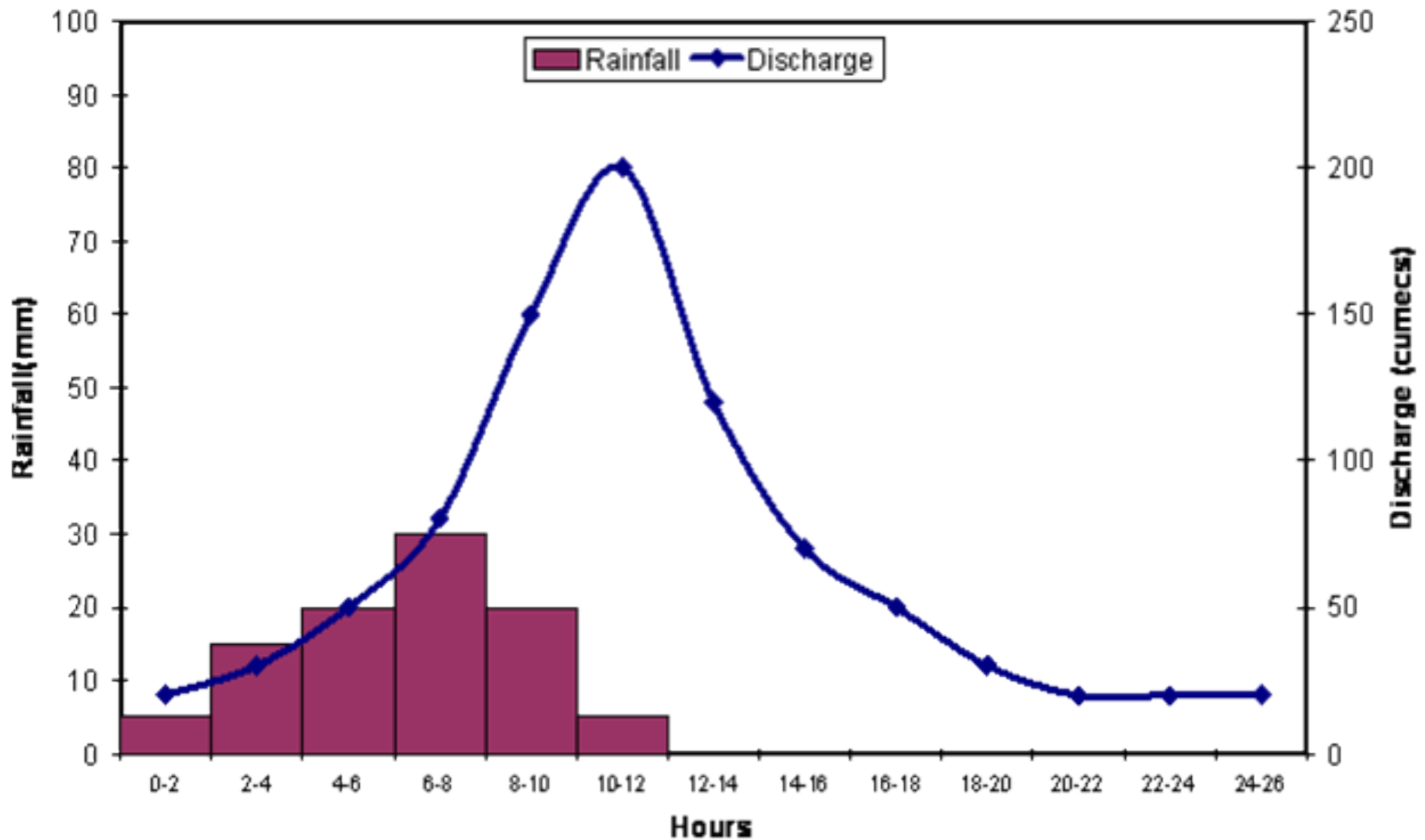


Flooding and it's solutions

Describe this hydrograph in 35 words



What is a flood?

What is a flood?

- A period of of high discharge, where the river overflows its banks

Why is this a problem?

- What are some of the problems that flooding can cause?
- Is it just a problem in an LEDC?

What can be done?

How to manage
a river?

Your Task

- On a page of A3 you must create a fact sheet on flooding and river management
- pg 286-287 MEDC flooding
- pg 288-289 LEDC flooding
- pg 293-295 river management

Perfecting your answers

- For a named river you have studied, explain what has been done to reduce flooding. (7)

Mark Scheme

Level 1 (1–3marks)

Statements including limited detail describing what can be done to reduce flooding.

(e.g. build higher banks, plant trees in drainage basin, build dams / reservoirs along course of river, straighten river etc.)

Level 2 (4–6marks)

Uses named example.

More developed statements describing what can be done to reduce flooding.

(e.g. build higher banks so the river will have a greater capacity; raise banks especially in areas where river flows at a higher level than flood plain; plant trees so flow will not be so flashy / so less water will get to river as more evapo-transpiration occurs; build dams to regulate flow of water; straighten river so water is removed from drainage basin more quickly etc.) a

(NB MAX 5 marks if no named example)

Level 3 (7 marks)

Uses named example (e.g. River Mississippi).

Comprehensive and accurate statements including some place specific reference.

(e.g. built high levees so the river will have a greater capacity; raised banks protecting cities like Memphis where river flows at a higher level than flood plain; planting trees in Tennessee Valley so flow will not be so flashy / so less water will get to river as more evapo-transpiration occurs; much straightening of river / meanders cut off between New Orleans and Memphis, etc.)

- There are many ways to prevent flooding, such as straightening the river channel, building levees, afforestation of the river basin and building dams. The Yangtze river in China was prone to flooding and has claimed the lives of millions in the past. They tried to prevent flooding by building the Three Gorges Dam. This has prevented flooding by regulating the discharge of the Yangtze river. During times of heavy rainfall they hold water back preventing flooding downstream. They have also built levees around some of the major cities downstream, like Yichang. These work by increasing the volume of water which can be held by the river before it floods. They have also planted trees in the area to increase evapotranspiration and interception, reducing the speed at which water can enter the river making it less prone to flash floods.

Your Turn

- Thinking about what we have discussed aim to get full marks on these questions
- Remember to look for the command word, limiting words and the number of marks available

Weathering

What is it?

- What is weathering and how is it different to erosion?

Weathering

- Weathering is the breakdown of rock by mechanical, physical and biological forces that do not remove it
- Any movement will be due to gravity

Erosion

- Erosion is the breakdown of rocks by moving water, ice and wind which then transport the eroded material away

Types of Weathering

- CHEMICAL
 - involves the decomposition of rocks (changing chemical composition)
 - mostly in hot, humid environments
- MECHANICAL
 - involves disintegration of rocks (no chemical change)
 - mostly in hot desert environments

Types of weathering

1. GRANULAR DISINTEGRATION water enters the pores of the rock, it then freezes and expands causing the grains of rock to loosen
2. FREEZE-THAW WEATHERING water moves through vertical cracks into the rock and into the bedding planes. It then freezes and expands. This is repeated until the rocks break from frost-shattering
3. THERMAL EXPANSION AND CONTRACTION in hot conditions the rock surface expands and then cools on a night. This creates stress causing it to slowly break apart. It is also called exfoliation.

Types of weathering

1. OXIDATION oxygen combines with metal to weaken the rocks, causing them to be easily broken down as rust
2. CARBONATION rainwater combines with carbon dioxide to form carbonic acid. This soaks into the rocks, reacting with limestone to make calcium bicarbonate which can then be dissolved into water
3. GRAVITY causes weathered material to fall to the bottom of the slope. This debris is called scree

YOUR TASK

- Using the handout summarise the 6 types of weathering and draw a simple sketch to illustrate each
- Identify which are chemical and which are mechanical weathering

YOUR TASK

- What is biological weathering?
- How can plants and animals contribute to mechanical and chemical weathering?
- Complete TASK 4