

If asked about... 

Paper 1 – Tectonic Hazards (Section A)

If asked about...	Write about...
Types of plate boundaries	• Destructive – Plates move towards each other • Constructive – Plates move away from each other • Conservative – Plates slide past each other
Destructive plate boundary	• Plates moving towards each other • Oceanic crust subducts underneath continental crust • Plates locking Pressure builds up • Oceanic crust continues to melt New magma forms
Primary and secondary effects of an earthquake	• Mention examples like Chile 2010 • 53 ports were destroyed • 220,000 homes destroyed and thousands homeless • 56 hospitals were destroyed • Job losses and cost of rebuilding was billions
Immediate and long-term responses of an earthquake	• Mention examples like Chile 2010 / Nepal 2015 • Field hospitals were set up immediately • The UK sent search and rescue teams • Food aid and medical kits were sent to those affected • Housing reconstruction programme began • Deals on tourism slowly opened to grow the economy
Reasons/benefits to why people live near tectonic areas	• Tourism, creates thousands of jobs, Iceland (Blue lagoon) • Fertile soils • Geothermal energy (25% of Iceland's energy)
The Three P's	• Prediction – Use of historical maps and seismometers • Protection – Life safe buildings in Japan with cross-bracing and computer-controlled weights • Planning – Japan Earthquake preparation day with Drills of Drop/Cover/Hold and emergency kits

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Paper 1 – Weather Hazards (Section A)

If asked about...	Write about...
Global atmospheric circulation	● Hadley / Ferrell / Polar cells ● As air rises this creates low pressure (Equator – Rainy) ● As air sinks this creates high pressure (30°N/S – Dry)
Where do tropical storms form and conditions	● Tropical storms at 5°-15° North/South of the equator ● Ocean temperatures are above 27° ● Form mainly in the summer and autumn ● Ocean depth of 60-70m
Formation of tropical storms	● Ocean temperature of 27° and above (Low pressure) ● Lots of warm air rises and cools to form thunder clouds ● Due to earth's rotation storm will have a spiral shape ● Cool air sinks to form the storm eye ● Due to friction of the land storm loses energy
How might climate change affect tropical storms	● Distribution – Tropical storms are now forming further away from the equator as more oceans are above 27° ● Intensity – There are now deadlier tropical storms above category 4 and 5 ● Frequency – The number of storms has not really changed but intensity has
Primary and secondary effects of a tropical storm	● Use an example of Typhoon Haiyan – Philippines 2013 ● 40,000 homes destroyed Thousands homeless ● 30,000 fishing boats destroyed Loss of income ● Lack of clean water Increase in diseases e.g. Cholera ● Lack of food and power Increase in looting
Immediate and long-term responses of a tropical storm	● Mention Typhoon Haiyan – Philippines ● International aid sent from the UK e.g. Food and water ● Field hospitals set up ● More cyclone shelters built for the future ● Fishing boats were replaced to help people earn income
The Three P's	● Protection – Cyclone shelters Built on stilts and from strong concrete (Bangladesh) ● Prediction – Use of weather forecasts from satellites shows the path of the storm Can evacuate

	● Planning – Emergency kits and early warning systems in Bangladesh (Use of megaphone to evacuate)
Types of extreme weather in the UK	● Somerset Level floods 2014 – 350mm of rainfall ● Heavy snowfall – Beast from the East 2018 ● Extreme cold or extreme summer heatwaves
Extreme weather in the UK example	● Somerset Levels 2014 – Heavy floods ● Causes – River not dredged / Low pressure ● Impacts – 600 houses flooded / 16 farms evacuated / power supplies cut off / farmland lost costing thousands ● Responses – River banks were increased / dredging the river to allow to carry more water / pumping stations

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Paper 1 – Climate Change (Section A)

If asked about...	Write about...
Evidence / effects of climate change	• Global temperatures have fluctuated • Rising sea levels – There will be a 1m increase by 2100 • Ice caps melting – Arctic sea ice has thinned by 65% • Extreme weather events – Deadlier wildfires / storms • Long term evidence from ice cores and tree rings
Natural causes of climate change	• Milankovic cycles – Eccentricity Earth's orbit not fixed • Milankovic cycles – Axial tilt Earth's tilt changes from 21.5 – 24.5 degrees • Sun spots – Dark patches that release more of the sun's heat • Volcanic eruptions – Ash can block sun's rays / Earth's temperature can become cooler
Human causes of climate change	• Deforestation – Trees act as carbon sinks, without them there will be more CO₂ in the atmosphere • Fossil fuels – 60% of carbon emissions Increases enhanced greenhouse effect • Agriculture – Farming for rice or cattle releases methane
Managing climate change – Mitigation	• Planting trees – Trees act as carbon sinks, cheap methods to reduce CO₂ • Carbon capture and storage – Technology that will capture CO₂ and store it deep under the sea bed • Renewable energy – Solar and wind energy does not emit CO₂ and this will reduce the need of fossil fuels • International agreements – Paris deal 2015 – Countries agree to reduce carbon emissions and invest \$100 billion towards climate change projects

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Paper 1 – Ecosystems (Section B)

If asked about...	Write about...
Producers / consumers / decomposers and a small-scale UK ecosystem + nutrient cycling	● Producers (Plants) – Produce their own food through photosynthesis + provide food for consumers ● Consumers (Animals) – Gain energy by consuming other producers/consumers ● Decomposers (Bacteria) – Break down dead plant and animal matter + Help release nutrients ● UK ecosystem – Pond ● Food chain example – Algae Tadpole Small fish Perch (Big fish) Heron (Bird) ● Nutrient cycling – Dead plant and animal matter decomposes and this releases nutrients into the ground / broken down by rainfall + roots easily absorb nutrients
How change can affect ecosystems	● Natural factors – Droughts and heatwaves can cause ponds to dry out ● Human activities – Woods cut down for logging + Eutrophication (Farmers use fertilisers) + This causes algae bloom which can reduce oxygen levels in ponds and cause marine life to die
Global biomes	● Coniferous forests (Taiga) – Colder climates / mainly pine growing trees / lots of snowfall / Below the tundra area ● Tropical grasslands (Savanna) – Has a wet and dry season / lots of animals graze the land + predators e.g. lions ● Tundra – Found in the Arctic circle (60/70 degrees north) / Low growing plants / ground is permafrost (Frozen) ● Deciduous forests – Has four seasons / Trees lose their leaves in the winter / Found 50-60 degrees North

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Paper 1 – Tropical Rainforests (Section B)

If asked about...	Write about...
Physical characteristics (Location / climate / plant and animal adaptations)	• Location – Found along the equator / between tropics e.g. Amazon in South America • Climate – Wet and humid / Average temperature 27°C and annual rainfall is above 2000mm • TRF's have high rainfall and temperatures as sun's rays are directly along the equator causing warm air to rise which forms clouds/heavy rainfall • Soils – Mostly infertile as heavy rainfall washes away nutrients rapidly through leaching • Layers – Emergent / canopy / understory / forest floor • Plants – Buttress roots / Lianas / Drip tip leaves • Animals – Poison dart frog / anteaters / squirrel monkey
Causes of deforestation Remember – FLEM F – Farming L – Logging E – Energy M – Mining	• Mention Malaysia as the example for deforestation • Farming – Trees are cut down to make Palm Oil farms • Logging – Timber is cut down as there's a demand for wooden products e.g. furniture • Energy – Hydroelectric Power (Bakun Dam) – Helps power homes and businesses • Mining – Minerals like gold and tin are found in rainforests which can be sold at good prices • Urbanisation – Creating more homes for urban growth
Environmental issues of deforestation	• Loss of biodiversity – TRF's contain millions of plants and animals' species e.g. orangutans / habitats will be lost / animals will become endangered and decline • Soil erosion – Soils will become infertile as trees have roots that binds the soil together / without the roots the soils are exposed to wind and rain turning them into dust • Increasing global warming – Trees act as carbon sinks / without them, more CO₂ will remain in the atmosphere which increases the enhanced greenhouse effect / This will lead to more extreme weather events e.g. wildfires
Economic benefits of deforestation	• Palm oil in Malaysia is exported around the world / This generates billions through export revenue • These companies pay taxes which provides the government with extra money to improve public

	services e.g. schools and hospitals ● Mining and logging can help provide locals with jobs / This can help provide locals with jobs / increase the multiplier effect ● HEP energy (Bakun Dam) can help power businesses with cheaper energy, reducing costs and increasing profits
Economic losses of deforestation	● Ecotourism in rainforests will decline causing jobs to be lost and local businesses to lose revenue ● Plants that have medicinal benefits could be lost / They could provide huge profits if sold properly
Is deforestation decreasing in some parts of the world?	● Consumer pressure – People are more aware of products that come from rainforests so they can boycott products ● Government laws – Governments e.g. Brazil are now making tougher laws and fines for illegal deforestation ● International agreements – Paris agreement 2015
The value of tropical rainforests	● Medicine – 25% of all medicines come from tropical rainforests / over 2000 plants have anti-cancer properties ● People – Millions of indigenous groups (Tribes) live in TRF's and rely it on for food, water and shelter ● Biodiversity – 50% of worlds plants and animals live in TRF's and without them it could disrupt ecosystems ● Climate – Rainforests are the lungs of the planet, they take in CO2 and let out oxygen.
Sustainable management of tropical rainforests	● Ecotourism – The money from this goes back to protecting rainforests / many locals gain jobs from this ● Selective logging and replanting – Only specific trees are chosen e.g. mature trees / not all trees are chopped which helps maintain habitats and trees replanted ● Debt reduction – HIC's will agree to reduce/cancel debts of LIC's if they reduce/stop deforestation ● FSC – An organisation that educates companies to use trees from sustainable rainforests

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Paper 1 – Hot Deserts (Section B)

If asked about...	Write about...
Physical characteristics (Location / climate / plant and animal adaptations)	● Location – Found 15-30 degrees north/south of the equator e.g. Sahara Desert in North Africa ● Climate – High temperatures above 30 degrees and less than 250mm of rainfall all year ● Soils – Sandy and stony / very infertile as there is no real nutrient cycling here as there's little plant life ● Plants – Saguaro cactus – Spikes instead of leaves / long roots / thick fleshy stems ● Animals – Camel – Long eyelashes / hump that stores fat / large flat feet
Economic opportunities in a hot desert	● Mention examples like Thar Desert in India ● Mining – Gypsum can be used in construction and sold as an export product + generates taxes ● Tourism – Winter festivals and desert safaris are important for local jobs and the multiplier effect ● Energy – Solar energy can help provide power to industries which improves productivity ● Farming – Goods like cotton and grains can be sold as products abroad
	● Mention examples like Thar Desert in India ● Extreme temperatures – Temperatures can reach above 50 degrees in the summer / making it hard for farmers to grow crops / reducing economic growth ● Lack of water – Water is needed for many factories and businesses as well farm animals – This can impact growth and affect many people living in the area ● Inaccessibility – The extreme heat has melted nearby roads / it is difficult to trade goods in the area and this can cause businesses and tourism to lose revenue.
Causes of desertification (Human and natural)	● Overgrazing – Animals overfeed on the same area of land / vegetation struggles to recover / soil loses its nutrients and becomes infertile / land wears away due to wind and rain (soil erosion) ● Overcultivation – Due to the demand for food for a growing population (Sahel) / Crops are constantly grown on same areas of land / soil becomes exhausted and slowly loses its quality / over time the land turns into dust ● Natural cycle – Natural weather patterns leads to

	heatwaves and droughts / droughts result in drier soils / vegetation stops growing and no roots are left to bind the soil / soil is eroded by winds and rain into dust
Ways of managing and reducing desertification	● Great Green Wall (Sahel) – Wall of trees built across 11 countries in Sahel (Africa) / Trees through roots will help bind the soil together reducing soil erosion / Trees will act as a barrier against wind prevent soil erosion ● Low stone walls (Jordan) – These walls built along slopes to help capture soil and water through surface runoff / This can then be re-used to plant more crops which will help bind and stabilise soils / Atriplex plants are also special plants that is good for soil quality ● Appropriate technology (Solar cookers) – Solar cookers can be given to people to help cook food / This will reduce people from cutting down trees to use for fuel / This aims to protect trees which are vital to reduce desertification

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Paper 1 – Coasts (Section C)

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Types of waves	● Constructive waves – Strong swash and weak backwash / crests further apart / waves gently spill on the beach ● Destructive waves – Strong backwash and weak swash / crests closer together / high energy / waves plunge on
Types of erosion	● Hydraulic action – Force of waves smashing against coast ● Abrasion – Waves chuck rocks and pebbles onto coast ● Attrition – Rocks and pebbles collide with each other ● Solution – Rocks can dissolve in acidic seawater
Types of weathering	● Freeze-thaw – Water can freeze into cracks and the pressure can cause rocks to expand ● Salt weathering – Salts from waves can expand as crystals in cracks ● Chemical weathering (Carbonation) – Some types of rock can react with acidic seawater and begin to dissolve ● Biological – Plants and animals can break through rock
Transportation and deposition	● Longshore drift – Sediment can be transported through swash and backwash until deposited ● Traction – Pebbles are larger so only roll along seabed ● Saltation – Smaller pebbles can bounce along seabed ● Suspension – Very fine sediment is carried by the waves ● Solution – Dissolved material is carried by the waves ● Deposition occurs when waves lose their energy / there is little wind or when they enter sheltered areas like bays
Mass movement	● Sliding – Landslides are the downward movement of mud in a straight line ● Rock fall – large fragments of rock break off and fall ● Slumping – Material like mud that moves down in a rotation
Erosional landforms	● Headlands and bays – Discordant coastlines / bays form on soft rock as it less resistant and headlands form on hard rock as it is more resistant / formed by Hydraulic action and abrasion / beaches form through deposition

	● Cliffs and wave-cut platforms – Waves attack cliff face and cracks form over time / crack turns into wave-cut notch / undercutting takes place / area above notch becomes unstable and collapses leaving behind WCP. ● Stack formation – HA and AB creates a crack on a headland, crack can form into sea-cave / arch forms / arch roof collapses / stack and stump forms
Depositional landforms	● Spits and bars – Longshore drift (swash and backwash) / coastline changes direction / deposition taken place of spits / salt marsh forms / spit can become recurved ● Dunes – Form on sandy beaches / wind helps sand form around obstacle e.g. wood / marram grass stabilises dunes
Hard engineering (Managing coasts)	● Sea walls – Curved face to reflect waves / can last 25+ years / promenade (act as a walk way) / very expensive ● Rock armour – Large boulders can absorb wave energy + act as platform for fishing / homes have long-term security / very expensive to transport and slippery ● Groynes – Wooden barriers that stops longshore drift / helps build the beach to absorb wave energy / beaches can attract tourists / it can starve sand downstream which is a problem / can act as an obstacle for beaches ● Gabions – Steel cages can act as a barrier against waves / cheaper than seawalls / cages can erode and break
Soft engineering (Managing coasts)	● Beach nourishment – Sand sprayed back onto beach / high and wide beach will absorb wave energy / increases tourism / destroyed by storms / costly maintenance ● Beach re-profiling – Beach made higher to absorb waves power / cheaper than hard engineering / noise pollution from machinery ● Dune regeneration – Marram grass helps from dunes / dunes act as a barrier / grass attracts wildlife / dunes easily broken by visitors / grass takes long time to grow



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Paper 1 – Rivers (Section C)

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Profile of the river (Valley and channel)	● Upper course – Valley is steep sided and v-shaped and channel is narrow and shallow / vertical erosion ● Middle course – Valley is wider and flatter and channel is deeper and wider / lateral erosion is more dominant ● Lower course – Valley is at its widest and flattest and channel is very deep and wide / deposition is greater
Erosional river landforms	● Interlocking spurs – Fingers of the land that stick out / formed by vertical erosion over hard rock ● Waterfalls and gorges – River flow over hard rock followed by soft rock / soft rock is less resistant and erodes due to HA and AB / plunge pool forms and hard rock above becomes unstable and collapses, gorges are left behind.
Erosional and depositional river landforms	● Meanders – Meanders are large bends mainly form due to lateral erosion / River flows faster on the outside bend (Hydraulic action) / River cliffs may form / Rivers flow slower on the inside bend where deposition occurs / river beaches may form ● Ox-bow lakes – U shaped landforms that form through meanders / neck of meanders erode to break through and forms a straight new channel / deposition seals off old meander for form ox-bow lake.
Depositional river landforms	● Floodplains – These are land found either wide of the river and form due to constant flooding and deposition as the river loses its energy / the lands are very fertile ● Levees – Larger material from the river deposits on to the edge of the river as the river floods / smaller material gets deposited on the floodplains ● Estuaries – These are wide areas of the rivers mouth / when there is a high tide, the river deposits sediment which forms mudflats and marshes.
Hydrographs and factors that causes floods	● Flashy hydrograph – This hydrograph has a short lag time and a high peak discharge showing the river floods very quickly ● Low-flat hydrograph – This hydrograph has a long lag

	time that shows rainfall takes longer to reach the river and it has a medium peak discharge ● Human factors that causes floods – Urbanisation (Impermeable surfaces e.g. tarmac) and deforestation ● Physical factors – Steep slopes and rock type could be hard or soft + heavy rainfall
Hard engineering (River management)	● Dams and reservoirs – Dams are large concrete walls that control the flow of the river / reservoir can store excess rainfall / reservoir can be used for watering crops during summer / Dams also produce HEP energy / Very expensive to build ● River straightening – Meanders are cut off to make a straight new channel / this speeds up the flow of the river to avoid damage to homes / cutting off meanders destroys habitats / however increases flood risk downstream ● Embankments – This is when the rivers edges are raised using mud or concrete / this allows the river capacity to increase / mud embankments are natural and cheaper increasing habitats / however mud embankments can erode quickly, making maintenance expensive.
Soft engineering (River management)	● Planting trees – Tree roots can absorb rainfall / trees intercept rainfall and reduces surface runoff / very cheap and attracts biodiversity / can take up too much space ● Floodplain zoning – Policy that restricts how land is used near river / more valuable land use if built further away from the river e.g. house building / method does restrict how many houses are built ● Flood warnings – Warnings and alerts can be sent through texts and social media / this can help families move items upstairs + use sand bags / however it does not stop the floods and people may chose to ignore advice.