Montgomery Academy

GCSE AQA Geography Flashcards

Physical B: The Living World



CONTENTS

Question(s)

What is an ecosystem?

Topic: The Living World

Answer(s)

An ecosystem is a natural system of interdependent and interrelated living and non-living components.

Question(s)

Define the terms:

(i) Producers

(ii) Decomposers

(iii) Food Chain

Answer(s)

(i) **PRODUCERS** – these convert sunlight into sugars (glucose) through the process of photo-synthesis

(ii) **DECOMPOSERS** – these break down plant and animal matter releasing nutrients back into the soil

(iii) **FOOD CHAIN** – these show the direct links between producers and consumers

Question(s)

Define the terms:

(i) Consumer

(ii) Food Web

(iii) Nutrient Cycle

Answer(s)

(i) **Consumer** – these get their energy from the food generated by the producer
(ii) **Food web** – these show all the complex connections between producers and consumers in an ecosystem
(iii) **Nutrient Cycle** – this is the way that nutrients are transferred through an ecosystem

Question(s)

Give an example of a small-scale ecosystem

Topic: The Living World

Answer(s)

Pond, hedgerow or woodland (or any other small scale ecosystem)

Question(s)

Explain how the removal of a primary producer can have an impact on an ecosystem.

Topic: The Living World

Answer(s)

The removal of a primary producer can lead to the collapse of an ecosystem. By removing a primary producer, the food source of primary consumers is also removed which can lead to these organisms dying. In turn this removes the food source of secondary consumers leading to large scale devastation across the ecosystem.

Question(s)

What is a biome?

Answer(s)

Biomes are very large ecological areas on the earth's surface, with fauna and flora (animals and plants) adapting to their environment.

Question(s)

Identify three of the world's major biomes

Topic: The Living World

Answer(s)

Any from tropical rainforest, taiga, hot desert, savanna, polar, deciduous forest, coniferous forest, Alpine, Mediterranean, tundra etc.

Question(s)

What are the main characteristics of these biomes?

Answer(s)

- **Tropical Rainforest** - Temp around 28°C all year round, near the Equator, lots of rain
- **Savannah** - Dry, 2-3 months of rain, temperatures high in summer, grasslands, not many trees
- **Hot Deserts** - Very dry <250mm per year, v.hot in summer, quite hot in winter
- **Temperate Forest** - Large range in temperatures, lots of rain, rarely drops below freezing, lots of forests
- **Tundra** - Very cold, temperatures below 0°C for long periods, ground frozen, small shrubs and grasses
- **Polar** - V.cold, rarely above 0°C, little precipitation

Question(s)

Describe the distribution of the tropical rainforest biome

Topic: The Living World

Answer(s)

Tropical rainforests are located between 10°N and 10°S of the Equator where temperatures stay near 28°C throughout the year. Rainforests typically receive over 2000mm of rain each year. The largest rainforests are in the Amazon in Brazil (South America), Demographic Republic of Congo (Africa) and Indonesia (South East Asia). Tropical rainforests are also found in Hawaii and the islands of the Pacific & Caribbean.

Question(s)

Explain the distribution of the tropical rainforest biome

Topic: The Living World

Answer(s)

Tropical rainforests are found near the equator due to the amount of rainfall and the amount of sunshine these areas receive. Most tropical rainforests fall between the tropics as these areas receive more sunlight and therefore aid plant growth. The high temperatures means that evaporation happens at a fast rate, resulting in frequent rainfall. Also, air is rising due to the circulation of air resulting in convectional rainfall.

Question(s)

Identify the main layers of found in the tropical rainforest ecosystem

Topic: The Living World

Answer(s)

Emergent, canopy, under canopy, shrub and ground layer

Question(s)

Describe the characteristics of the emergent layer

Topic: The Living World

Answer(s)

The Emergent layer consists of the tallest trees and are usually over 50 metres tall. The Kapok tree is an example of an emergent

Question(s)

Describe the characteristics of the canopy layer

Topic: The Living World

Answer(s)

The sea of leaves blocking out the sun from the lower layers is called the **canopy**. The canopy contains over 50% of the rainforest wildlife. This includes birds, snakes and monkeys. Lianas (vines) climb to the canopy to reach sun light. Epiphytes, or air plants, are also found in this layer. An epiphyte is an organism that grows on the surface of a plant and gets its moisture and nutrients from the air, rain, water or from debris gathering around it.

Question(s)

Describe the characteristics of the under-canopy layer

Topic: The Living World

Answer(s)

The **under canopy** mainly contains bare tree trunks and lianas. Lianas are vines that climb the vegetation in a bid to reach sunlight.

Question(s)

Describe the characteristics of the shrub layer

Topic: The Living World

Answer(s)

The **shrub layer** has the densest plant growth. It contains shrubs and ferns and other plants needing less light. Saplings of emergent and canopy trees can also be found here.

Question(s)

Describe the characteristics of the forest floor

Topic: The Living World

Answer(s)

The **forest floor** is usually dark and damp. It contains a layer of rotting leaves and dead animals called litter. This decomposes rapidly (within 6 weeks) to form a thin humus, rich in nutrients. Below the rich top soil, the soil lacks nutrients. This is because nutrients are rapidly absorbed by vegetation.

Question(s)

Describe three characteristics of the climate of the tropical rainforest ecosystem

Topic: The Living World

Answer(s)

- Very wet with over 2,000 mm of rainfall per year.
- Very warm with an average daily temperature of 28°C. The temperature never drops below 20°C and rarely exceeds 35°C.
- The atmosphere is hot and humid.
- The climate is consistent all year round. There are no seasons.

Question(s)

Describe three characteristics of soil in the tropical rainforest ecosystem

Topic: The Living World

Answer(s)

- Most of the soil is not very fertile.
- A thin layer of fertile soil is found at the surface where the dead leaves decom-pose.
- It is red in colour because it is rich in iron.
- Due to heavy rainfall the nutrients are quickly washed out of the soil.

Question(s)

Why does the tropical rainforest have the greatest biodiversity of all ecosystems?

Topic: The Living World

Answer(s)

- The warm and very wet climate provides perfect conditions for plant growth.
- The wide range of plant species supports many different animals, birds and insects.
- Species have **adapted** to the conditions of the rainforest, e.g. trees and plants have shallow-reaching roots to absorb nutrients from the thin fertile layer in the soil.

Question(s)

Identify 3 ways vegetation has adapted to the rainforest environment

Topic: The Living World

Answer(s)

Examples could include:

- Emergents
- Drip tips
- Waxy leaves
- Epiphytes
- Smooth trunks
- Thin bark
- Wide buttress roots
- Flexible leaf stems

Question(s)

Explain 3 ways vegetation has adapted to the rainforest environment

Topic: The Living World

Answer(s)

- Plants in the highest layer (emergent) only have branches at the top (where the most light reaches them), and plants in the under canopy have large leaves to absorb as much light as possible to support photosynthesis.
- In the tropical rainforest, most trees in the rainforest have wide buttress roots. This is to support them as they grow incredibly tall (over 20-40m in some cases) as there is great competition for sunlight. In addition to this roots grow wide rather than deep because nutrients are found in the top layer of soil.
- Lianas (vines) grow around trees as they climb to reach sunlight.
- Plants have thick, waxy leaves with pointed tips. The pointed tips (called drip-tips) channel the water to a point so it runs off – that way the weight of the water doesn't damage the plant, and there's no standing water for fungi and bacteria to grow in. The waxy coating of the leaves also helps repel rain.

Question(s)

Identify 3 ways animals have adapted to the rainforest environment

Topic: The Living World

Answer(s)

- Prehensile tail
- Bright colour
- Nocturnal
- Sharp claws
- Sticky foot pads
- Camouflage

Question(s)

Explain 3 ways animals has adapted to the rainforest environment

Topic: The Living World

Answer(s)

- The poison dart from excretes poison through its skin and its bright colour warns potential predators against eating it. Sloths have long, sharp claws that help them cling onto branches. Combined with their sharp teeth, these claws are also used to defend themselves from predators such as anacondas, boas, wild cats, eagles and hawks.
- The spider monkey is its prehensile tail. The prehensile tail allows the spider monkey to be able to grasp the branches of trees.
- Geckos have developed large, flattened toe pads that have sticky scales on their undersides. These help them grip onto the smooth tree trunks allowing them to climb vertically up trees.

Question(s)

How has the rate of deforestation changed over time?

Topic: The Living World

Answer(s)

The rate of rainforest deforestation around the world has **increased** over time. Around **half** of the world's tropical rainforest has now been cleared. Rates of deforestation increased in three continents containing tropical rainforest. These were **Asia** (Indonesia, Thailand and Malaysia), **Africa** (Mali and Madagascar) and **South America** (Bolivia, Guatemala and Peru).

Question(s)

Identify a tropical rainforest case study you have studied

Topic: The Living World

Answer(s)

Malaysia

Question(s)

Identify 4 causes of deforestation

Topic: The Living World

Answer(s)

Slash and burn, farming, logging, trans-migration, hydroelectric power, mining and road construction

Question(s)

Give a brief description of each cause of deforestation

Topic: The Living World

Answer(s)

Slash and burn - Local people and tribes cut down the trees and then burn them to clear the land for crops. Even with the ash, the soil begins to turn infertile (usually after 3-5 years) and the people move on.
Logging - Commercial logging is the major cause of primary rainforest destruction in South East Asia and Africa. Malaysia became largest exporter of hardwoods e.g. mahogany in 1980's
Hydroelectric Power - Development of hydroelectric power stations (HEP Stations) such as the Bakun Dam in Malaysia.
Farming - Malaysia is the biggest exporter of Palm Oil in the world. Plantations growing due to 10 year tax incentives
Mining - The mining of tin, and more recently oil and gas means large areas of rainforest has been felled

Question(s)

Identify 4 impacts of deforestation (including both economic and environmental impacts)

Topic: The Living World

Answer(s)

- Soil erosion
- Loss of biodiversity
- Climate change
- Economic development
- Loss of natural habitat
- Loss of native people's lands

Question(s)

Explain 4 impacts of deforestation in your case study location

Topic: The Living World

Answer(s)

Soil erosion - When land is cleared the soil is left bare. The nutrients in the soil are washed (leached) away during rain. The roots of plants and trees no longer hold the soil together, so it is easily eroded.
Loss of biodiversity - Many different species of plants and animals die because of deforestation. As plants and animals are closely connected through the food web, this reduces the biodiversity.
Climate change - If there are fewer trees and plants, due to deforestation, then less carbon dioxide is removed from the atmosphere. In this way deforestation contributes to global warming.
Economic development - The creation of mines, farms and roads has also led to econ. development. The money created from this allows a country to generate foreign income, which can then be used to pay off debts or be invested in further development projects.

Question(s)

Identify 3 strategies that can be used to manage the tropical rainforest sustainably

Topic: The Living World

Answer(s)

Any from:

- Selective logging
- Replanting
- Debt Reduction
- International Hardwood Agreements
- Ecotourism
- Conservation & Education

Question(s)

Explain how two of the strategies are sustainable

Topic: The Living World

Answer(s)

Selective Logging – Only certain trees (e.g. just the older or inferior ones) are cut down. This causes less damage as the trees that remain provide soil cover and allows young trees to grow for the future

Debt reduction programme – Wealthier countries have agreed to write off the debt in return for protecting the rainforest.

International Agreements – The Forest Stewardship Council (FSC) source sustainable timber and mark these products with their logo so people know it is from a sustainable source.

Conservation – Rainforest gets converted into national parks to protect it for the future.

Ecotourism - Local people earn money through tourism (instead of logging) that doesn't damage the environment.

Question(s)

Describe the distribution of hot deserts

Topic: The Living World

Answer(s)

Hot deserts are mainly found around the **Tropics of Cancer and Capricorn**. The hot deserts of the world are located between 15° and 30° **north** or south of the equator. The largest hot desert is the **Sahara** in Africa which spans the whole width of the continent. Deserts are typically found towards the **west coast of continents**.

Question(s)

Describe the typical climate of a hot desert ecosystem

Topic: The Living World

Answer(s)

The climate is very **hot**. Hot deserts have two distinct seasons: **summer**, when the temperature ranges between 35-40°C, and **winter**, when the temperature ranges between 20-30°C. The climate is very **dry** with less than 250 mm of rainfall a year. Summer day time temperatures can exceed **40°C**. However, at night the temperature can drop below 0°C. Little or no rainfall occurs during the day.

Question(s)

Describe three characteristics of soil in the desert ecosystem

Topic: The Living World

Answer(s)

Characteristics of soil include:

- Desert soils are **thin**, **sandy**, **rocky** and generally grey in colour.
- Desert soils are **very dry**. They soak up water quickly when it does rain.
- The surface of the soil may appear **crusty**. This is due to the lack of rainfall. As it is so hot water is drawn up to the surface of the soil by **evaporation**. As the water evaporates, **salts are left behind on the surface** of the soil.

Question(s)

Why does the hot desert have a low biodiversity compared to other ecosystems?

Topic: The Living World

Answer(s)

The hot, dry climate is not suitable for many types of life

Question(s)

Identify 3 ways vegetation has adapted to the hot desert environment

Topic: The Living World

Answer(s)

Examples may include:

- Deep roots
- Shallow roots
- Small leaves
- Short life cycles
- Spines
- Succulents
- Wax coated leaves

Question(s)

Explain 3 ways vegetation has adapted to the hot desert environment

Topic: The Living World

Answer(s)

- Vegetation has leaves that are very small To reduce water loss;
- Long and wide roots to absorb rain when it does fall;
- Plants have short life cycles. The seeds lie dormant and then germinate following rainfall, grow, flower and die within a short space of time. This helps them avoid drought
- Spikes (not leaves) to reduce water loss through transpiration;
- Some plants store the water in their leaves, stems or roots.
- Cacti have a waxy coating on stems to help reduce water loss.
- **long deep roots** to tap into the water deep underground

Question(s)

Identify 2 animals that have adapted to the hot desert environment

Topic: The Living World

Answer(s)

- Camels
- Desert (Fennec) Fox

Question(s)

Explain 3 ways animals have adapted to the hot desert environment

Topic: The Living World

Answer(s)

Camels - **Long eyelashes** and **closing nostrils** help to keep out sand. **Wide feet** so they don't sink in the sand. They can go **without water for over a week** because they can drink gallons in one go. They can go months without food - they **store fat in their humps**. They are **well camouflaged**. **Thick fur** helps to keep them warm at night

Desert Fox - **Thick fur** on the soles of their feet, protecting them from the hot ground. **Burrow** to escape the heat. **Nocturnal** animals sleep during the day, sheltering to help prevent dehydration. Animals may **hiber-**

Question(s)

Identify the hot desert case study you have studied

Answer(s)

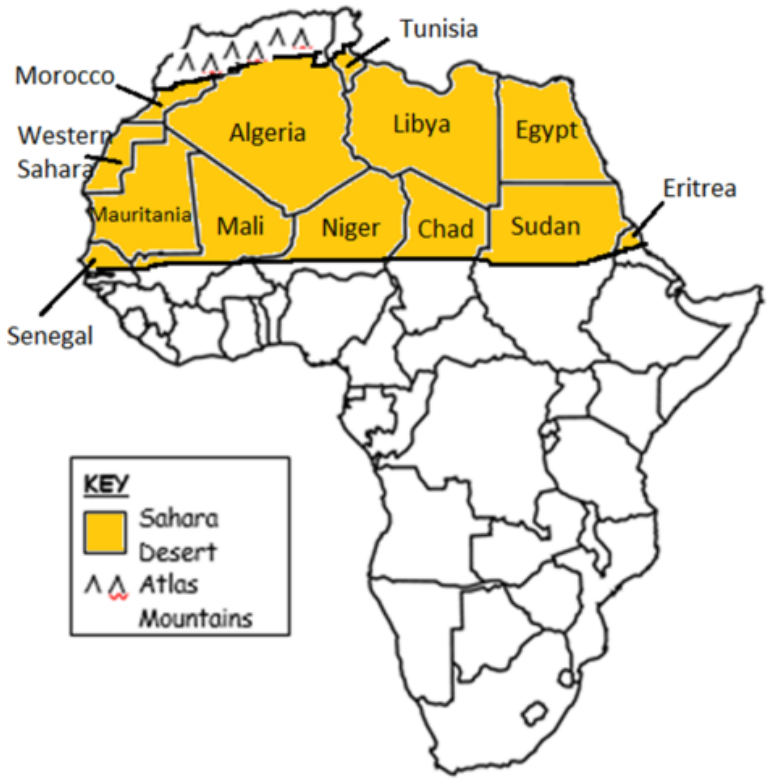
The Sahara

Question(s)

Describe its location

Topic: The Living World

Answer(s)



The Sahara is the world's largest hot desert and lies in **north Africa**. It is bordered by the Atlantic Ocean on the west, the Red Sea on the east, the Mediterranean Sea on the north and the Sahel on the south. The enormous desert **spans 11 countries**: Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Western Sahara, Sudan and Tunisia.

Question(s)

Identify four development opportunities in the hot desert area you have studied

Topic: The Living World

Answer(s)

- **Underground water stores** - Large quantities of fresh water stored in aquifers beneath the Sahara.
- **Tourism** - The coastline, oases, landscapes and sand dunes attract lots of visitors to Egypt, Tunisia and Morocco
- **Farming** - Land that is irrigated allows crops to grow
- **Oil & Gas** - Algeria and Libya has large stores of gas
- **Mineral Extraction** - Morocco is one of the biggest exporters of phosphates
- **Solar Energy** - Tunisia are building huge solar farms

Question(s)

Explain how two of these provide development **opportunities**

Topic: The Living World

Answer(s)

- **Underground water** could **offset droughts** linked to climate change increase drinking water and improve farming. This would improve the socio-economic well-being of the people
- **Oil and Gas extraction** in Algeria provides 60% of its income. The industry employs over 40,000 people therefore improving their economic chances and boosting the country's economy
- **Mining for minerals** has improved the quality of life for people in the Sahara region of Morocco because of jobs and taxes gained from the exports of the phosphates.
- **Solar energy** farms could create a vast amount of renewable energy to sell to Europe boosting Tunisia's economy
- **Tourism** plays a significant role in the economies of North African states. It brings jobs, taxes and foreign currency to them

Question(s)

Identify four development **challenges** in the hot desert area you have studied

Topic: The Living World

Answer(s)

- Salinisation
- Remoteness
- Desertification
- Extreme Heat
- Arid (Dry) Climate
- Thin Soils
- Existing Nomadic Populations
- Wind Erosion & Dust Storms

Question(s)

Explain how two of these provide development challenges

Topic: The Living World

Answer(s)

- **Tourism** is not well developed, tourist stays are short and infrequent. Very **hot temperatures** limit the tourist seasons
- **Exporting minerals** and natural resources from the Sahara is very expensive. This is due to the **long distances** it needs to travel to get to customers from the **remote** mining areas .
- **Water levels** deeper than 50m are difficult to access, and require more than hand pumps. It **costs $130,000**, money farmers can't afford. Excess irrigation of land can cause **salinisation** (salt rises to the surface) and the becomes infertile.
- The **harsh climate** poses problems for maintaining **solar farms**, **sand-storms** and **high winds** damage the panels. Large amounts of mineral-ised water are needed to clean them regularly, with over 10,000 gal-lons per day.
- The building of long **gas and oil pipelines** through the Sahara Desert presents a major challenge. The 'Trans Saharan' pipeline needs the consent of several countries and **$20 billion** to finance.

Question(s)

Define desertification

Topic: The Living World

Answer(s)

Desertification is the process of fertile land turning into desert over time

Question(s)

Identify four causes of desertification

Topic: The Living World

Answer(s)

- Climate Change
- Removal of trees for fuel
- Overgrazing
- Over-cultivation
- Population growth

Question(s)

Explain two causes of desertification

Topic: The Living World

Answer(s)

- **Climate Change** – hotter and drier conditions are increasing the risk of land turning to desert.
- **Removal of trees for fuel** – cutting down trees leads to roots dying. The soil will no longer be held together roots and erosion will occur.
- **Overgrazing** – soil becomes bare as the result of vegetation being removed by grazing animals. The soil becomes bare and prone to drying out and cracking.
- **Over-cultivation** – as a population grows there is a greater demand for food. Farming becomes more intensive which means the land has less chance to recover causing it to become infertile, exposed and at risk of erosion.
- **Population growth** – rising population puts a great demand on resources e.g. wood and food etc.

Question(s)

Identify four strategies to reduce desertification

Topic: The Living World

Answer(s)

- Afforestation (Great Green Wall)
- Soil/Water Management
  - ⇒ Magic Stones (Burkina Faso), Ponding Banks, Contour Traps, Drip Irrigation
- Appropriate Technology
  - ⇒ Crop Rotation, Strip Farming, New Cattle Breeds, Solar Cookers
- Creation of National Parks

Question(s)

Explain how these strategies reduce desertification

Topic: The Living World

Answer(s)

- **Water & Soil Management** - Small-scale irrigation projects, such as **catching and storing rainwater** and using slow dripping water keeps the land **fertile** and **prevent salinisation**.
- **Afforestation** - This helps reduce soil erosion because tree **roots stabilise the soil** and offer **shade** to the ground
- **Appropriate Technology - Crop Rotation:** Used to replace nutrients by changing the crops every year, or even leaving one field fallow; **Strip Farming:** Planting crops that mature at different times. This does not exhaust the nutrients in the soil; **New Cattle Breeds:** Smaller cattle that produce more milk/meat per cow to reduce the numbers needed, therefore reducing grazing; **Solar Cookers:** These use solar energy to cook food, therefore reducing the need for firewood.
- **Creating National Parks** - It protects it from being **deforested** without permission, **overgrazed** and **over-cultivated** by farmers