Option D: Geophysical Hazards

Hazard –
Disaster –
Geophysical hazard -

LO1a) *Mechanisms of plate movement*

Draw and label a diagram to show the structure of the Earth. Include temperatures.

Explain the difference between Oceanic & Continental crust

	Oceanic	Continental
Thickness		
Material made of		

Explain what the Plate Tectonic Theory is and list four pieces of evidence for it.

Draw and label a diagram to show how convection currents in the mantle occur

Draw and label a diagram to show a oceanic-continental convergence plate boundary. Include an example.

Draw and label a diagram to show a continental-continental convergence plate boundary. Include an example.

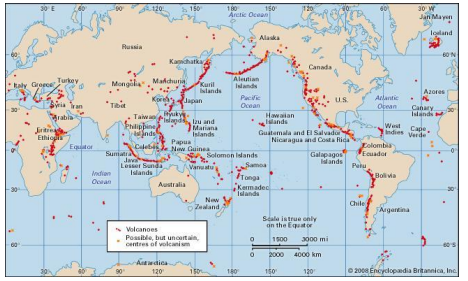
Draw and label a diagram to show a divergent plate boundary. Include an example.

Draw and label a diagram to show a conservative plate boundary. Include an example.

LO1b) *Characteristics of volcanoes formed by varying types of volcanic eruptions*

Active volcano –
Dormant Volcano –
Extinct volcano –
Lava –
Magma –
Primary impact –
Secondary Impact –
Viscous –
Non-viscous -

Describe the distribution of volcanic activity around the world



Draw three diagrams to show shield, composite & cinder volcanoes

Plate margin	***Convergent***	***Divergent***
Viscosity of lava		
Magma Source		
Magma's Physical Characteristics		
Eruption interval & hazard lvl		

Volcanic Hazards

Hazard Type	Description	Primary/Secondary Impact
Pyroclastic Flow		
Lahars		
Lava Flows		
Landslides		
Flooding		
Climate Change		

LO1c) *Characteristics of earthquakes*

Earthquake –
Epicenter –
Focus –
Seismic Waves -
Aftershock –

Draw and label a diagram to show P-waves

Draw and label a diagram to show S-waves

Draw and label a diagram to show Rayleigh-waves

Draw a diagram to show the focus & epicenter of an earthquake

Human impacts on the risk of earthquakes

Factor	Description	Impact	Example
Dam building			
Resource extraction			
Fracking			

Earthquake Hazards

Hazard Type	Description	Primary/Secondary Impact
Landslides		
Liquefaction		
Tsunamis		

LO1d) *Classification of mass movement types*

Mass Movement –
Liquidity –
Duration –
Extent -

Solifluction –

Gelifluction -

Classify the different mass movement types

Liquid Content / *Movt. Speed*	*Wet*	*Dry*
Slow		
Fast		

Explain the difference between 'Sheer Strength' & 'Sheer Stress'

Explain three factors which increase and three factors which decrease sheer strength

Types of Mass Movement

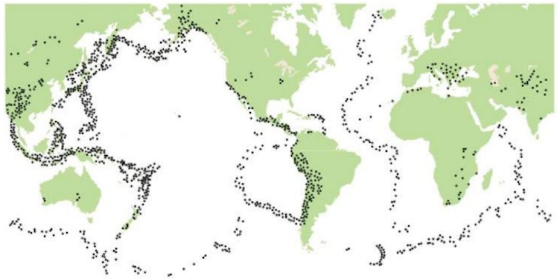
Motion								
Liquidity								
Material								
Speed								
Type	*Falls*	*Slide*	*Slump*	*Debris Flow*	*Mudflow*	*Avalanche*	*Creep*	*Lateral Spreading*

Describe the four factors which promote mass movement

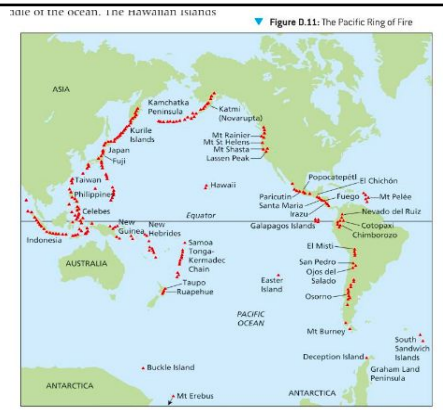
Factor	*Description*
Slope	
Water	
Texture	
Initial Impetus	

LO2a) *The distribution of geophysical hazards*

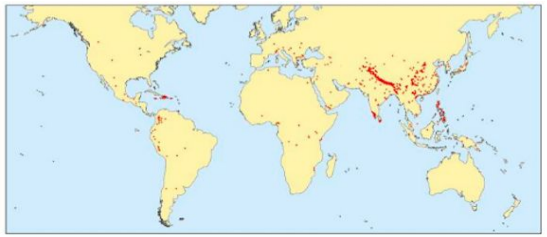
Describe the distribution of earthquakes globally



Describe the distribution of volcanoes globally



Describe the distribution of landslides globally



LO2b) *The relevance of hazard magnitude and frequency/recurrence for risk management*

Frequency –
Magnitude -
Richter Scale –
Mercalli Scale –
Volcanic Explosivity Index –

Give three reasons why the frequency of earthquakes and volcanoes is considered to be increasing globally

Explain why there is no clear relationship between the number of earthquakes and numbers of deaths per year

Explain three factors that can cause the frequency of landslides to increase & decrease

LO2c) *Geophysical hazard risk as a product of economic factors*
LO2d) *Geographic factors affecting geophysical hazard event impacts*

Vulnerability –
Risk -

Explain three factors which increase the vulnerability of an individual to a hazard

1)

2)

3)

Explain three factors which increase the vulnerability of a community to a hazard

1)

2)

3)

Human factors which impacts hazardous events

Factor	*SEPD?*	*How impacts hazardous events & vulnerability*

Physical factors which impacts hazardous events

Factor	*SEPD?*	*How impacts hazardous events & vulnerability*

LO3a) *Two contemporary case studies of volcanic hazard events in contrasting plate boundaries*

Eyjafjallajokull, Iceland (2010)

Plate Boundary & Vulnerability	*Causes & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

Chaitan, Chile (2008)

Plate Boundary & Vulnerability	*Causes & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

LO3b) *Two contemporary contrasting case studies of earthquake hazard events of similar magnitudes but with contrasting human impacts*

Port-au-Prince, Haiti (2010)

Plate Boundary & Vulnerability	*Causes & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

Christchurch, NZ (2010)

Plate Boundary & Vulnerability	*Causes & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

LO3b) *Varied impacts of these hazards on different aspects of human well-being*

Outline the different attitudes to hazards

For each hazard case study, identify human & physical factors which increased the vulnerability of the community impacted

Case Study	*Factor*	*How impacted vulnerability of the community*
Haiti	*1)*	
	2)	
	3)	
Christchurch	*1)*	
	2)	
	3)	
Chaitan	*1)*	
	2)	
	3)	
Eyjafjallajokull	*1)*	
	2)	
	3)	

LO3c) *Two contemporary contrasting case studies of mass movement hazard events with contrasting physical characteristics*

Geyzerov landslide, Russia (2007)

Vulnerability	*Mass Movt. Process & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

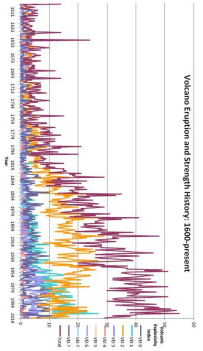
Oso mudslide, WA, USA (2014)

Vulnerability	*Mass Movt. Process & Impacts*
Future Possibilities	*Responses & successes/failures (Relief, Recon., Rehab.)*

LO4a) *Global geophysical hazard and disaster trends and future projections*

Isostatic Readjustment –

Describe the trends in volcanic eruptions since the 1600s



Explain why communities can cope better with high-frequency low-magnitude events than low-frequency high magnitude events

Explain how instability in the Earth's Orbit could explain the fluctuation in volcanic eruptions

Explain how isostatic readjustment could explain the fluctuation in volcanic eruptions

Explain three other reasons why the number of volcanic eruptions could be considered to be increasing over time

1)

2)

3)

LO4b) *Geophysical hazard adaptation through increased govt. planning and personal resilience*

Adaptation –
Resilience –
Predicting –
Forecasting -

Explain examples of govt. planning to reduce community risk to hazards

1)

2)

3)

Explain examples of personal adaptation to reduce individual risk to hazards

1)

2)

3)

Explain how land-use zoning can reduce the risk of the following hazards

1) *Volcanic eruptions:*

2) *Earthquakes:*

3) *Landslides:*

LO4c) *Pre-event management strategies*

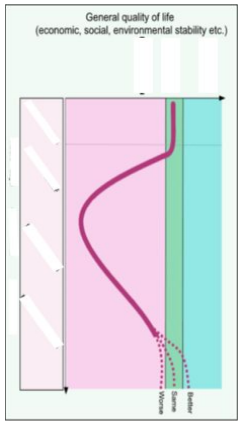
Give three pre-management strategies for each hazard & how it helps mitigates the hazard

Hazard	*Pre-Mgt. Method*	*How helps mitigate*
Earthquakes	*1)*	
	2)	
	3)	
Volcanoes	*1)*	
	2)	
	3)	
Mass Movt.	*1)*	
	2)	
	3)	

LO4d) *Post-event management strategies*

Label the stages and timeframes of Park's Hazard Response Model. Describe what happens in each stage

Stage	*Time frame*	*Description*
1:		
2:		
3:		
4.		



Give three post-management strategies for each case study & how successful it was

Case Study	*Post-Mgt. Method*	*Details*	*Successful/not successful?*
Haiti	*1)*		
	2)		
	3)		
Christchurch	*1)*		
	2)		
	3)		
Chaitan	*1)*		
	2)		
	3)		