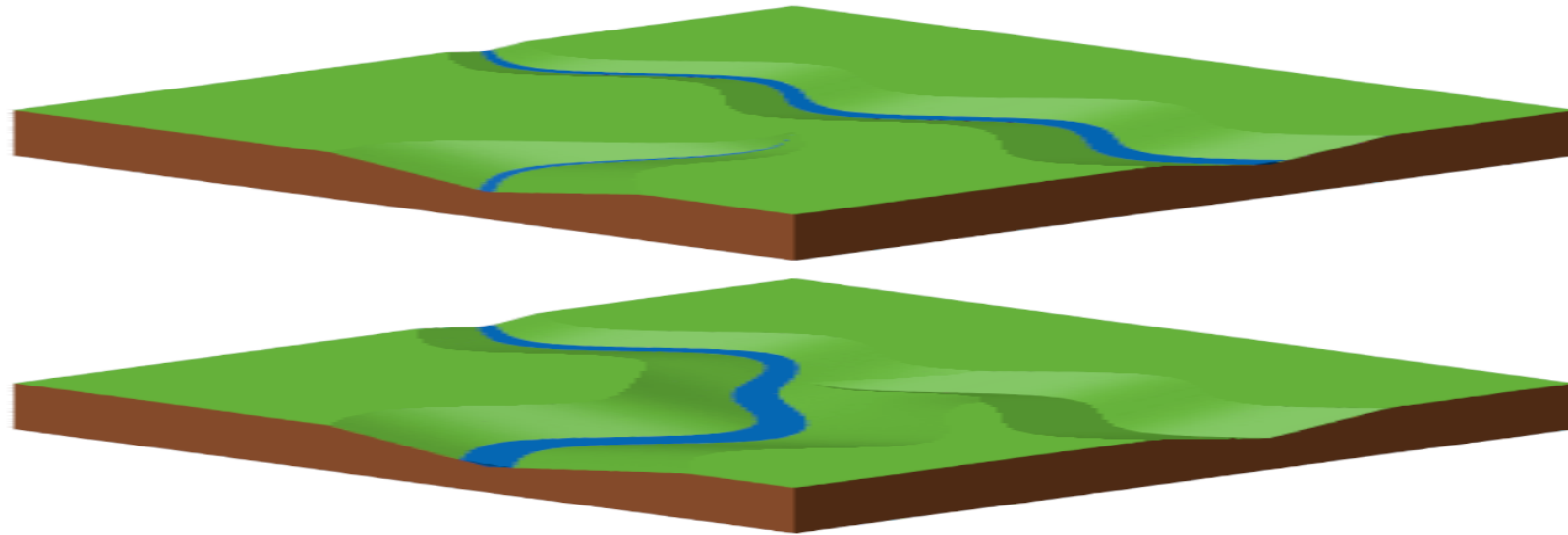




# GEOMORPHOLOGY



# RIVER CAPTURE

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## OVERVIEW

**Need to know two important concepts you have done already.**

Watershed is a high lying area separating two river systems/drainage basins

Headward/backward erosion is erosion at the origin of the stream channel, causing the origin to move back away from the direction of stream flow.

**Here we will deal with two concepts**

- River Capture
- Abstraction

**The two main factors**

The energy of a river

One river capturing the headwaters of another river



## **Factors that influence this process**

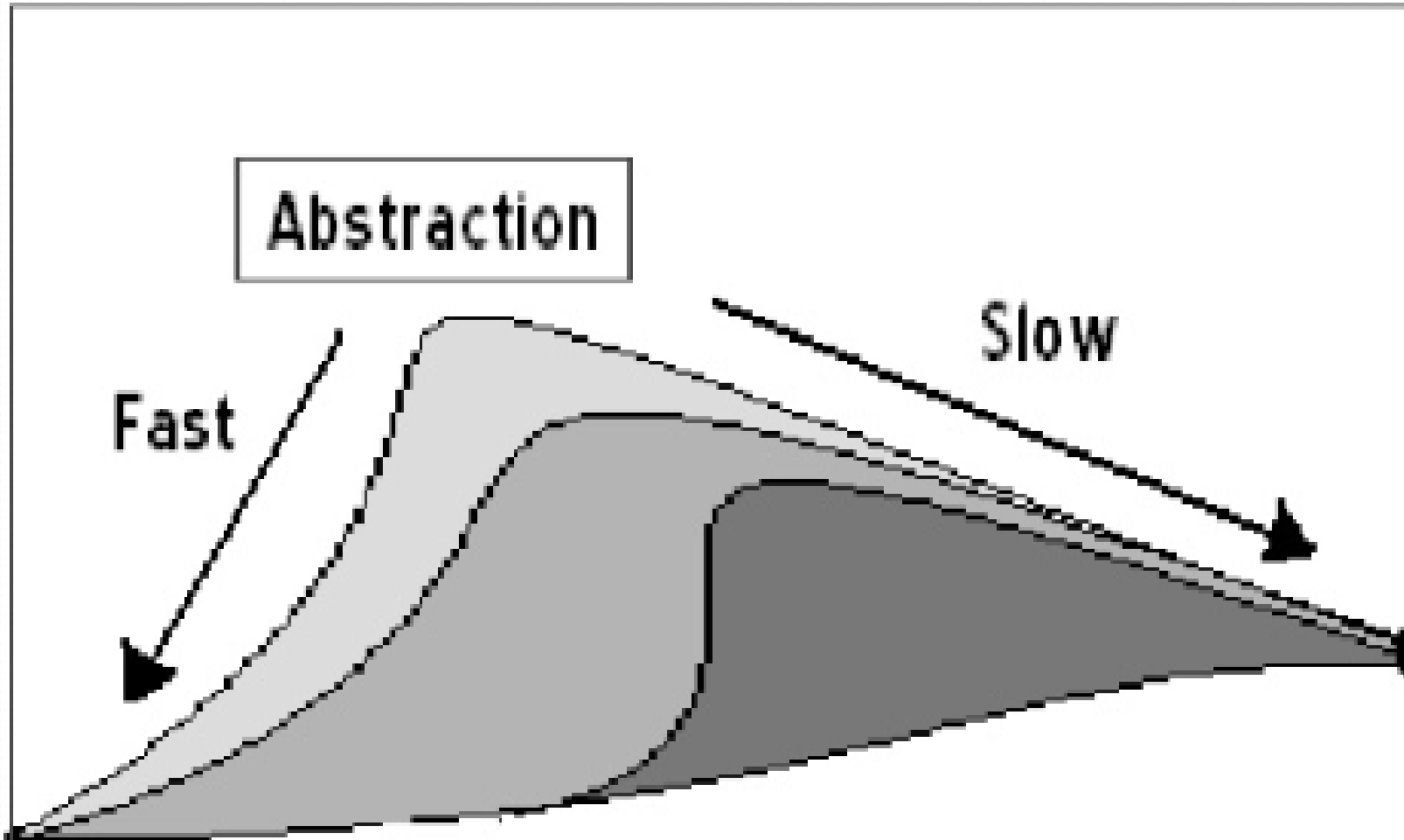
1. One river has a steeper gradient than the other river
2. One river has a less resistant underlying rock than the other river
3. One river has a greater volume of water than the other river

## **SOURCES USED**

LinkedIn learning Geography fluvial landforms

DBE past papers

Mindset learning channel



SlideShare

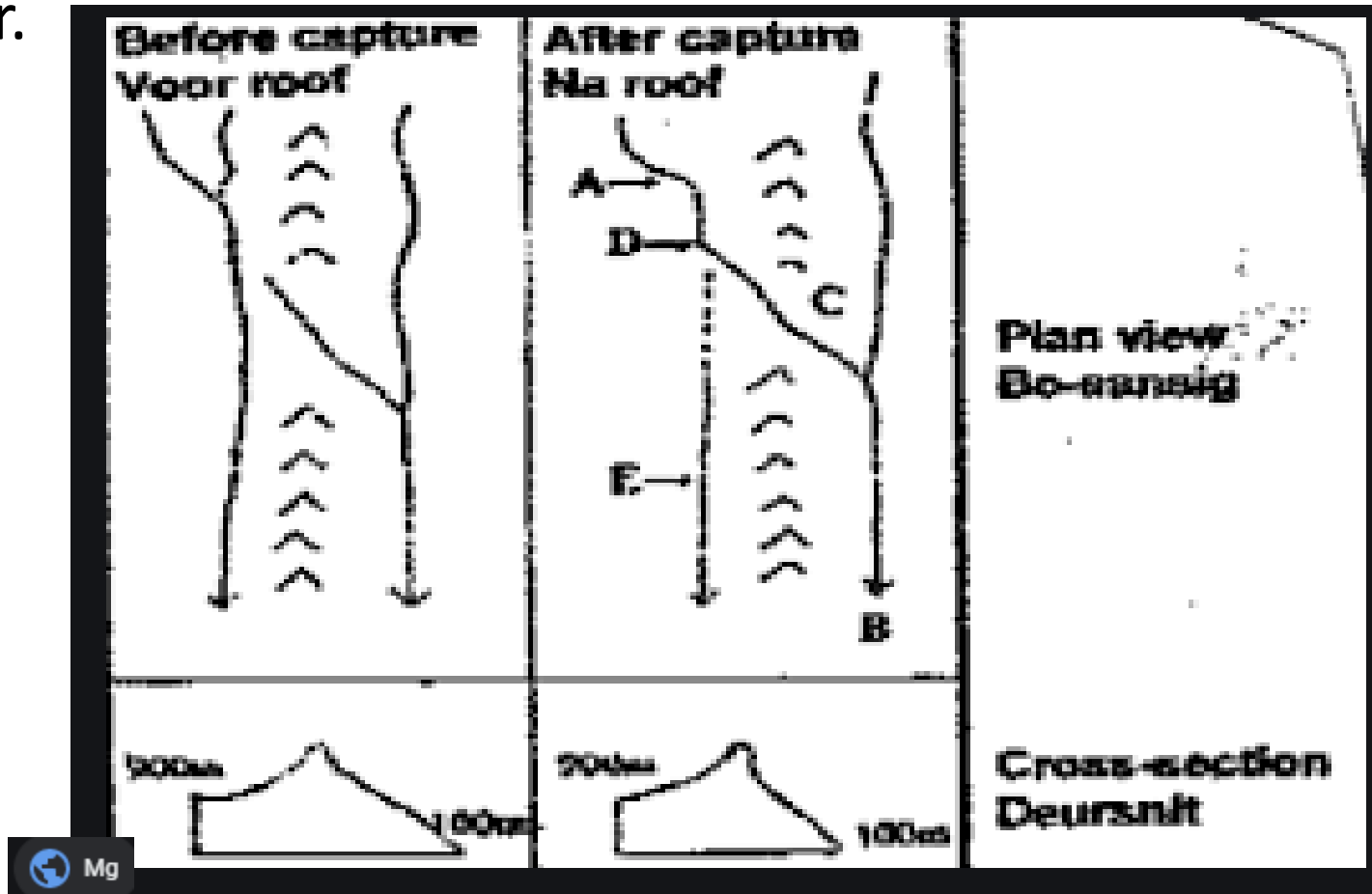


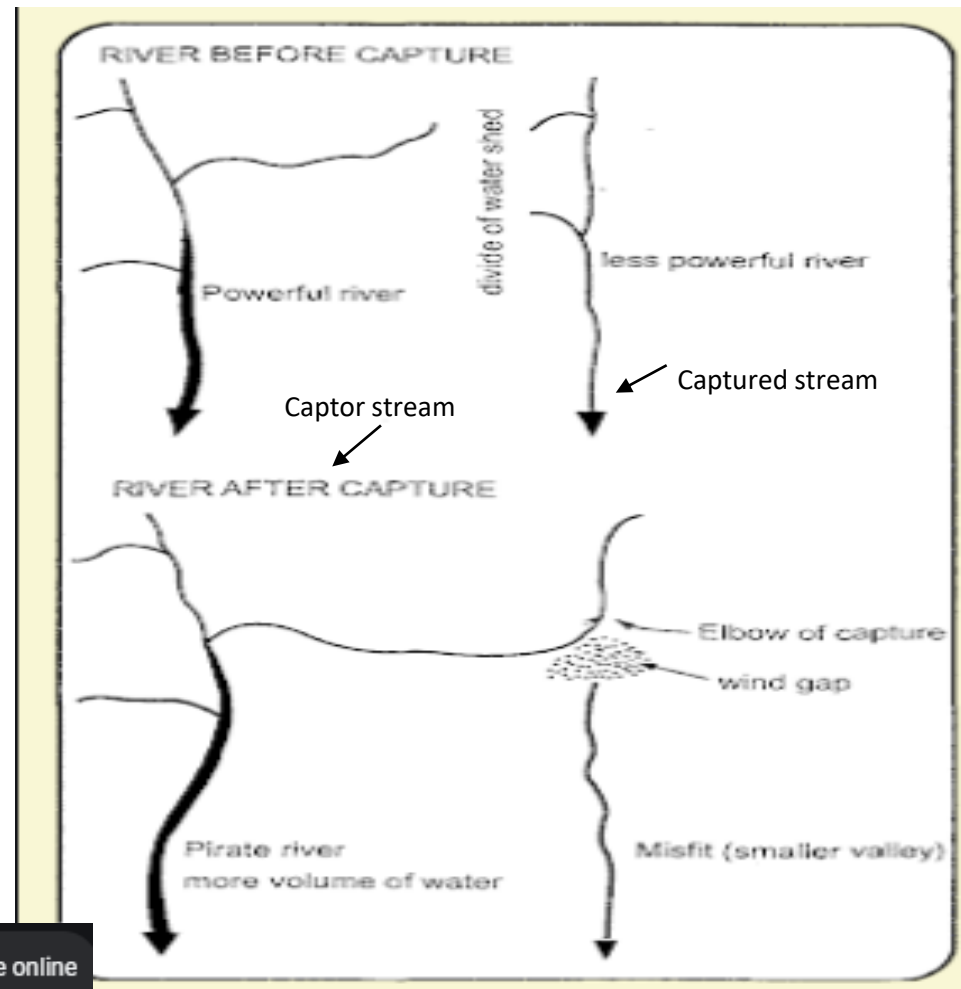
## ABSTRACTION

- It occurs when streams flow on either side of a watershed. If one stream is more energetic than the other (this could be due to the three factors mentioned above) it will erode upstream and the watershed will move in the direction of the less energetic stream. This allows the more energetic stream to capture the headwaters of the less energetic stream. The size of the drainage basin of the more energetic stream increases.

## RIVER CAPTURE

- Occurs when one more energetic river captures headwaters of a less energetic river.







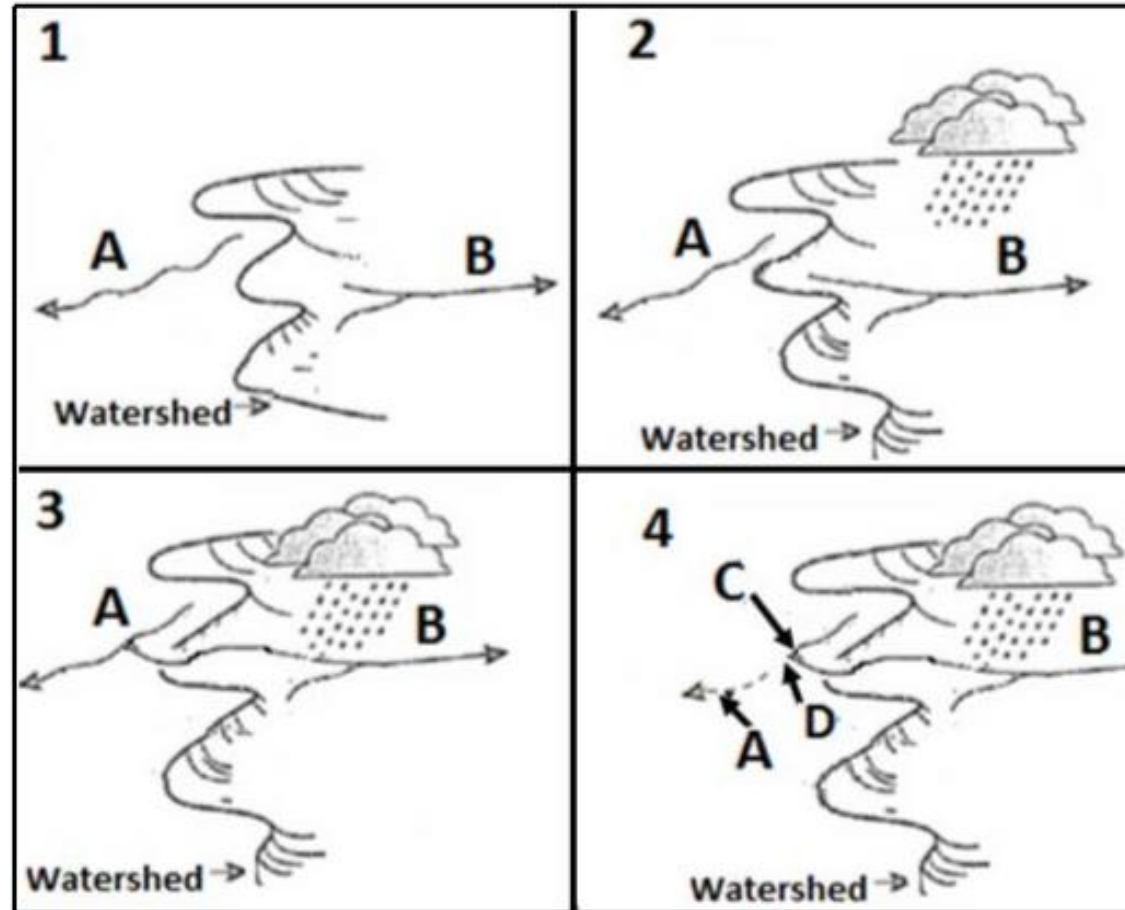
## DESCRIPTION OF RIVER CAPTURE FEATURES

- **Captured stream**
- The part of the river that is diverted by the captor stream
- **Captor stream**
- This is the energetic stream that cuts back and intercepts the other river
- **Misfit stream**
- The river that has lost its headwaters as a result of capture
- **Elbow of capture**
- This is the point of capture where the change of flow direction occurs.
- **Windgap**
- This the area between the elbow of capture and the misfit stream where the water stops flowing and river gravels are deposited.



## DBE PAST PAPERS

FIGURE 1.2: RIVER CAPTURE



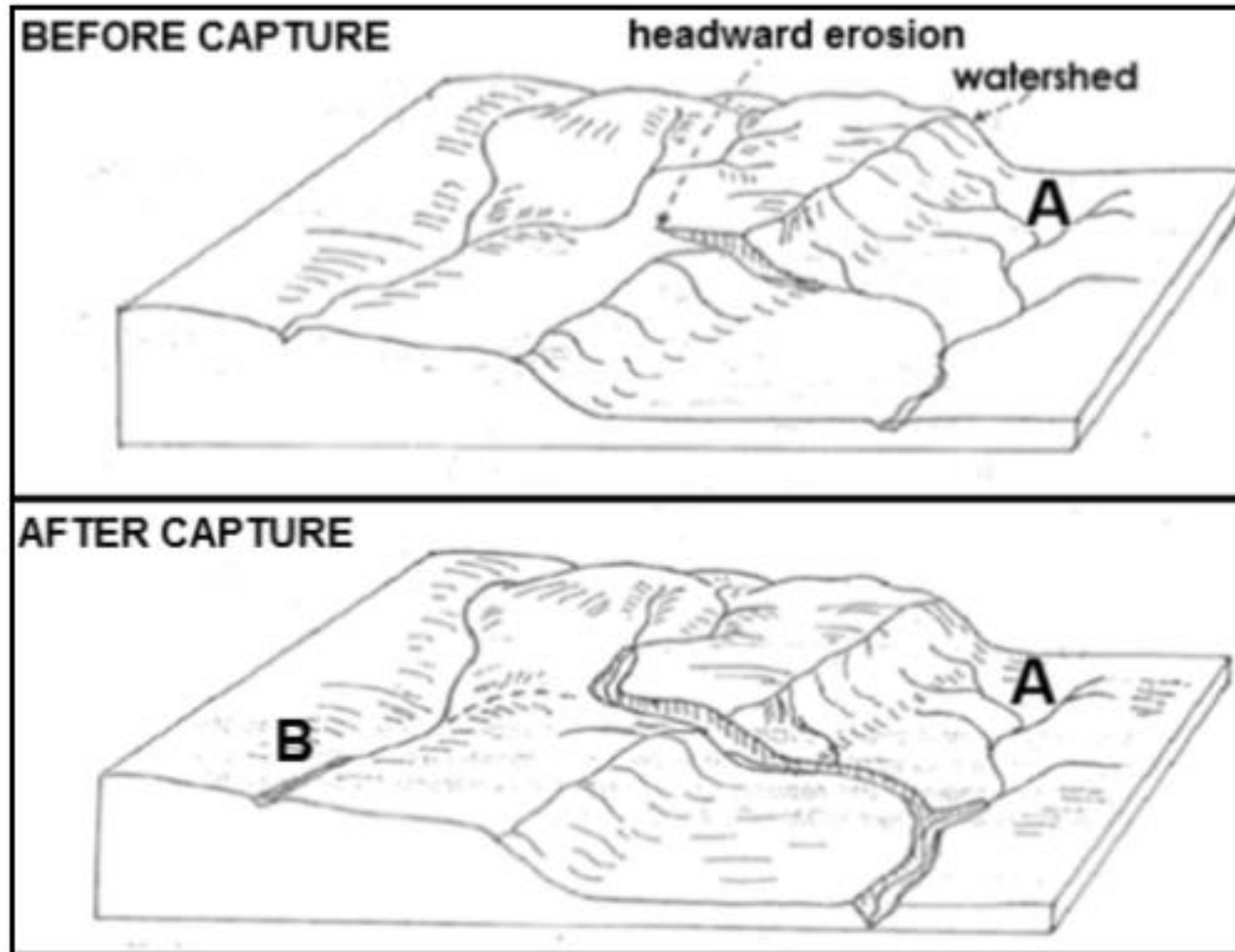
[Adapted from <https://www.bing.com/images/search=landforms+of+stream+capture>]



- 1.2 FIGURE 1.2 shows sketches (1 to 4) based on river capture.
- 1.2.1 Refer to sketch 1. Which one, river **A** or river **B**, is likely to be the captor stream?
  - 1.2.2 Name the climatic factor causing river **B** in sketch 2 to erode at a faster rate.
  - 1.2.3 What type of erosion caused the watershed to move towards river **A** in sketch 2?
  - 1.2.4 Refer to sketch 3. Which one, river **A** or river **B**, is the captured stream?
  - 1.2.5 Refer to sketch 4. Name the feature of river capture at **C**.
  - 1.2.6 Refer to sketch 4. Name the feature of river capture at **D**.
  - 1.2.7 What is the term used to describe river **A** which has been reduced in volume in sketch 4?
  - 1.2.8 Does river **A** or river **B** flow at a lower altitude in sketch 2? (8 x 1) (8)



FIGURE 1.6: RIVER CAPTURE



[Adapted from [ecoursesonlineiasri.com](http://ecoursesonlineiasri.com)]



- 1.6.1 Define the term *river capture*. (1 x 1) (1)
- 1.6.1 When a more energetic river captures the headwaters of a less energetic river (1)
- 1.6.2 What evidence in sketch **A** indicates that river capture is likely to take place? (1 x 1) (1)
- 1.6.2 Headward erosion is taking place (1)  
Tributary of river A is cutting back through watershed (1)  
**[ANY ONE]** (1 x 1) (1)
- 1.6.3 Name TWO physical changes that river **A** will undergo after river capture has occurred. (2 x 1) (2)
- 1.6.3 Greater volume of water (1)  
Erosive ability increases (1)  
Drainage basin becomes larger (1)  
Will be rejuvenated/more energetic/greater velocity(1)  
**[ANY TWO]** (2 x 1) (2)



1.6.4 State TWO possible conditions that have led to river **A** being the captor stream. (2 x 2) (4)

1.6.4 River A flows at a lower level than river B (2)  
River A could be flowing on softer rock (thus eroding faster) than river B (2)  
River A could be in a higher rainfall area than river B (2)  
Tributaries of river A flow down a steeper slope (2)  
River A has a greater erosive ability (2)  
Higher volume of water/higher stream order (2)  
**[ANY TWO]** (2 x 2) (4)



1.6.5 Write a paragraph of approximately EIGHT lines to describe how the reduced volume of water will negatively impact on the farming community at **B**. (4 x 2) (8)

1.6.5 Less water for irrigation of crops (2)  
Reduced yields due to the lack water (2)  
Increase costs to obtain sufficient water (2)

Reduced flooding reduces natural fertilization of soil (2)  
Input costs to farm increases (2)  
Farming no longer economically viable (2)  
Loss of jobs as farming areas decline(2)  
Loss of income as farming yields decrease (2)  
Poverty increases due to lack of crops to sell and access to food (2)  
Rural-urban migration sets in (2)  
Lack of domestic water (2)  
Lack of recreational activities (2)  
Poverty increases due to lack of access to food (food insecurity) (2)

**[ANY FOUR]**

(4 x 2) (8) |