Case study: Paarl Rock

Paarl Rock or Paarl Mountain in the Western Cape gleams like a diamond or pearl in the sun after rain. Its three granite domes are part of a huge underground granite intrusion that extends from Saldanha in the north to George in the east. Millions of years ago, the Paarl Rock did not exist. Over time, the Berg River, and wind and rain exposed the rock and layers were peeled off, almost like the layers of an onion.

As a giant rock outcrop, Paarl Rock is often compared to Uluru (also known as Ayres Rock) in Australia. Uluru means “island mountain” and it is the largest single rock in the world, but the geology of Paarl Rock and Uluru is very different. Paarl rock is an igneous intrusion, while Uluru is a sedimentary remnant.


Read the case study ‘Paarl Rock’ as well as the information on p.3 and answer the following questions.

1. Define the following concepts:
   (a) monolith
   (b) tor

2. Which of the two mountains, Paarl Rock and Ayres Rock:
   (a) originated from a batholith?
   (b) consists of sandstone?

3. Name ONE process that led to Paarl Rock being exposed.

4. Briefly explain how a tor is formed.

5. Name ONE characteristic of tors.

6. Name TWO landforms associated with sedimentary rocks.

7. What similarity is there between a table mountain and a butte?

8. In which part of South Africa are table mountains and buttes especially found?

9. What type of rock does the Magaliesberg escarpment consist of?
### TOPIC: OVERVIEW OF LANDFORMS ASSOCIATED WITH IGNEOUS, SEDIMENTARY AND METAMORPHIC ROCKS

**STUDY THIS TOPIC WITH THE FOLLOWING QUESTIONS IN MIND!**

1. **Landforms associated with igneous rocks.**
   - **What does it look like?**
   - **What is it?**
     - Monolith - a single very hard rock mass.
     - Tor - a rocky pile or outcrop. Occurs when the seams and cracks are weathered. It looks like a stack of rocks stacked together.
     - Dolerite dykes - form ridges.
     - Dolerite intrusion plates - form the cap rock at a table mountain and butte.
   - **Where is it?**
     - Paarl-rock in the Western Cape.
     - Valley of Desolation – Graaff-Reinet.
   - **Why is it there?**
     - Tectonic uplift, faulting and erosion lead to the exposure of the landforms.

2. **Landforms associated with sedimentary rocks.**
   - **What does it look like?**
   - **What is it?**
     - Limestone caves – hollow that develops when water dissolves the rocks.
     - Table mountains (mesas) and buttes - consist of gentle slopes with flat crests.
   - **Where is it?**
     - Cango caves near Oudtshoorn
     - Extensive parts of the Karoo of South Africa
   - **Why is it there?**
     - Large-scale deposition of sediments layers on top of each other over time.

3. **Landforms associated with metamorphic rocks.**
   - **What does it look like?**
   - **What is it?**
     - Cape Fold Mountains - a mixture of sedimentary and metamorphic rocks - in the form of erosion-resistant quartzite.
     - Magaliesberg - scarp consists of metamorphic rocks, namely quartzite.
   - **Where is it?**
     - South western parts of Western Cape
     - Magaliesberg in Gauteng
   - **Why is it there?**
     - They are often very old (over time changed) rock formations that form plateau areas.