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| **IBDP Geography – PAPER 1 - Option D Geophysical Hazards – Question Spotting May 2024** |

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| **Syllabus Point** | **‘Already Asked’ - Questions** | **Date** | **‘Be Prepared For’ Questions** |
| 1. **Geophysical Systems**

**KEY CONCEPT - How geological processes give rise to geophysical events of differing type and magnitude** |
| **Mechanisms of plate movement** including internal heating, convection currents, plumes, subduction and rifting at plate margins | ?? |  | Be prepared for a stimulus short response question at the start of the question (often based on a diagram).  |
| **Characteristics of volcanoes** (shield, composite and cinder) formed by varying **types of volcanic eruption**; and **associated secondary hazards** (pyroclastic flows, lahars, landslides) | Examine the **relationship between processes** at **contrasting plate margins** and the **characteristics** of volcanoes. [10] \*\*can include case study detail\*\*Outline one reason why the lava from a **shield** volcano spreads over a wide area. [2] | Nov 2022May 2023 | Outline **two associated secondary hazards** associated with **volcanic eruptions.** [2+2]Examine the relationship between the **characteristics of volcanoes** and their associated secondary hazards. [10]Outline one reason why the lava from a composite volcano spreads over a small area. [2] |
| **Characteristics of earthquakes** (depth of focus, epicentre and wave types) caused by **varying types of plate margin movement** and **human triggers** (dam building, resource extraction); and **associated secondary hazards** (tsunami, landslides, liquefaction) | Outline how the **distance from the epicentre** of an earthquake **can determine the severity of two associated secondary hazards**. [2+2]Examine the reasons why **earthquakes** vary in **magnitude and frequency** between different places. [10] \*\*can include case study detail\*\* | Nov 2019Nov 2021 | Outline **two associated secondary hazards** associated with **earthquake events** [2+2]Outline **two human triggers** of **earthquake events** [2+2] |
| **Classification of mass movement** types according to **cause** (physical and human), **liquidity, speed of onset, duration, extent and frequency** | Outline one **physical factor** affecting the speed of a **mass movement**. [2]Outline one **physical factor** that increases the speed of **onset in a mass movement event**. [2]Outline one way in which **human** activity may increase the **instability** of a slope. [2] | May 2021Nov 2021Nov 2023 | Outline one **human factor** that can cause a **mass movement event**. [2]Outline one **human factor** affecting the speed of a **mass movement**. [2] |
| 1. **Geophysical Hazard Risks**

**KEY CONCEPT - How geophysical systems generate hazard risks for different places** |
| The **distribution of geophysical hazards** (earthquakes, volcanoes, mass movements) | ?? |  | Outline **two factors that impact the distribution** of **mass movement** events [2+2]Outline **two factors that impact the distribution** of **tectonic** events globally [2+2] |
| The relevance of **hazard magnitude and frequency/recurrence for risk management** | ?? |  | Explain how the **risk to a community** from **geophysical** events might be **managed** by: 1. **Frequency** of past events; [3]
2. The **magnitude** of past events [3]
 |
| **Geophysical hazard risk** as a product of **economic factors** (levels of development and technology), **social factors** (education, gender), **demographic factors** (population density and structure) and **political factors** (governance) | Outline how one characteristic of a **community’s population structure** can affect its **vulnerability** to **earthquakes**. [2)Examine **the relative importance** of **economic and social factors** in the vulnerability of local communities to geophysical hazards. [10)\*\* ***would need reference to your case studies***Explain how the risk to a community from earthquake events such as these might be affected by: 1. the age structure of its population; [3]
2. (ii) political factors (governance of the country). [3]

Outline one reason why people may underestimate the risk of a geophysical hazard occurring in their local area. [2]Examine how **different human factors** can affect **community vulnerability** to **one or more geophysical hazards**. [10]Examine how **economic** and **social** factors may reduce the **vulnerability** of communities to geophysical hazard risk. [10]Explain why **vulnerability** to mass movement hazards might vary between communities due to:(i) one **economic** reason; [3](ii) one **social** reason. [3] | May 2019Nov 2019May 2022Nov 2022May 2023Nov 2023 | Outline how a **community’s population density** can affect its **vulnerability** to **earthquakes**. [2)Outline how a **governance of a place** can affect its **vulnerability** to **geophysical events**. [2)Explain how the risk to a community from earthquake events such as these might be affected by: 1. Availability of technology; [3]
2. Educational provision [3]

Examine how **demographic** and **political** factors may reduce the **vulnerability** of communities to geophysical hazard risk. [10]Explain why **vulnerability** to mass movement hazards might vary between communities due to:(i) one **demographic** reason; [3](ii) one **political** reason. [3] |
| **Geographic factors** affecting geophysical hazard **event** impacts, including **rural/urban location, time of day and degree of isolation** | Examine the importance of physical and human factors in increasing mass movement **events.** [10] |  | Explain how **geographic factors** affecting **earthquake\* events** might be affected by: 1. **Rural / Urban** location [3]
2. Degree of **isolation** [3]

\*Change to mass movement or volcanic eruptionExamine the importance of physical and human factors in determining the impacts of tectonic **events.** [10) |
| 1. **Hazard Risk & Vulnerability**

**KEY CONCEPT - The varying power of geophysical hazards to affect people in different local contexts** |
| Earthquake LIC | Examine how **geophysical factors** were responsible for the **differing impacts** of two**earthquake** hazard events. [10] | May 2021 | Examine how **human processes** affect the level of **earthquake hazard risk in different places**. [10] |
| Earthquake HIC | Examine how **geophysical factors** were responsible for the **differing impacts** of two**earthquake hazard** events. [10]Examine how **social and economic strategies** may **reduce people’s vulnerability** to **earthquake** hazard events. [10) \* ***would need reference to your case studies***Examine reasons why some **high-magnitude** earthquakes have **low-level impacts** on people and property. [10] | May 2021Nov 2020Nov 2023 | Examine how **human vulnerability** affects the level of **earthquake hazard risk in different places**. [10] |
| Volcano LIC | Examine how **physical processes** affect the level of **volcanic hazard risk in different places**. [10]Examine the **relationship** between **plate margin type** and the **character of volcanic activity**. [10) | May 2019May 2021 | Examine the **severity of the impacts** of **different earthquakes** on **human well-being**. [10) |
| Volcano HIC | Examine the **relationship** between **plate margin type** and the **character of volcanic activity**. [10) | May 2021 | Examine how **geophysical factors** were responsible for the **differing impacts** of two**volcanic** hazard events. [10]Examine reasons why some volcanic eruptions have **low-level impacts** on people and property. [10] |
| Mass Movement LIC | Examine the **severity of the impacts** of **different types of mass movement** on **human well-being**. [10 | May 2022 | Examine how **geographic factors** were responsible for the **differing impacts** of two **mass movement** hazard events. [10] |
| Mass Movement HIC | Examine the **severity of the impacts** of **different types of mass movement** on **human well-being**. [10 | May 2022 | Examine how **geographic factors** were responsible for the **differing impacts** of **two mass movement** hazard events. [10] |
| 1. ​**Future resilience and adaptation**

KEY CONCEPT - Future possibilities for lessening human vulnerability to geophysical hazards... |
| **Global geophysical hazard and disaster trends** and future projections, including event frequency and population growth estimates | Examine **why mass movement hazard** risk in some places **could change in the future**. [10]To what extent will the **impacts** associated with **mass movement hazards** in different **places increase** in the future? [10] | May 2019 | Examine **why earthquake hazard** risk in some places **could change in the future**. [10]To what extent will the **impacts** associated with **earthquake hazards** in different **places increase** in the future? [10] |
| **​Geophysical hazard adaptation** through increased government planning (land use zoning) and personal resilience (increased preparedness, use of insurance and adoption of new technology) | Explain **three strategies that could increase the personal resilience** of community members to an earthquake event such as the one shown in the diagram. [2+2+2]Examine the effectiveness of **technology** and **planning strategies** in reducing human vulnerability to **volcanic hazards**. [10] | May 2019May 2022 | Examine the effectiveness of **technology** and **planning strategies** in reducing human vulnerability to **volcanic hazards**. [10] |
| ​**Pre-event management strategies for mass movement** (to include slope stabilization), **earthquakes** and tsunami (to include building design, tsunami defences), **volcanoes** (to include GPS crater monitoring and lava diversions) | Examine **pre-event management strategies** designed to reduce human vulnerability to **mass movement hazards**. [10)Explain how **volcanic hazard** vulnerability in an area such as this could be reduced using:(i) GPS crater monitoring; [3](ii) lava diversions. [3]Evaluate **pre-event strategies** and post-event strategies for the management of **mass** **movement hazards**. [10)Explain two possible strategies to reduce human vulnerability to **rapid mass movement** hazards in a mountainous area. [3+3)Suggest how two pre-event management strategies could reduce the negative impact of **mass movement** in an area such as this. [3 + 3]Explain how **human vulnerability** to an earthquake hazard can be reduced by: (i) one **pre-event strategy**; [3] To what extent are **pre-event management** strategies successful in **reducing vulnerability** to **volcanic** hazard events? [10] | Nov 2019Nov 2020Nov 2020May 2021Nov 2021Nov 2022Nov 2023 | Evaluate **pre-event strategies** and **post-event** strategies for the management of **volcanic hazards**. [10)Evaluate **pre-event strategies** and **post-event** strategies for the management of **earthquake hazards**. [10)Explain two possible strategies to reduce **human vulnerability** to **earthquake** hazards for an urban area one the **coast**. [3+3)Explain how **human vulnerability** to an volcano hazard can be reduced by one **pre- event strategy**; [3]To what extent are **pre-event management** strategies successful in **reducing vulnerability** to **earthquake** hazard events? [10] |
| ​**Post-event management strategies** (rescue, rehabilitation, reconstruction), to include the enhanced use of **communications technologies** to map hazards/disasters, locate survivors and promote continuing human development | Explain two reasons why internally displaced persons may have to wait a long time to return home after a major earthquake event such as this. [2+2]Explain how **human vulnerability** to an **earthquake hazard** can be reduced by one **post-event** strategy. [3]Explain how two different **communications technologies** can help with the **post-event**management of geophysical hazards. [3 + 3] | Nov 2019Nov 2022May 2023 | Explain how **human vulnerability** to a **mass movement hazard can** be reduced by one **post- event strategy** [3]Explain how **human vulnerability** to a tectonic **hazard can** be reduced by one **post-event strategy**  [3] |