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Mark Scheme (Standardisation)

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GCE Geography (6GE04/01)
Unit 4: Geographical Research

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Unit 4: Geographical Research Indicative Mark schemes

Question Number 1:

Assess the significance that plate margins play in the spatial distribution of tectonic hazards.

- Explore the physical causes of tectonic hazards including the significance of differing plate boundaries and other factors.
- Research the spatial pattern of tectonic hazards and their causes in contrasting tectonic locations.

Indicative content:

FOCUS:

The focus of this title is the factors affecting/causes of spatial distribution of hazards, with particular evaluation of plate boundary types.

The framework chosen may be by for example type of tectonic hazard, factor, plate margin, hotspot, and possibly spatial pattern e.g. active margins ring of fire versus less active areas like UK. **Plate margins are critical, but NOT the only factor** e.g. location of tsunami hazards, or hotspots not on plate boundaries e.g. Hawaii.

Models, for example of different plate boundaries may feature. Maps may be drawn linking plate features to hazard creation.

There is a strong role for plate boundaries, **but better candidates** will:

- Justify their focus and framework more effectively
- Set up criteria to test/ evaluate the role of boundaries.
- Have a greater awareness of **spatial distribution** and should tease out role of hotspots**,** convection currents, fault lines.

Key ideas which candidates may discuss + possible case studies/ examples:

An indication of **methodology** should feature: why/ what particular material was used; reputable sources like academic text books and journals such as the New Scientist, or reputable academic websites like the USGS**.**

Better candidates will be better in **ongoing referencing** e.g. from Geofiles, Geography Review.

Key ideas

- 3 types of hazard: primary volcanic and earthquake, secondary tsunami
- Plate boundaries critical in large number of hazards. Convergent destructive boundaries may have more violent events- in earthquakes and volcanic eruptions. Divergent boundaries may have more effusive eruptions and shallower higher frequency quakes. Expect the link between boundary and lava type, depth/frequency/magnitude of earthquake. Collision zones have earthquakes but rarely volcanoes.
- Tsunami hazard may be created at a plate boundary but actually affect areas a very long distance away, as in 2004 Asian tsunami.
- Hotspots can be found in oceanic plates (Hawaii) or continental (Yellowstone) and are not related to boundaries.
- Some hotspots found near /on boundaries e.g. Iceland increasing hazard risks
- Earthquakes in e.g. UK, Spain not actually on plate boundaries but via fault lines

Case studies: expect a large range: by scale, location and possibly over time, showing **detailed knowledge**; locations should feature and be contrasted, most likely by boundary type. Likely to include reference to 'The Big One of San Andreas', Nazca subduction zone, East African Rift Valley. Credit should be given to **topical /current** examples. Japan tsunami and Spanish earthquakes of 2011, Haiti and Chile quakes and volcanic eruption from Eyjafjallajökull 2010, Grimsvotn 2011.

Credit relevant fieldwork/primary research used as part of evidence e.g. to Iceland, Sicily, Vesuvius.

Better candidates may:

- **Assess by significance of plate boundaries and by reference to other possible factors**
- Select a **balanced range of case studies** to test out criteria set in introduction
- Develop the importance of topical, or potentially more biased sources in their **methodology** e.g. blogs and NGOs versus academic researchers, or have a comparison of sources in accuracy. They may be more vigilant, exploring reliability, and in ongoing referencing e.g. from USGS, Geography Review, National Geographic, New Scientist, United Nations ISDR.
- Use accurately **specialist geographical/ associated terminology** such as convection cells, divergent/convergent/transform margins, Benioff zone, hot spot, hazard profile, secondary hazard, event profile, lithosphere, asthenosphere, explosivity index, quasi-natural.

Question Number 2 :

Assess the importance of the values and attitudes of interest groups in determining how different cold environments are used.

- Explore the factors determining the use of cold environments including the attitudes and values of a range of interest groups.
- Research a range of high altitude and high latitude cold environments which demonstrate different opportunities and uses.

Indicative content:

FOCUS:

The focus of this title is the importance of values and attitudes as well as other factors in the uses of cold environments, originating from primarily the attitudes/values of those involved, but also other factors which may influence their use(like location, accessibility, technology, politics)

The **framework** may be by cold environment location, or a conceptual one: preservation- exploitation spectrum. Other possible frameworks: type of cold environment (arctic/upland/relict/active).

Better candidates may select a more **balanced range of players and case studies** by scale, location and possibly over time, showing **detailed knowledge**, locations should feature and be contrasted .They will set up criteria to assess the importance of values/attitudes.

Key ideas which candidates may discuss + possible case studies/examples:

An indication of **Methodology** should feature: why/ what particular material was used: reputable sources like academic text books and journals such as the New Scientist, or reputable academic websites like BAS**.** **Better candidates** may in their methodology develop the importance of topical, or potentially more biased sources e.g. blogs and local groups like Friends of the Lake District, and NGOs like Greenpeace versus academic researchers as in BAS, or have a comparison of sources in accuracy. They will be better in **ongoing referencing**

Key ideas

- Several distinctive / different cold environments (polar, high altitude, relict, active etc.)
- **Uses range from** preservation- conservation- sustainability -exploitation-destruction i.e. a whole **spectrum**.
- **Factors** affecting use ; economic, social, political, technological, environmental- with the added extra complication recently of climate change- melting ice sheets, glaciers, melting permafrost and also rise in tourism and mineral exploitation - especially in the Arctic.
- **Attitudes** means the positions held by the players involved; from global, international-local, government and business, pressure groups, NGOs, NIMBYs.....They may be more economically/socially/environmentally biased and have differing powers/influence.
- **Values** mean the importance or preciousness of the cold environment to these varying players
- Historically cold environments mean adapt or die, but have long supported small groups indigenous people-Inuit, Eskimo, Nenets. There are still several million people involved in fairly traditional uses just in the Arctic, let alone alpine regions. Their use has been largely low key, sustainable because locals have often viewed the environment as sacred/easily disrupted/essential to keep for future generations. The late 20th Century and present century has seen increased pressures/uses often in a destructive/unsustainable way.
- High and low latitude cold environments may vary in both type and scale of use e.g. European Alps with a high population and usage yet also a long tradition of conservation and types of protection e.g. National Parks. Current huge demands on NIC/LEDC areas: Himalayas (water/energy supply)
- Antarctica is unique because of values given by international/global scale and no resident population. The Treaty + Annexe restricts occupation/use so far- so therefore not so much opportunity for economic use , more for research, education but there is increasingly a tourist use.
- Differences therefore lie in use and whether valued for conservation or exploitation. Similarities in uses if conservation, biosphere reserves, zoning. Accept **some use** of **relict** cold environments e.g. National Parks.

Case studies: Expect a range of **case studies** by scale, location and possibly over time, Antarctica will probably feature, as will ANWR. The Arctic, studied in Unit 1 may feature. Credit should be given to **topical /current** examples e.g. Greenland or Himalayas, or China's Qinghai-Tibet plateau.

Credit relevant fieldwork/primary research used as evidence e.g. to Iceland, and relict areas e.g. Lake District, Snowdonia.

Better candidates:

- Will identify some interest groups have more power to influence uses
- May suggest other factors involved too like accessibility, technology other than values/attitudes
- May tease out the attitudes /values of those living in/ actually managing the cold environment with more 'distant' views for e.g. of conservation pressure groups or non local TNCs , and be more confident in the role of the players
- Show detailed, accurate knowledge, with locations featured and contrasted, most likely by areas with similar attitudes applied versus those with differing ones , or by type, scale of use for recreation, mining.
- Use more effectively **specialist geographical /associated terminology** such as glacial, periglacial, indigenous, biosphere reserve, conservation, exploitation, sustainable management.

Question Number 3:

'**Currently, drylands are the areas most vulnerable to the threat of food insecurity.' Discuss.**

- Explore the physical and human factors that contribute to some areas being more vulnerable to food insecurity than others.
- Research contrasting locations which are experiencing food insecurity, with particular reference to drylands.

Indicative content:

FOCUS:

The focus of this title is why some areas are more prone to food insecurity than others, with particular focus on drylands.

The **framework** chosen may be by area (dryland, urban etc), scale of insecurity /vulnerability, economic development, possibly over time.

Better candidates will justify their focus and framework more effectively and set up criteria to test their case studies on vulnerability to food security.

Key ideas which candidates may discuss + possible case studies/examples:

An indication of Methodology should feature: why/ what particular material was used, reputable sources like academic text books and journals such as the Geographical Review, New Scientist, Economist or reputable websites like the FAO. **Better candidates** may develop the importance of topical, unbiased sources e.g. scientific/academic researchers e.g. UNEP versus blogs and NGOs or have a comparison of sources in accuracy. They will be better in **ongoing referencing**.

Key ideas:

- **Food insecurity (**FAO) exists when people do not have adequate physical, social or economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. 850 million people are chronically hungry, up to 2 billion lack food security intermittently. Over 50% of the world's population live in low-income, food-deficit countries that are unable to produce or import enough food to feed their people.
- About 41% global land area is drylands including deserts, semi-deserts, and some grasslands. Home to 37% of population.
- Dryland vulnerability stems from; low total rainfall and high variability in rainfall patterns =difficult challenges for ecosystems and growing crops. World Resources Institute: drylands are generally subject to climate regimes that are not highly favourable to crop production
- In Sub-Saharan Africa: the Sahel, the Horn of Africa and SE Africa: severe droughts occur on average once every 30 years, although the major causal factor here is mismanagement as part of systemic issues developed since mid 20th C. Some evidence 1960-90 of increased periodic drought however- possible global warming effects
- Fragile xerophytic dry land ecosystems and agricultural systems easily disrupted; small areas of erosion can quickly spread and lead to full scale desertification
- **Desertification** (OECD) the **process** of land degradation in arid, semiarid and dry sub humid areas resulting from various factors, including climatic variation(drought) and human activities. Not all drylands are desertified. 70% of drylands are degraded and a high % desertified.
- It affects the food security of over 40% global population - 2 billion people in drylands especially. Asia including Russia. So it is a major direct contributor, but more immediate impact in less economically developed countries like within Africa and Central Asia compared with wealthier Australia, USA or Spain. However, the latter produce much global supplies of food so this may cause insecurity not so much within the country but to importing countries /areas especially poorer megacities dependent on outside supplies**.**
- **Salinisation:** ironically irrigation designed to reduce vulnerability by increasing water supply can aggravate problems e.g. in Australia and Egypt- but with contrasting effects on local food security.
- **Other areas seeing worst food insecurity** which may be mentioned: such as **Urban areas** especially in LDCs like Dhaka; high rainfall areas e.g. Bangladesh , continental areas like North Korea or inland China which all have experienced famines but often for political reasons rather than solely physical: areas with **natural hazards,** e.g. Sahel, Haiti (NB not a dryland): the biofuel and land grabbing issues reducing land used for local agriculture and food supply e.g. in Kenya

Case studies: expect a huge range, from Brazil to the Sahel, Australia and other non dryland areas- rural and

urban. Credit should be given to topical /current examples.

Better candidates:

- May quantify food insecurity using indices / databases such as Maplecroft, SOFI etc, and use data to support the argument that some groups are more vulnerable.
- May go beyond / challenge simplistic viewpoint that drylands are the most vulnerable areas- depending on case studies chosen.
- Will show some drylands are more vulnerable than others as in California/Australia versus Sahel or NE Brazil but that economic development is a critical factor in insecurity
- Will use accurately specialist geographical/associated terminology such as, nutritional spectrum, desertification, degradation, salinisation, marginal food supply areas, land tenure, bottom-up, transitory and chronic food insecurity, food spike, megacity, intermediate technology.

Question Number 4

Evaluate the relative importance of the different factors which contribute to the development of cultural landscapes.

- Explore the factors affecting the characteristics of cultural landscapes and why they develop similarities and / or differences.
- Research the degree of diversity in contrasting urban and rural cultural landscapes.

Indicative content:

FOCUS:

The focus of this title is weighing up the relative importance of the range of different factors in creating cultural landscapes.

The framework chosen may be by economic / social / political /environmental factors, rural/ urban, scale, and type of landscape (e.g. financoscapes, ethnoscapes, and commodityscapes etc or historic / modern / fusion).

Better candidates will:

- Set up criteria to test the relative importance of factors involved
- Will develop the concept of 'development'
- Justify their focus and framework and have a more balanced range of case studies by scale, location and possibly over time, showing **detailed knowledge.**

Key ideas which candidates may discuss + possible case studies/examples:

An indication of **Methodology** should feature: why/ what particular material was used, reputable sources like academic text books and journals such as the Geography Review, or reputable websites like UNESCO. Expect a wide variety in this option from National Geographic, tabloid newspapers, pressure groups.

Better candidates may develop the importance of topical, or potentially more biased sources e.g. blogs and NGOs versus academic researchers, or have a comparison of sources in accuracy. They will have better **ongoing referencing.**

Key ideas

- Cultural landscapes are a complex product, and are either historic, modern or a fusion, showing 'layers' of history.
- **Spaces** become **places:** they show the values, beliefs and symbols of both local and often more distant cultures.
- Cultural landscapes may be urban-semi urban-rural-wilderness
- Landscapes may be viewed as sacred/for pleasure/for goods and services and for profit
- Globalisation has been influential in global similarities /more globalised forms of landscape
- Types of landscape: commodityscapes (sites of consumption- retailing shopping malls (NB Clone towns!) and leisure, ethnoscapes (from pubs to golf courses, sacred sites to Chinatowns....many have a historical element-e.g. National Trust, English Heritage), financescape offices, technoscape high tech industry, even national parks, mediascapes often dominated by Americanisation
- All urban and many rural landscapes are the product of cultural decisions.
- **Factors** may be divided by economic/social/political/environmental. These may include: which players are involved, economic value of a landscape , political agendas, accessibility, gentrification, deindustrialisation, tourism, degree of cultural diversity or homogeneity in a locality, whether landscapes are viewed as sacred, for pleasure, for profit or for life. Environmental factors may change the landscape- deforestation, global warming in Arctic.
- Increased international agreements on landscape management illustrate desire to reduce conflicts and restrict changes – but may create them (e.g. imposition of a national nature reserve or global scale biosphere reserve on indigenous people).
- Huxley's model on artefacts, sociofacts, mentefacts may feature.

Case studies: Credit should be given to **topical /current examples, e.g.** attitudes to 'Tescoisation' of retailing landscape and clone towns, creation of new South Downs National Park, Stratford and Olympic city landscape and reliance on publically generated street names. Expect anything from hutongs in Beijing to favelas in Rio de Janeiro, the Jurassic coastline to Antarctica, China town to Canary Wharf, Bhutan to Thomas Hardy country, Machu Picchu to Curry Mile.

Credit relevant fieldwork/primary research such as in a city or country/national park. Use of Unit 2 rebranding and Unit 1 World at Risk may feature.

Better candidates may:

- Show the complexity of the factors more clearly
- Show the 'layers' and legacy present in landscapes
- Make a decision as to which factors are more important for the case studies chosen
- Use more effectively **specialist geographical/associated terminology** such as globalisation, glocalisation, consumerist society, anthropocentric, environmentalism, ethnoscape, artefacts, mentefacts, sociofacts.

Question number 5:

To what extent is health risk strongly related to the level of economic development?

- Explore the factors which contribute to human health risk including the importance of the level of economic development.
- Research both pollution related and other types of health risk in areas at different levels of economic development.

Indicative content:

FOCUS:

The focus of this title is the assessment of the role of economic development in the types and amounts of health risk

The framework chosen may be by for example by model, location, type of health risk, scale-global-regional-local quality of life, level of economic development.

Better candidates will justify their focus and framework more effectively and set up criteria to test the title.

Models may feature: Environmental Health Transition model, and those by Wilkinson, Kuznets, Preston, Omran, Rostow (modernisation theory).

Key ideas which candidates may discuss + possible case studies/examples:

An indication of **Methodology** should feature: why/ what particular material were used, reputable sources like academic text books and journals such as the New Scientist and BMJ, or reputable academic websites like the WHO. **Better candidates** may be more vigilant in their methodology, exploring topicality, reliability, bias, etc and in ongoing referencing e.g. from.NHS, the WHO, Geography Review, New Scientist, Blacksmith Institute, Greenfacts, BBC. They will be better in **ongoing referencing** e.g. from Geofiles, Geography Review, Lancet, BMJ.

Key ideas

- Wide range of health risks, some more toxic/persistent or longer term than others. Some affect morbidity, some mortality.
- How to **measure health**? Life expectancy, DALYs (**Disability-adjusted life years** is the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.
- How to **measure economic development**- GDP GNI possibly HDI (more overall development) World Bank divides up world into rich-middle-lower income groups.

Economic development results in:

- Improvements in nutrition, with direct effects on health and longer life expectancy.
- Access to clean water and sanitation, 7th MDG: *"Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation* (over 2.8 billion people do not) Acute diarrhea is a major reason of death in developing countries. 5 million people die annually from bacteria and viruses, which spread and grow easily in polluted water, such as cholera.
- Medical treatment: vaccinations, rehydration. TRIPs agreements on drug production reduces access to poorer countries
- Richer people may pay more taxes, and health care is spread to poorer sections of society
- Education and hence knowledge about healthier living styles especially by women.
- Access to technology - digital divide is still huge.

Overall positive correlation between income and health**: Preston model**: Strong, positive relationship between national income levels and low life expectancy in poorer countries. However life expectancy levels in richer countries are less sensitive to variations in average income .The relationship is changing, with life expectancy increasing over time at all income levels. Economic development is **not the only factor** in health risk. – health care, politics, aid, pollution levels are all important

- **Anomalies** e.g. Saudi Arabia very high GNP per capita but low life expectancy. China and Cuba have low GNP per capita but reasonably high life expectancies**; r**egression of sub Saharan Africa since 1960s- historical and political factors + civil wars- 'switched off area'
- Rise of transition economies especially **BRICs**- rise in health issues and double health burden (infectious and chronic) but also rise in health care.
- **Models:** Wilkinson and Kuznets models may feature. The Omran epidemiology model has 3 basic stages (reduction of infectious and rise of degenerative diseases) with a 4th developed since 1980s (rise of emergents (HIV/AIDs) re-emergents (TB)) , fall of communist bloc + rise of risk, rise of BRICs and pollution related risks, rise of ageing populations creating double burden risks

- Globalisation and Lifestyle changes important- globalisation of food tastes, sedentary habits, cultural focus on car.
- Areas with low economic development are more vulnerable to- price spikes in food, debt repayments nationally and individually, natural hazards(e.g. Haiti, Bangladesh)
- Areas with higher economic /transition economies may have invested more in technology which is potentially lethal e.g. nuclear- ex 1985 Belarus and Chernobyl, 2011 Japan-Fukushima
- All areas under increased threats from health risks from Global warming, but developing nations less likely to have finances and infrastructure to cope with increased heat stroke, dengue and malaria etc.
- **Environmental pollution** is another major factor in health risk, and this IS strongly related to economic development- see Kuznets curve .NB decreased water and land pollution over time with development once initial industrialisation, but increased air pollution from GW gases
- **Management** may **mitigate the health risks**, and increasingly international efforts available- from UN, G8 and NGOs like the Gates Foundation or Medicine San Frontiers and Red Cross.

Case studies to be expected: health risks e.g. HIV/AIDs, Malaria across spectrum of countries, or use of risks within a country like China and UK. If events like Bhopal, Chernobyl, Fukushima events are used they should be contextualised and not just one off examples for highest marks.

Better candidates may:

- Credit those who go beyond simplistic viewpoint that low economic development areas have worse health risks; further credit those who go beyond and explain why.
- Select a **balanced range** to test out criteria set in introduction**.**
- Use accurately **specialist geographical/ associated terminology** such as DALYs, chronic, epidemiology, health risk, health shock, prevalence.
- Investigate a range of economic development levels, not just a simple north south focus.
- Examine the strength of the relationship and / or its complexity.

Question Number 6

Assess the reasons why different strategies are used to manage leisure and tourism in rural areas.

- Explore why, in rural areas, a range of management strategies for leisure and tourism are used.
- Research a range of rural landscapes experiencing pressure from leisure and tourism, and the contrasting strategies used to manage them.

Indicative content:

FOCUS:

The focus of this title is an assessment of why there are different management strategies used, for both leisure and tourism, in rural areas.

The framework chosen may be by type of rural area, type of leisure/tourism or location, type of strategy (preservation, conservation, stewardship, sustainable management, ecotourism, total exploitation) scale of management (global-national - regional-local) ,success /failure, possibly level of economic development or economic/social/political/environmental factors.

Better candidates will justify their focus and framework more effectively and set up criteria to test the title

Models may feature: sustainability quadrant, resilience / carrying capacity, Doxey's irritation model, urban-wilderness continuum model, pleasure periphery, Butler's model, biosphere reserves.

Key ideas which candidates may discuss + possible case studies/examples:

An indication of **Methodology** should feature: why/ what particular material were used, reputable sources like academic text books and journals such as the New Scientist, or reputable academic websites like the BAS. **Better candidates** may develop the importance of topical or potentially more biased sources exploring reliability, e.g. blogs and NGOs versus academic researchers, or have a comparison of sources in accuracy etc. They will be better in **ongoing referencing** e.g. from Geofiles, Geography Review, National Geographic.

Key ideas:

- Definitions / differences between leisure and tourism.
- Rural areas include settlements as well as physical landscapes – i.e. strategies for local communities as well as natural environment
- Different types of leisure and tourism (active or passive) may produce different impacts and have different strategies

Strategies include:

- Preservation- e.g. core areas of Biosphere reserves, possibly Antarctica, no-go zones in National Trust
- Conservation-e.g. Antarctica
- Sustainable management.
- Responsible ecotourism e.g. S Africa Kwazulu N P
- Environmental stewardship / caretakers e.g. UK farmers Lake District
- Over time strategies may alter e.g. in National Parks, honeypot/urban fringe areas,
- **Techniques** of zoning, permits, traffic control, building regulations etc may be considered

Some factors affecting choice of management strategy:

Economic	Social	Political	Environmental
• Role of TNCs • Finances available from business and government • Financial booms and recessions • Disposable income	• Attitudes and values of locals, government, pressure groups NIMBYs, • Legacy of these on present • Desire for more extreme pursuits • Expansion of pleasure periphery • Role of media in publicising areas	• Government (national, international e.g. EU) willingness to devote funds, legislation. Top-down v bottom up schemes • Desire to get prestige in globalised world • UNESCO	• Fragility = resilience of landscape/ecosystems • Beauty • Proximity /access to urban centres/demand

- Management related to **impact:** high impact sites are often more regulated, zoned, possibly

preserved

Case studies likely to be popular are Antarctica, Machu Picchu, Galapagos, various UK national parks and country parks, golf courses, Olympic winter sports sites. Locations such as the Great Barrier Reef, Galapagos need to be within a leisure and tourism context. Beware non-rural e.g. Dubai.
Credit local research and other fieldwork, which may have been carried out if Unit 2 Rebranding chosen. Likely to be a National Park or tourist/recreation hotspot

Better candidates may:

- Assess the importance of the relative factors clearly and give reasons for differences in strategies used
- Assess the severity of problems and / or differentiate between leisure and tourism strategies / reasons they are managed in different ways.
- Credit those who go beyond simplistic viewpoint that the main factor is economic development
- Use accurately **specialist geographical/ associated terminology** such as post productive landscape, rebranded, valorisation, hot spot, carrying capacity, pleasure periphery, resilience, stewardship, ecotourism, top down, bottom up, leakage.