Parent and student question and answer booklet

Geography
Paper 3

Home revision question and answer booklet

The purpose of this booklet is to support your child with their revision for their GCSE examination.

This booklet is a summary of all the content that your child needs to know and will assist them with regards to preparation for the subject knowledge that they need to apply in the examination. Although the booklet is by no means a guarantee, it will make a significant contribution to their success.

This booklet should be used as a question and answer test booklet so that you can help coach your child into answering content correctly with accuracy. Ideally questions should be worked through at random and use a priority red, amber, green system to prioritise areas to work on.

This booklet is the **minimum**/basic amount of work that your child needs to complete based on the knowledge that they need to have.

What else can your child be doing to revise?

They should not:

Simply read over the material. This will not help you remember it.

Highlight lots of text, this gives you a feeling that you are learning it when in fact you are not.

Type up lots of notes.

Revise for hours at a time on the same topic.

They should:

Transform the notes.

Create diagrams

Create pictures to represent the material.

Produce flashcards. The process of doing this helps you to learn it.

Test yourself using your flash cards.

Get others to test you using the flash cards.

Turn the events into a storyboard.

Prioritise - chose the three key points to learn for a given topic.

Go through exemplar answers given in class and learn the rules of how to approach each question.

Topic 7: People and the Biosphere

1.What is a biome?
A world scale ecosystem (a community of plants and animals)

2. What is the biosphere?

The part of the earth that contains plants and animals

3. What is an 'ecosystem'?
A natural system of plants and animals and the environment in which they live

4. What is solar insolation?
How much solar energy strikes the ground depending on the distance from the equator.

5. How does latitude influence biome type?
Locations near the poles where sunlight is more intense, are warmer than areas near the poles
Near the Equator, the sun's rays are at a high angle in the sky all year round

6. Define latitude
This measures how far north and south a location is from the Equator.

7. What latitude is the equator?
0°

8. How and why does latitude affect climate?
Temperatures are hotter near the equator as the suns rays are more concentrated
Precipitation is high near the equator as it is an area of low pressure

9. How does climate determine biomes?
Temperature - most plants need over 5°C to grow
Precipitation - plants need water to grow
Sunshine hours and intensity - this influences photosynthesis and plant growth

10. Describe the distribution of the taiga biome
Found at high latitudes between 50° N to 63.5°N in Canada and Russia

11 Describe the climate and vegetation of the taiga
Temperatures ranging from - -5°C - 8°C
Precipitation ranges from 500mm - 2300mm
Vegetation includes coniferous (pine) trees

12. Describe the distribution of the tropical rainforest biome
Located around the equator (at low latitudes) examples include Brazil, Congo, Indonesia, Malaysia

13. Describe the climate and vegetation of the tropical rainforest
Temperatures ranging from 20°C - 30°C
Precipitation ranges from 2500mm - 4800mm
Vegetation is evergreen

14. Why is there so much vegetation in a tropical rainforest biome?
Growth is continuous as it is hot and wet all year round and non-seasonal.

15. Why do plants in the rainforest grow so tall?
Because there is so much vegetation there is more competition for sunlight so trees tend to grow upwards rather than out.

15. What does the word 'deciduous' mean?
A seasonal climate where trees lose their leaves.

16. Describe the distribution of the hot desert biome
Located around the Tropic of Cancer and Capricorn in areas of high pressure examples include Australia and Egypt

17. Describe the climate and vegetation of the hot desert

Daytime temperatures ranging from 20°C - 40°C
Precipitation is very low with less than 250 mm of rainfall a year
Vegetation is sparse but includes cacti and succulents

18. What local factors affect biomes?
Rock and soil type
Water availability and drainage
Altitude

19. Explain how rock and soil type affects biomes.
Weathering influences the alkalinity of rock and soil; this influences the type of vegetation that grows

20. Explain how water availability and drainage affects biomes.
Permeable soils are drier as water drains more easily.
Evaporation also influences water availability

21. Explain how altitude affects biomes
Temperature drops by 6.5°C for every 1000m increase in height. At high altitudes temperatures drop below freezing and plants can't grow.

22. Distinguish between biotic and abiotic
Biotic - living part of the biome
Abiotic - non-living part of the biome

23. Distinguish between flora and fauna
Flora - plants
Fauna - animal

24. Define 'goods' and give three examples
Goods are physical materials people get from the biosphere such as timber, food, water, medicines

25. Define 'services'
Functions that biomes naturally carry out e.g. the oxygen cycle.

26. Explain how the biosphere regulates the atmosphere.
Trees take in carbon through photosynthesis. They store this making them a carbon sink. They respire oxygen.

27. Explain how the biosphere maintains soil health.
Nutrients from the soil is taken up by trees.
When leaves die they fall to the floor and become known as 'litter'
Over time they decompose and transfer nutrients back to the soil.

28. What is a nutrient cycle?
The movement of nutrients from one area of an ecosystem to another, plants grow and decomposer into the soil. The nutrients that go into the soil then are used to help the plants to grow.

29. What is leaching?
When nutrients are washed out of the soil due to precipitation.

30. How does climate affect soil health?
In climates with high precipitation, leaching will be higher therefore soils will be less nutrient rich.
In climates with cold temperatures, decomposition will not happen therefore nutrients are not transferred to the soil.

31. Explain how biomes affect food risk.
Vegetation intercepts rainfall therefore in areas with a lot of vegetation, there is less surface run off and water takes longer to reach the channel. This decrease flood risk.

32. Define 'biomass'
The total quantity of plants and animals in an area or biome.

33. Why is there increasing demand for natural resources?
Rising population
Rising affluence
Industrialisation (shift to secondary sector jobs)
Increased urbanisation

34. What is Malthus' view on population v resources?
Pessimistic- population will outstrip resources leading to crisis.

35. According to Malthus, what are positive checks?
Processes that occur due to a lack of resources that work to reduce population e.g. famine, war, starvation

36. What evidence supports Malthus' view?
War
Famine
Peak oil

37. What is Boserup's view on population v resources?
Optimistic- as population grows humans will find ways to ensure they have enough resources.

38. What evidence do we have to support Boserup?
GM crops
Farm machinery
Crop irrigation
Fertilisers

Topic 8: Forests under Threat

1. Describe the tropical rainforest's climate.
Stable temperature all year around at between 24-30°C. High levels of precipitation with monthly averages of 150mm-450mm.

2. Explain the tropical rainforest's climate.
High temperatures are due to closeness to the equator where the sun's rays are more concentrated.
High precipitation is due to the low pressure system around the equator due to atmospheric circulation.

3. State the layers of the rainforest in order from lowest to highest.
Forest floor
Understorey
Canopy
Emergent

4. How has vegetation adapted to the rainforest?
Epiphytes- plants that grow on other vegetation in the canopy to access increased light and water
Lianas- plants that have their roots in the ground but climb up the trunks of other trees to access sunlight
Drip tips- most plants in the rainforest have these waxy leaves with a pointed end to allow water to run off quickly
Buttress roots- these large, triangular shaped roots stabilise the tall trees in windy conditions

5. How have animals adapted to the rainforest?
Sloths- huge claws allow them to hand upside down in the branches
Primates- long tails are used for balance and to move through the trees with ease
Birds- parrots have powerful beaks to break open nuts. They have loud class to it is easier to attract a mate as it's difficult to see them in the dense canopy.

6. Explain how the nutrient cycle in the rainforest differs to the theoretical cycle described in topic 7.
Biomass is larger due to huge trees
Litter decays quicker due to the humidity

Plants grow all year and take up more nutrients
Leaching is more common due to high precipitation

7. State the 4 parts of the food web in order of energy flow.
Primary producer
Primary consumer
Secondary consumer
Tertiary consumer

8. Distinguish between direct and indirect threats and give three examples of each
Direct- deliberate deforestation for roads, HEP, for timber, to convert to farmland
Indirect- secondary impacts of other activities e.g. global warming, pollution or disease

9. What are the reasons for deforestation?
Farmland
Urbanisation
Timber supply
Resources (medicines)

10. When there is deforestation in a tropical rainforest how does this impact the likelihood of flooding?
- Removing trees decreases the interception and increases surface run off causing flooding.
- Increase in soil run-off as there is less interception this causes sediment to build up in the river channels and increases flooding further

11. Name 4 uses of the tropical rainforest in emerging economies such as Brazil
Mineral extraction such as iron ore and gas extraction
Dams to generates HEP to help industrial development
Cattle ranching to provide Brazilian beef
Huge growth in the agricultural industry such as soybean production

12. How is palm oil production an example of monoculture?
Because it is the growth of one crop.

13. Why are conservationists against palm oil production?
They feel that it is not environmentally friendly to destroy virgin rainforest for agricultural and economic gain.

14. Explain factors in a country that would increase rates of deforestation
Poverty- need to sell raw materials to generate income
Industrialisation- deforestation to make space for urban sprawl
Weak laws- no enforcement of environmental protection laws

15. Explain factors in a country that would decrease rates of deforestation
Flood risk- areas with a high flood risk are likely to want to preserve trees as they intercept rain and decrease surface run off
Eco-tourism- countries that rely on eco-tourism will want to preserve a pristine environment to attract tourists
Democracy- democratic governments are more likely to listen to the will of the people when it comes to environmental issues

16. Explain how global warming threatens the rainforest
Species struggle to adapt to intensified weather conditions.
Droughts in the amazon limited growth and meant they were unable to absorb carbon

17. What is CITES?
Convention on International Trade in Endangered Species. An international treaty, adopted by 180 countries that bans cross-border trade in listed species.

18. What are the advantages of CITES?
Protects a wide variety of animal species
Works well for high profile species
Has been successful in reducing the ivory trade

19. What are the disadvantages of CITES?
Protects species, not ecosystems so does not reduce deforestation
Relies on countries setting up and funding policing systems which LICs can't afford
Species have to be under threat to get on the list and therefore it could be too late by the time they are protected

20. What are the three criteria for 'sustainability'?
Social positives
Economic positives
Environmental positives

21. What is Kilum-Ijim
A sustainable environmental management project that protects forests in Cameroon.

22. What techniques are used in Kilum-Ijim?
Selective logging
Afforestation
Agroforestry
Ecotourism

23. What is agroforestry?
Sustainable forestry where a variety of crops are grown between trees so trees do not need to be cut down. Mixing crops (inter-cropping) helps to protect soil erosion and reduces pest numbers.

24. What is eco-tourism?
Small scale, low-impact tourism that appears to tourists who are interested in wildlife and culture.

25. Describe the taiga's climate.
Short (3 months) wet summers where temperatures reach up to 20°C. Long, dry winters where temperatures reach -20°C. Low annual precipitation of 350-750mm per year.

26. Explain the taiga's climate.
Low solar insolation due to distance from the equator. The sun's rays are less concentrated. Rainfall is low due to the high pressure system here.

27. How has vegetation adapted to the taiga?
Cone shaped trees help the snow fall off
Flexible branches- to prevent them being snapped under the weight of snow
Waxy leaves- prevent damage by frost
Wide spread roots- stabilise the tree in high winds and prevent access to the permafrost

28. Why is the cycle of nutrients slower in a taiga ecosystem in comparison to a tropical rainforest?
Decomposition is slower in the taiga and there is less vegetarian therefore there is less to decompose in the first place.

29. Define NPP
Net Primary Productivity- the amount of biomass added to a biome each year measured in grams per square metre per year.

30. What are the reasons for deforestation?
Mining for tar sands
HEP
Softwood for construction

31. What threats does the Taiga face?
Wildfires due to the low precipitation
Acid rain due to fossil fuel combustion
Pests and disease

32. What are wilderness areas?
Isolated, hard to reach places in the Canada where motorised transport is not allows and people must leave no trace of their activities. Logging, mining and road building is banned.

33. What are national parks
Designated areas that have a legal budget with park minders to monitor the area. The world's second largest national park is in Canada.

34. What is sustainable forestry?
Socially - they respect indigenous communities
Economically - harvesting and logging permitted but on a small scale
Environmentally - protect wildlife through laws and policies

35. Why might people have different views on Taiga management?
Economic interests - TNCs and some local people benefit from trade and employment
Social reasons some people live in the taiga and therefore want it to be protected and pollution limited
Environmental reasons Environmentalists and scientists promote the conservation of the Taiga

Topic 9: Consuming Energy Resources

1.What are the three categories of energy resource? Can you define them?
Renewable - will never run out and can be used over and over again
Non-renewable - these are being used up and cannot be replaced. Also known as finite resources
Recyclable - they provide energy from sources that can be recycled or reused

2. Give 3 examples of non-renewable energy resources?
Coal, oil and gas

3. Give 3 example of renewable energy resources
Wind
Solar
Tidal
Hydro electric (HEP)

4. Give 2 examples of recyclable energy resources?
Biofuels
Nuclear (reprocessed uranium)

5. What is landscape scarring? What type of energy resource leads to this?
Unsightly damage to the landscape caused by opencast mining for coal.

6. What are the costs and benefits of wind power?
Costs: unattractive, can harm birds, in certain weather conditions that are ineffective
Benefits: renewable energy, can bring farmers money if they rent their land

7. What are the costs and benefits of solar power?
Costs: unattractive, take up large areas of land, energy cannot be stored for long periods
Benefits: renewable energy, can bring farmers money if they rent their land

8. What are the costs and benefits of hydro-electric power (HEP)?
Costs: expensive, flood large areas of land, disrupt river sediment, displacement of people, often require large scale deforestation
Benefits: renewable energy, reservoir can use used for recreation and a water source

9. What are the costs and benefits of oil?
Costs: non-renewable, expensive to explore, can lead to oil spills, enhanced greenhouse effect
Benefits: efficient, can be transported

10. What is a biofuel?
Fuels extracted or burned from plants and crops.

11. What are the costs and benefits of biofuels?
Costs: take a large area of land that could be used for other agriculture. Can affect food supply.
Benefits: Recyclable, efficient

12. What is hydrogen technology?
Uses hydrogen (the most abundant element in the universe) to provide an alternative to oil to power vehicles.

13. What are the costs and benefits of hydrogen technology?
Costs: requires energy to separate hydrogen from other elements, expensive
Benefits: the emissions are water so pure you can drink it, hydrogen is abundant

14. Identify and explain three factors that impact per capita energy consumption.
Technology – people in HICs use energy thirsty technology for domestic and industrial purposes. In addition, HICs will have the technology to explore and extract fossil fuels
Cost – energy resources are expensive and therefore those with a higher income can access it
Physical availability – if an area has a high supply of energy, costs are likely to be lower and it will be used more freely
Government policies – in developed countries, 'green' policies are more likely to be introduced to encourage energy efficiency
Climate – in extreme climates people may need more energy to make their environment habitable

15. Why do emerging countries have high energy consumption?
Their economic structure is dependent on secondary sector jobs, which require a lot of energy.

16. Why do HICs start to use less energy?
Outsourcing of manufacturing to emerging countries
Green politics
People become more conscious about the environment

17. What is 'black gold'?
A term used for oil as it is such a valuable commodity.

18. Why are oil reserves unevenly distributed around the world?
It is a naturally occurring substance formed under ancient oceans as organic matter was deposited in layers.

19. Define peak oil.
The point at which half of the world's known oil reserves have been used

20. Why is oil consumption growing?
Increasing wealth: Emerging economies – particularly in Asia – need more oil as they become wealthier for domestic use such as car ownership and industrial use in the secondary sector.
Population growth

21. What impact does increased demand have on oil pries?
They rise

22. What impact does increased supply have on oil prices?
They fall

23. State and explain 5 factors that affect oil prices.
OPEC member countries can restrict oil supplies to keep prices high
Financial crises can decrease demand and lower prices
Conflict can decrease production in some countries e.g. Iraq
Climate agreements can decrease demand (and prices) when people move to renewable energy
Discovering new oil reserves can increase supply and cause prices to fall
New technology can increase supply and cause prices to fall

24. What is tar sands oil?
An unconventional fossil fuel that occurs naturally and is a mixture of sand, oil, water and petroleum (oil)

25. Define 'unconventional fossil fuel'
An unusual fossil fuel that is not the big three of coal, oil or gas

26. Where are tar sands being explored and extracted?
Athabasca, Canada

27. What biome is found here?
Taiga

28. What are the costs of tar sands?
Water intensive (hot water is injected underground to heat the sand and make the oil less sticky) 5 barrels of water per one barrel of oil
Energy intensive (to extract it)
It pollutes water supplies
Deforestation of the Taiga biome
Animal habitats are destroyed
Landscape scarring
Indigenous groups are losing their homes, food source and firewood as trees are cut down
Burning tar sands adds to the greenhouse effect- it's still a fossil fuel

29. What are the benefits of tar sands?
It's abundant in Canada
USA's energy security improved by having an ally who exports oil
500000 jobs depend direction on the tar sands industry

30. What is a carbon footprint?
A measure of the total greenhouse gas emissions caused by a person, organisation or product

31. Distinguish between direct and indirect emissions.
Direct- created by burning fuels for energy use at home or on transport
Indirect- emissions that come from owning a product

32. What is energy efficiency
Providing the same service but using less energy: for example, energy efficient lightbulbs use less energy to produce the same amount of light as non-efficient lightbulbs.

33. What is energy conservation
Not using as much energy: for example, switching off lights in your house when you are not using them.

34. State three ways homes can be more energy efficient.
Double glazing winds
Energy efficient lights
Insulation
Hot water cylinder jacket
Locally sourced materials

35. What strategies can be used in urban areas to make them more sustainable:
Cycling schemes
Congestion charges
Eco- housing
Electric car charging points

36. Why might CO_2 emissions fall by 2035?
Reduced demand
Renewables
More efficiency
Nuclear power

37. Identify 3 key players in energy futures.
TNCs
OPEC

Governments
Climate scientists
Environmentalists
General public

38. Explain why these groups might disagree.
Disagreement over the extent of climate change
Economic interests e.g. OPEC and TNCs gain wealth from fossil fuels

39. How does rising affluence (wealth) put pressure on the planet?
More disposable income for cars, technology, food from distant places

40. What is sustainable development?
Development that meets the needs of today's generation without compromising the ability of future generations to meet their own needs.