Chapter 11=Rivers

Why are rivers important?

They are important as they drain the land of rainwater and carry it to the sea.
Erosion= is the breakdown of rock,transportation and deposition of rock in rivers,seas and glaciers.

SOURCE=The beginning or start of a river
COURSE=The route a river takes to the sea
CONFLUENCE=when 2 rivers meet.
TRIBUTARY=A small stream which joins a bigger river
DISTRIBUTARY=stream that branches off and flows away from a main stream channel.
MOUTH=The end of a river
DRAINAGE BASIN=The large area of land that a river and its tributaries drain.
WATERSHED=The highland separating 2 drainage basins.
ESTUARY=partially enclosed seawater where the river flows.

Stages of a river

youthful	mature	old
•has a steep gradient /slope and a fast flowing river •there is little water and lots of erosion •there is a very narrow,shallow channel •there is high bed load larger rocks •the features are (1)V-shaped valleys (2)interlocking spurs (3)waterfalls	•the land is gently sloping •there's more water and its still eroding •there is a wider deeper channel •there is more suspended sediment •features are (1)meanders (2)oxbow lakes	•there is a slow moving river •there is lots of water deposition •there's a gently sloping river valley •very wide and deep channel •high levels of suspended sediment •features=(1)flood plains (2)leeves (3)deltas

Processes of river erosion

(1)hydraulic action=is the force of moving river water and it depends on velocity(speed) the faster a river flows the more the river erodes.it also depends on volume the more water the greater the erosive power.

(2)abrasion=is the force of moving river water and its load like sand,stones and pebbles.it depends on volume,velocity and its load.

(3)solution=is when river water mixes with Carbon dioxide and makes a mild carbonic acid which will dissolve the limestone and the soil over a long period of time.

(4)attrition=is when small stones break down as they hit off each other.

Processes of river transportation

(1)solution=the materials dissolve in the water and are carried along by the river.limestone dissolved in the water.

(2)suspension=extremely light particles are kept in suspension such as sand and silt float along in the water.

(3)saltation=is the pebbles bounced along a river bed.

(4)traction=the heaviest load dragged along by fast flowing river water eg in a flood.

Diagram of transportation=

Causes of deposition

->it's caused by a reduction in the river's speed and volume and an increase in the load size.

Features of river/fluvial erosion

(1)v-shaped valleys (2)interlocking spurs (3)waterfalls

What's in common with them?

•All 3 of these are features of river erosion.they can be found in the youthful stage of a river.all formed by the processes of river erosion like hydraulic action,abrasion and solution.

Feature/Landform of fluvial (river) erosion

Feature=Waterfall
Example=Torc waterfall Killarney Co.Kerry.
Explain=•a waterfall is a feature of river erosion found only in the youthful stage
•a waterfall only forms if there's a band of hard rock on top of a soft rock or a band of hard rock sandwiched between 2 bands of soft rock.
•metamorphism occurs when there's a band of hard rock with a band of soft rock for example marble and limestone may be beside each other.
•due to metamorphism ,differential erosion then occurs.the soft rock gets eroded quicker than the hard rock by the process of river erosion that are hydraulic action=which is the force of moving river water that depends on velocity and volume ,abrasion=which is the force of moving river water and its load and solution=which is when river water and carbon dioxide mixes together and forms a mild carbonic acid that dissolves the limestone over a long period of time by the river eroding the soft rock quicker and it then forms a notch.
•over time a difference in height on the river bed gets created. That's a waterfall the river water plunges over the hardrock and forms a plunge pool at its base.

Diagram=

Examples of irish rivers

(1)shannon (2)liffey (3)lee (4)barrow (5) shore (6)bandon (7)black water.

spur=is a piece of hard land.

Meanders

Meanders are curves or bends in the river as it flows along its course in the mature stage.as river erodes laterally to right and then left side it forms large bends called meanders.meanders are formed by both erosion and deposition.its formed by the process of hydraulic action which is the force of moving river water wearing away the banks and bed of the river.example of place where meanders are found is in the river shannon and the river Moy.

Diagram=

Oxbow lakes.

An oxbow lake was formed when a meander was cut off from the river.when neck of meander becomes very tight the river can break through.for example during a flood the river has a higher flow of water and more energy.that combination enables the river to force its way through the neck and take a straighter course.the loop is cut off from the main channel when sediment is dropped off at its entrance.the cut off loops is called an oxbow lake.over time this lake will dry up and form a oxbow scar. Oxbow lakes can be seen on the river liffey and river Moy.

Diagram=

Flood plains

A floodplain is a wide, flat area of land on either side of the river in its old stage. Deposition has become the main process. The river carries a large load of sediment known as alluvium.it deposits alluvium formed by the process of river deposition like salutation and traction. River burst banks and dropped the heavy load. The floodplain is made up of a thick layer of alluvium which makes it very fertile and generally good for farming. The highest point reached by the river when in flood is called the bluff line. Flood plains can be found on the old stage of river Moy and River liffey.

Diagram=

Leeves=

Is a raised area of alluvium on the banks of a river.forms in the old/mature stage.they are caused by floods .times of low flood material is deposited on the river bed raising the height of the river bed.in

times of flood the water leaves the channel and loses its energy and deposits its load .heavier material is deposited on the river banks and the finer material is carried further onto the flood plain.after many floods the river builds a bank on either side.artificial levees can also be used to protect the surrounding land from flooding.levees can be seen in the old stage of river liffey and the River Moy.

Diagram =

Feature of river(fluvial) deposition

Feature=delta

Example=River shannon limerick

Explain=•A delta is a feature of river deposition formed by the processes of river erosion and only found in the old stage.•deltas only forms if a river deposits a large load of alluvium.the rate of deposition must be greater than the rate of the removal by the waves.a fetch of a wave is the distance that waves travel before they break

•The mouth of the river gets clogged with sediment.The river must break into distributaries to make its way out to the sea.•the sea at the mouth of the river must be very shallow.•the most famous delta is the river nile in Egypt

Diagram=

Human activities and rivers/how people manage river processes?

(1)they build a dam.

•Hydroelectric power stations are often built using dams.the building of dams can have both a positive and a negative impact on a river.A dam is a large concrete wall built across a river to try to control the flow of water.,its perpendicular to the flow of water.people built a dam in egypt to stop flooding which is known as the Aswan Dam.a dam is built in a youthful stage of a river.too much rainwater after long periods of time is can be contained in the river channel to reduce flooding.people object against building dams as they lose their houses,villages and farmland and have to move out. In order to build a dam you need a large area of land to flood.

(2)dredge river

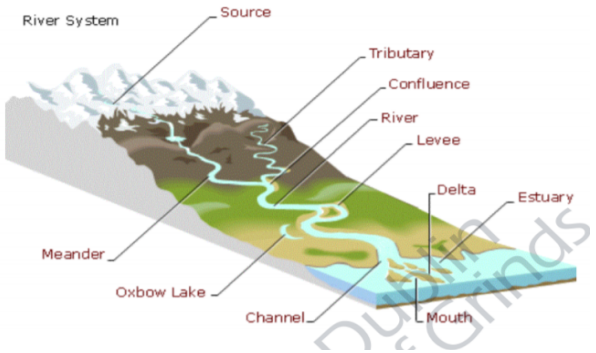
•removing some of the rivers bedload the level of water in the river then it wont flood during the times of rain eg bandon Co.Cork.the fishermen object as they will lose their jobs .the fish spawn on bedload and if that happens the fish will die.they should ban dredging during spawning seasons.

(3)rivers are used for transport and tourism

•they are used to transport people and goods..limerick is an example of a city with a port function.the tourists use rivers for cruising and fishing.towns such as carrick on shannon and athlone along the river shannon are well known tourist destinations in ireland.

Positive aspects of human and rivers
(1)they can provide a water supply to urban areas.
(2)reservoirs can be used for leisure activities such as fishing,boating and water sports.

Negative aspects of humans and rivers
(1)farmlands,villages and houses flood .People have to relocate.
(2)fish stocks can be affected by the dam.



Exam questions

An example of one cause of flooding and one flood prevention method that would be suitable to protect residential areas and towns close to rivers from flooding.an explanation of how the cause identified above can lead to river flooding and how the measure you suggested would help prevent flooding in the future.

One cause of flooding could be because of the Dam that was built to protect the rivers from flooding had become broken because of for example too much rainfall over a short period of time causing it to burst because of the amount of pressure put onto it.the flooding caused by the dam being broken occurs by large amount of water held behind the dam flooding also the areas downstream .Flooding could be prevented by planting more vegetation like more trees.Planting trees prevents flooding because trees soak up water faster than gas they have deep roots that they provide channels to send the water much further underground.the trees hold back the water and slow down the flow during heavy rainfall that then prevent flooding.trees not only slow down the rivers from flooding,eroding,pollution they also help fish and other river life.

how is putting flooding defence important for town situated near river

Putting flood defences are important for towns situated near rivers because they prevent the river from flooding and causing any damage to peoples properties.flooding can lead to life loss.if the town would be flooded there would be high costs to repair all the damage that has been done.

Two way people benefit from or exploit rivers

One way people benefit from rivers is Transport: people use rivers to transport heavy goods and people (River Rhine is used to transport different materials throughout Europe).
A second benefit is Hydroelectric Power (HEP): people create dams across a river to produce energy for the surrounding areas (Three Gorge dam in China and Inniscarra in Cork)

How do people pollute rivers?

(1)the factories and industry dump waste products and chemicals into rivers which can kill plants and animals.
(2)farmers spread slurry on the land which can be washed into the rivers by rainwater which can kill plants and animals

Choose either meanders or floodplains and explain with the aid of a diagram,how it was formed

Meanders are curves or bends in the river as it flows along its course in the mature stage.as river erodes laterally to right and then left side it forms large bends called meanders.meanders are formed by both erosion and deposition.its formed by the process of hydraulic action which is the force of moving river water wearing away the banks and bed of the river.the material is deposited on the inside of the bend theres greater friction.then horseshoe becomes tighter as ends get closer together.example of place where meanders are found is in the river shannon and the river Moy.

Diagram=