

Bdst 2 topic 1: Physical Features

The distribution of high land in Bangladesh.

main area in SE.

small area in NE

area in north/NW

small area in centre

Location of hill areas in Bangladesh.

SE / Chittagong division / Bandarban hill district / Rangamati / Khagrachhari

NE / Sylhet division

Main physical characteristics of the hill areas of Bangladesh

Relief:

1. low hills and high hills
2. steep slopes / slopes > 40%, often 100%
3. subject to landslide / erosion
4. high hills heights 300-1000m above sea level
5. long / narrow ridges/average 36m wide / hog back ridges
6. parallel ridges / ridges approx N-S
7. Keokaradang 1,230 m/ high peak / other named peak e.g. Sak-Haphong
8. low hills <300m above sea level
9. valleys approx. run N-S
10. hot springs [at Sitakunda Peak]

Rock types:

shales/siltstones/sandstone

Soil:

brownish loam

very acidic

Climate:

Tropical monsoon / heavy rain

Drainage:

trellis/dendritic drainage

major rivers drain into the Bay of Bengal

Karnafuli, Sangu, Matamuhuri and Feni rivers

Lakes:

Rainkhiangkine, Bagakine, Kaptai

Vegetation:

forested

700 species of flowering plants

Animal life:

snakes / monkeys / jungle cats / wild boar / foxes / abundant birdlife

Chittagong hill-tracts

1. few people/low population density
2. tribal peoples
3. practise shifting/hum cultivation
4. HEP
5. tea plantations
6. deep river valleys
7. hills
8. forested/tropical evergreen
9. deforestation
10. landslides
11. highest parts form a N-S ridge
12. highest area of Bangladesh/over 200 m high
13. hot springs
14. soil not fertile
15. steep slopes
16. waterfalls
17. lake(s)

18. high rainfall

(Pleistocene) Uplands

1. terraces formed by ancient/Pleistocene flood of snow melt
2. alluvial
3. clay
4. about 15 m asl up to 60 m asl
5. oxidised sediments
6. slightly undulating
7. dendritic drainage

Deltaic plain

1. flat
2. old delta
3. sediments/alluvium/silt deposited on sea floor/river mouth/fertile soil
4. W is inactive - relatively old
5. E is active - relatively young
6. dissected by river channels

Coastal plain

1. Relatively rapid changes in landforms due to erosion and sedimentation
2. Soil ranges from silty loam to silty clay loam
3. PH varies between 7.5 and 8.2
4. The coastal soils are slightly to moderately saline on the surface and highly saline in sub-surface layers
5. It is the home of the world's largest mangrove ecosystems, the Sundarbans mangrove forest

Tidal plain

level muddy surface bordering an estuary, alternately submerged and exposed to the air by changing tidal levels.

Distribution of the Sundarbans

in the south-west Ganges-Brahmaputra delta/on coast in Khulna/Patuakhali/Noakhali

Characteristics of the Sundarbans

evergreen/mangroves

pneumatophores

3 storeys

dense forest

estuarine/swampy

sundari/gewa/dhundul/amur/pasur

How a river and its channel changes its characteristics when it reaches the lowland (lower course)

1. Wider
2. Deeper
3. Faster / stronger flow
4. Lower gradient / flatter / lower slope angle
5. Increased discharge / high volume of water / more flow
6. Channel bed smoother
7. Load size smaller / more consistent / rounder
8. Load quantity greater
9. Braiding
10. River deposition

How the river discharge of a valley with steep sides differ from a valley with gentle sides

Starts at a lower level

Rises more quickly

Rises to a higher peak / higher discharge

Falls more quickly

Where silt and alluvium come from

erosion takes place in Himalayas/hills to the north

material eroded from river/meanders/banks/upstream

most erosion when rivers high/after heavy rain

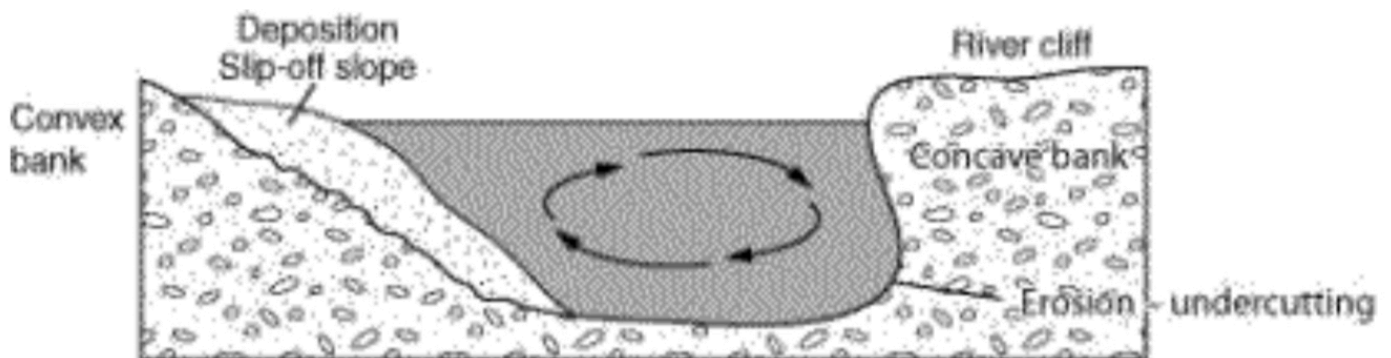
eroded material transported by river

Meanders

A meandering stream is one that consists of alternating bends, giving an S-shaped appearance. As it approaches base level, vertical erosion is replaced by lateral erosion, and the river widens its bed and valley and develops a sinuous course that forms exaggerated loops and bends called meanders.

deposition of material/silt (1) because current is slower or because more friction on inside of bend (1). This material is deposited on the inner bend to form a slip-off slope that is convex in shape.

erosion of bank (1)/undercutting (1)/current strongest or less friction on outside of bend (1) resulting in a concave bank. As this bank is undercut it collapses and forms a river cliff.



How rivers change course and form ox-bow lakes. (You may use a diagram(s) to explain your answer in the exam)

An oxbow lake is a crescent-shaped lake formed when a river bank meets across the neck of a well-developed meander. It is found on the floodplain of a river.

erosion on outer banks
deposition on inner banks
cause a river to migrate downstream
when meander pronounced/more circular
erosion on outer bend forms a narrow neck
deposition builds up on inner bend
neck eventually eroded
river flows straight/breaks through
deposits seal off the meander to create ox-bow lake

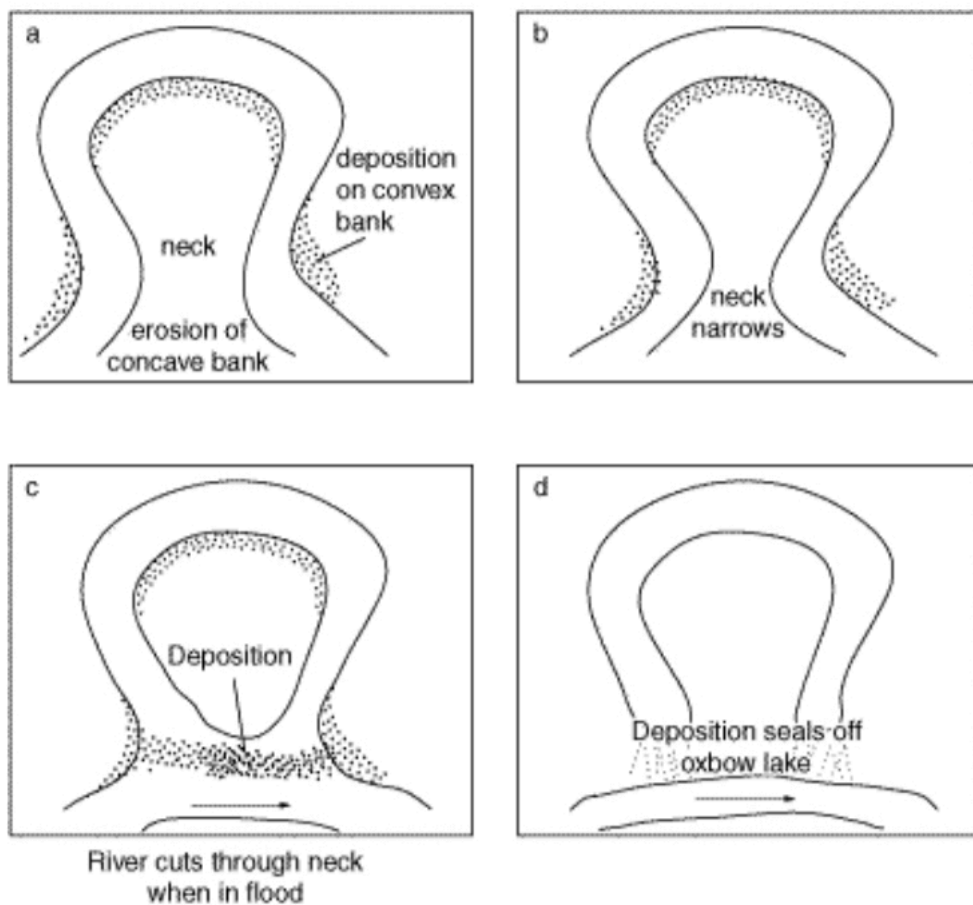


Figure 1:10: The formation of an oxbow lake

What is a floodplain?

A wide area of flat, low-lying land either side of a river channel / land on both sides of the river that is flooded annually

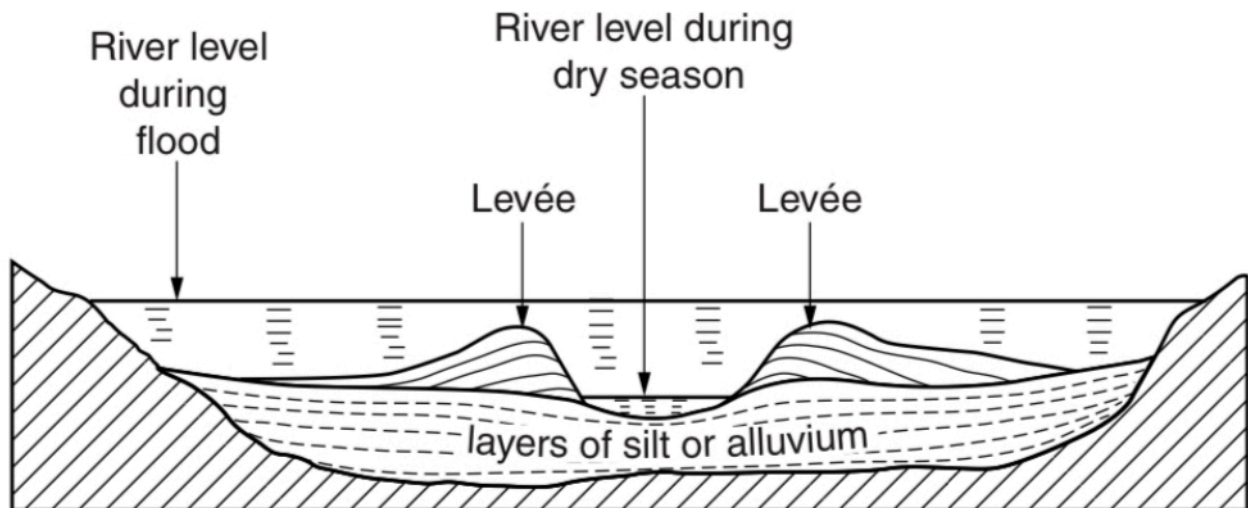
How flood plains are formed

river carries sediment
river overflows banks
water speed slows
deposits alluvium/sediments
heavier, coarser materials deposited on banks
finer material away from banks
levees build up
lateral erosion
repeated flooding
layers build up

How levées are formed

rivers carry silt/load
after heavy rain river floods
overflows banks
friction/speed slows on banks
silt deposited
heavier/coarser load deposited on river banks
sediments build up/accumulate over time/repeated floods
embankments formed/banks raised
more frequently flooded on bank side

Study Fig. 2, which shows a cross-section of a river and its flood plain.



The causes of the braiding of the rivers like the Jamuna.

Variable flows over year/due to monsoon/due to snow melt in Himalayas/large amounts of sediment brought down by river/sediment deposited when volume of water reduces/ sediment loose so channels change each time river floods/accept reference to shallow

Formation of a braided channel.

Description:

River divided into smaller channels

Small islands / eyots / chars / bars

Or labels on diagram

Explanation:

Rivers carries lots of (sedimentary) load

(Variable) Discharge changes regularly (due to monsoon/due to snow melt in Himalayas)

Deposition when load exceeds capacity

(Deposition) when discharge drops / river slows down / loss of energy

Accumulation of sediments

River channel blocked, river splits

(They recombine and redivide again multiple times)

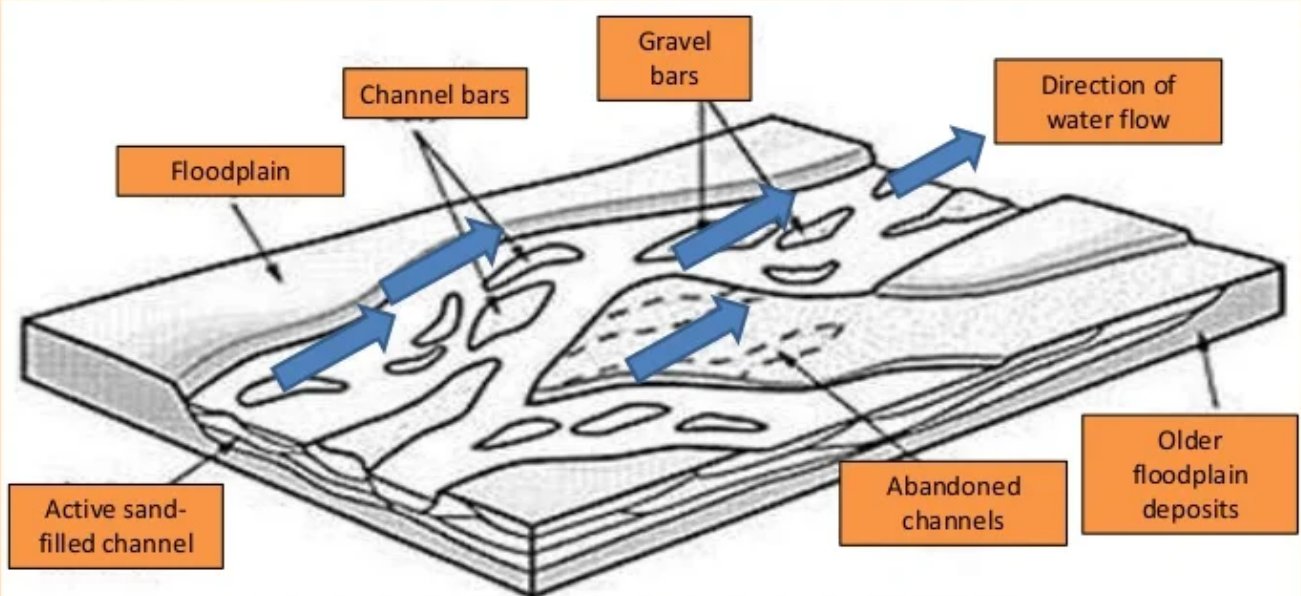
(forming Small islands / eyots / chars / bars)

Landform:

River Braiding

Location:

Lower course – usually close to the delta/mouth (Can be found upstream)



Main characteristics

1. Small islands or eyots of deposited material within the channel.
2. A network of small intertwining channels converge and diverge around the eyots.
3. At times of high discharge, braided streams carry a large load of coarse material.
4. Braiding is a characteristic of streams with a variable discharge

Formation of deltas

Rivers flowing in contain heavy loads of silt/(or alluvium)
due to erosion in hills to north or named area
river meets sea which checks its flow(velocity decreases)
water cannot all escape into sea
branching of river to find alternative routes to sea
coast being extended as silt builds up
fresh water meets salt water
silt deposited

Or

heavy load carried by river
river's speed checked (as it enters the sea)/slows
load deposited
no currents/strong tides to remove deposition
salt water/causes fine mud to coagulate/suspended
accumulates over time/builds up
distributaries branch out
advances seaward
deposition off-shore/out at sea

Or

river carries large/heavy load
due to erosion upstream in Himalayas/hills to the north
as river enters the sea it loses velocity/speed
begins to deposit its [sediment] load
flocculation idea(salt water/causes fine mud to coagulate/suspended)
deposits accumulate more quickly than the sea's currents and tides remove it
weaker (tidal) currents
distributaries branch out
advances seaward
deposition occurs off-shore/out at sea
over time deposits build upwards and outwards to form a delta
delta is colonized by plants [to stabilise it]

The river features seen in a delta

1. meanders/curves/bends
2. braiding/channels split
3. islands/chars
4. wide and narrow channels
5. confluences
6. distributaries
7. sediment/alluvium/deposition
8. tributaries

- 9. sand bars
- 10. floodplain

Two large rivers which join together to form the Bengal Delta:

Ganges-Padma

Brahmaputra-Jamuna

Meghna

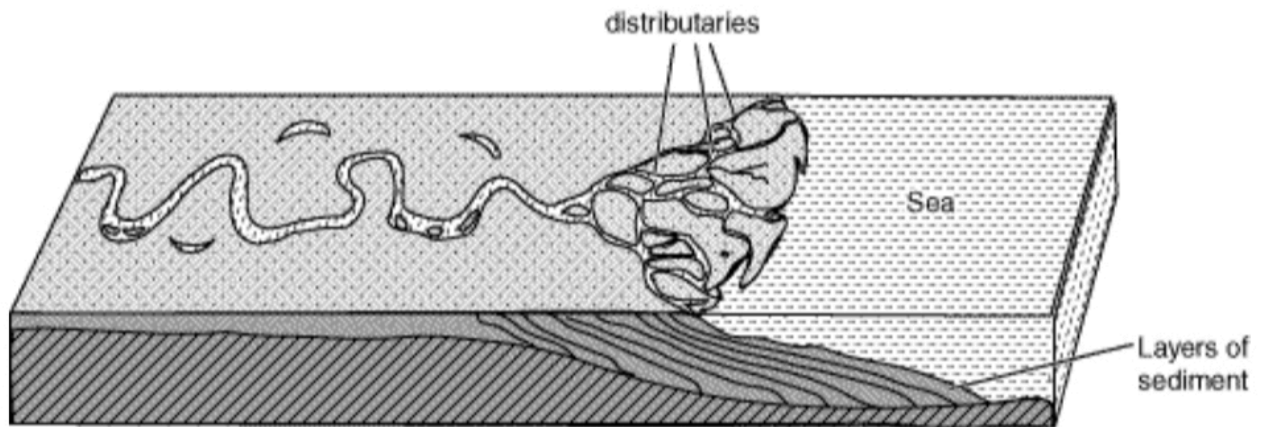


Figure 1:12 A delta