



eduresourceza.com



ST BENEDICT'S

Geography department

Test cover sheet

Name:	CLASS:	DATE: 2 march
ASSESSMENT type: cycle test	MARK TOTAL: 80	Teacher:
Assessor: mr gregory; Mr cimma	Moderators: mr brouard;	

SECTION:	SECTION MARK:	SCORE:
Q1 Basic concepts	24 LOT's	
Q2 Horizontal strata	10	
Q3 Inclined strata	14	
Q4 Slope elements	18	
Q5 Case study - landslides	14	

Comments:

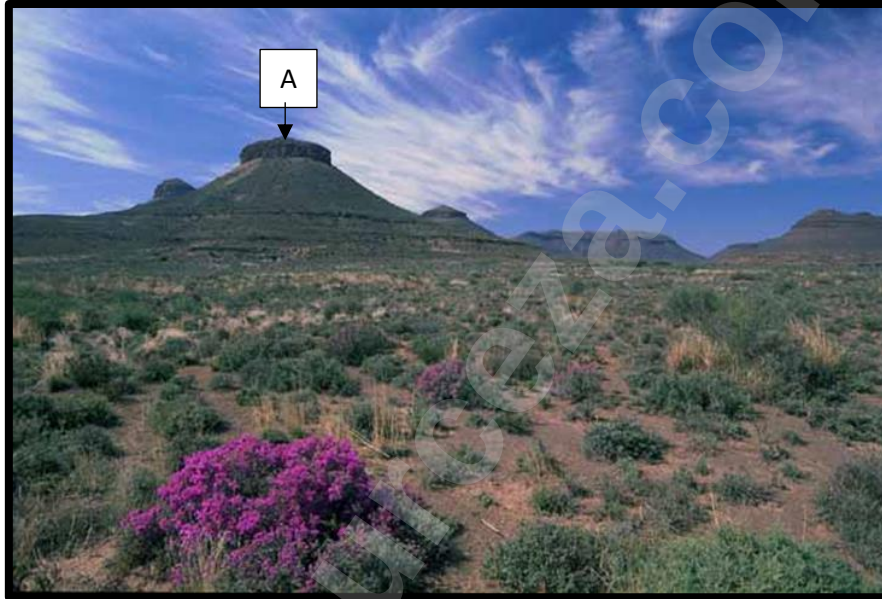
Q1. Basic concepts. Match the column.

Write down ONLY the number from column A and the letter of your **choice** from column B. [24]

Column A:	Column B:
1. Regolith	A. a relief feature that appears as a pile of rocks on the landscape
2. Free face	B. the product of the processes of weathering
3. Sill	C. a form of mass wasting that occurs on the free face
4. Dyke	D. a slope element steeper than 65 degrees
5. Strata	E. when gravity exceeds the integrity of a slope
6. Mesa	F. an igneous intrusive feature than result in the formation of a mesa
7. Soil creep	G. an igneous intrusive feature that can result in the formation of a homoclinal ridge
8. Rock fall	H. a relief feature on that is wider than it is high
9. Pediment	I. a form of mass wasting that occurs on the crest of a slope
10. Tor	J. the concave slope element at the base of the slope profile
11. Slope failure	K. the angle at which debris and regolith accumulate on the scree slope
12. Angle of repose	L. layers within a depositional sequence

QUESTION 2: HORIZONTALLY LAYERED ROCKS

- 2.1 **Draw** a series of labelled diagrams that demonstrate the stages a typical Karoo landscape will go through from a plateau to mature dissection. [6]
- 2.2 *Use the photograph of a Karoo landscape seen below, to answer the following questions*
- 2.2.1 **Name** the landform BELOW (A) visible in the photograph below. [2]
- 2.2.2 **Predict** what this feature will look like in few million years' time. [2]



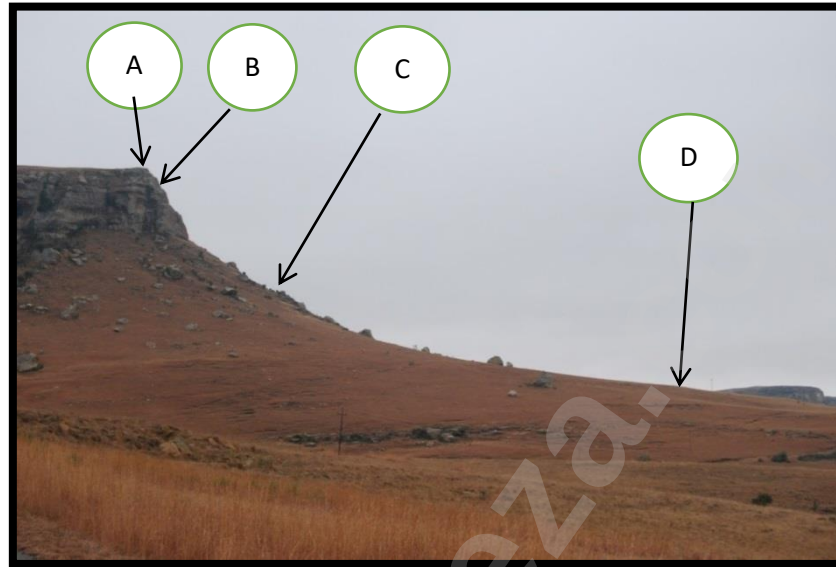
QUESTION 3: TOPOGRAPHY ASSOCIATED WITH INCLINED ROCK STRATA

- 3.1 With the aid of **two labelled diagrams**, **show** the difference between a CUESTA BASIN and a CUESTA DOME. [6]
- 3.2 **State** why inclined rock strata cause parallel valleys and ridges. [2]
- 3.3 **List** the impacts that a homoclinal ridge would pose to a human settlement. [6]

QUESTION 4: SLOPE ELEMENTS AND ASSOCIATED PROCESSES.

Refer to Figure 1 and answer the questions that follow.

Figure 1. The basic slope profile.



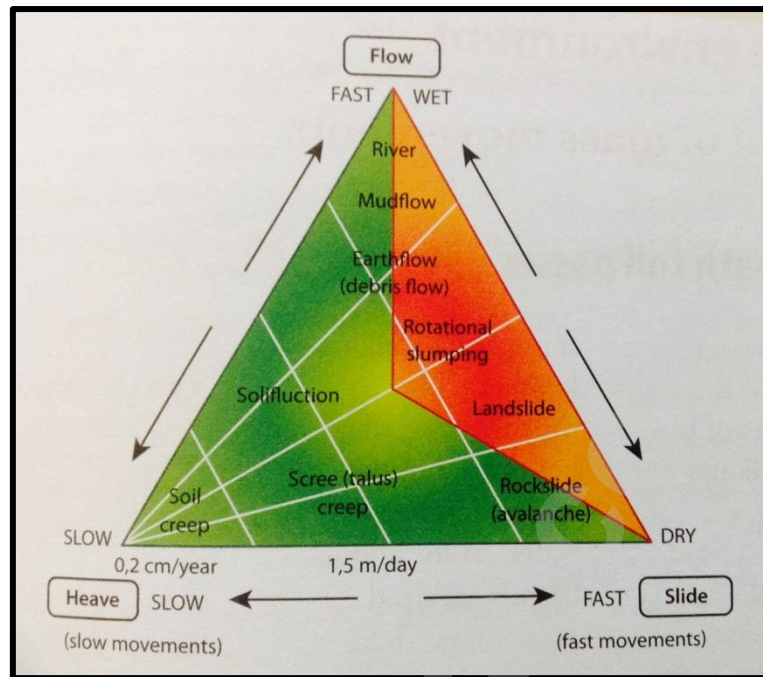
4.1 **Copy the table below** onto your answer script in which you must:-

	Name / label	Process / mass wasting
A		
B		
C		
D		

a) Provide **labels** for slope elements A to D [4]

b) For each of the slope elements A, B, C in your table **suggest** ONE form of mass wasting that takes place. [6]

4.2 **Identify** the fastest wet and fastest dry, mass movements shown in the diagram below. [4]



- 4.3 Using the graph above as a guide, differentiate between a rock slide and a mud flow. [4]

QUESTION 5: CASE STUDY – SLOPE FAILURE.

Use the attached case study material (*Bududa Landslide, Uganda - March 2010*) on the back page to assist you in answering the following questions:

- 5.1 Identify the main causal factors of the hazard event. [4]
- 5.2 Describe the damage and loss of life caused by this event. [4]
- 5.3 Suggest preventative strategies could be utilised to limit the scale of damage done in the future? [6]

TOTAL: 80

CASE STUDY PRINTED OVERLEAF ON LAST 2 PAGES....PTO

MASS MOVEMENT CASE STUDY

Case Study: Bududa Landslide, Uganda - March 2010

Eastern Uganda is generally a flat plateau, with the border between Kenya and Uganda dominated by the beautiful hills and slopes associated with Mount Elgon, an extinct shield volcano. These slopes are home to a number of communities. The higher elevation provides a more moderate climate than the plateau below, and the fertile soils are used by communities to grow crops, especially coffee. The slopes are also home to a wide variety of plants and forest – although a deforestation programme has been taking place in recent years.



Foothills of Mount Elgon

The slopes of Mount Elgon have been prone to a number of landslide events, as can be seen on [aerial photographs](#). One of the biggest was this time last year (March 1st 2010) in [Bududa](#). This landslide was preceded by significant rains. The slopes of Mount Elgon are the catchment area for a number of streams and rivers. The heavy rain caused a significant swell of these, and groundwater levels to rise. As groundwater levels rose, the instability of the slope increased due to the decrease in effective stress. This was likely exacerbated by the deforestation, with the soil losing anchorage and surface erosion more likely.

The total impact and effects of this landslide are unknown. Estimates of those who died are currently about 388, and significant numbers were left displaced as soil, mud and boulders submerged three villages. A number of school pupils took shelter in a health centre, which was tragically then destroyed.



From: <http://www.afronline.org/?p=3835>

As Uganda is entering a new rainy season one year on – there is a possibility that old landslides will be reactivated and new landslides occur. ***So what can be done to help reduce the tragic loss of life and economic costs of these disasters?*** In many ways it is hard to answer this question without fully understanding the landslide mechanisms and causes.

The Government of Uganda has criticised the communities for living in these high-vulnerability places, and advised that people move off the landslide prone slopes. This is, however, around half a million people – most of whom are subsistence or crop farmers. Relocating this amount of people, and finding the land for them to make a living, is no easy task. A review of vulnerability in the area could give more specific advice on which communities to relocate – but if crop yields (coffee etc) are less productive than their original plots, it may be difficult to persuade people not to return.

[Research](#) published this year in the African Journal of Agricultural Research suggests that farmers have a reasonably good knowledge of where landslides might hit, and some things they avoid (such as terracing) that can trigger landslides. The research suggests that possible interventions could be done using participatory methods. This would aim to help farmers better recognise causes and effects of landslides, and reduce activities that lead to instability - such as undercutting slopes for house construction. The research did not, however, discuss the effects of deforestation with the farmers. It is also unlikely that the threat could be removed simply by getting the farmers to change some practices. A bigger scale intervention, reseeding degraded land, planning and organising the slope-sided farming and improving drainage on the slopes would also be required.



Foothills of Mount Elgon: Concave Slopes identified by farmers as areas more vulnerable to landslides

It is likely that the best way to help reduce the effects of landslides in this area is a combination of a number of things:

- Relocation in some areas of very high risk
- Working with farmers to ensure their farming is more sustainable and avoids environmental degradation. Offering alternative housing styles to prevent the need for undercutting slopes.
- Some possible engineering solutions - improving drainage and increasing toe weights to prevent instability.

It is hoped that the Ugandan Government and their development partners will act strongly to reduce the possibility of future disaster in this area.