**ACTIONS OF WIND**

The action of wind is dominant in desert and other semi arid regions of the world. Desert which are associated with aridity (dryness) are caused by low rainfall, high temperature, cold current and high evaporation rate. Examples of Deserts are:

1. Sahara desert (West Africa).
2. Kalahari and Namib deserts (South Africa).
3. Arabian, Iranian and Thar deserts (Middle East).
4. Australian desert (Australia).
5. Mohave Desert (U.S.A).
6. Atacama Desert (South America).

**CHARACTERISTICS OF DESERT**

1. Deserts do experience extreme high temperature during the day and extreme low temperature at night
2. Deserts do experience low rainfall due to cold currents blowing them
3. Deserts do lack dense vegetation cover in deserts because of low rainfall
4. Deserts do experience high evaporation temperature due to he fact that there is high rate of temperature
5. Deserts do experience cold currents.

**TYPES OF DESERTS**

There are five distinct kinds of deserts

1. Erg or Sandy desert
2. Hamada or rocky deserts
3. Reg or stony deserts
4. Badlands
5. Mountain deserts

**ACTIONS OF WIND EROSION**

Wind erosion is carried out in the following ways:

1. **Deflation:** This is the lifting and blowing away of loose sand and pebbles by wind. Deflation results in the lowering of the land surface to form large depression called **deflation hallows**
2. **Abrasion:** This is the process whereby sand particles carried by wind are used to blast or wear away rock surfaces as in rock pedestal, zeugen and yandang
3. **Attrition:** This is the process whereby wind borne particles collide with one another, resulting in the wearing away of each other. This results in reduced and rounded sizes of the particles.

**DIFFERENCES BETWEEN DEFLATION AND ABRASION**

1. Deflation involves blowing while abrasion involves hauling rock against rock surface by the wind.
2. Deflation involves rolling of loose materials along the ground whereas, in abrasion, rock surface is polished, scratched and worn away.
3. Deflation usually results in lowering of the land surface while abrasion is most effective at the base of rocks.
4. Deflation is associated with the wind while abrasion can be caused by wind, water and wave.

**FEATURES OF WIND EROSION IN THE DESERT**

1. **Rock Pedestals:**

**Characteristics:** Rock pedestals are irregular in shape e.g. mushroom shape with alternate horizontal layers of hard and soft rocks. They are like pillars in structure. They are desert landforms which range from 10 – 15 meters in height.

**Mode of formation:** Rock pedestals are formed by wind abrasion on alternate horizontal layers of hard and soft rocks. Abrasion is greater at ground level, resulting in serious undercutting, to produce irregularly shaped feature called **rock pedestals** in deserts.

2. **Zeugen:**

**Characteristics:** These are tabular masses with a layer of soft rocks lying beneath a surface layer of hard rock. It has a long ridge and furrow landscape. They are also formed by wind abrasion in deserts.

**Mode of formation:** Zeugen is formed when a tabular mass of rock which has a layer of soft rocks lying under a layer of a more resistance hard rock is lying horizontally to the direction of the wind. The mass of rock is then attacked by wind abrasion and then wears the mass into a ridge and furrow landscape, leading to the formation of Zeugen. Mechanical weathering starts the formation by opening up joints of the surface of hard rocks.

3. **Yardang:**

**Characteristics:** Yardages have vertical bands of hard and soft rocks, ridge and furrow of the landscape of about 10 – 15 meters long.

**Mode of formation:** Yardangs are formed when hard and soft rocks in vertical bands are aligned in the direction of the prevailing wind. Wind abrasion wears off the softer rocks into long narrow corridors which separate the steep-sided ridges of the hard rocks. These hard rocks are called Yardangs.

**4. Mesas and Buttes:**

**Characteristics:** Mesa is a flat, table-like landmass. It has a resistant horizontal top layer with steep sides and is made up of soft and hard layers.

**Mode of formation:** As a result of the action of denudation, the hard top layer of rock resists agents of denudation and protects the softer layers of rocks below from being eroded. At times, mesas may be formed in canyon regions. Canyon develops in the space between mesas and butte. Denudation, sometimes, may reduce mesas in areas to become isolated flat-topped hills called **buttes.**

5. **Inselberg:**

**Characteristics:** Inselberg is an arid landform. It is an isolated rocky outcrop having steep sides, round top and composed of granite. It may rise up to a height of over 500metres and may occur singly or in a group. Examples are found in Northern Nigeria, Kalahari desert, and Western Australia.

**Mode of formation:** Inselbergis formed from the existence of extensive old plateau. It is caused as a result of weathering and removal of weathered materials by water and wind. It is an exposure of rock out-crop.

6. **Ventifacts and Dreikanters:**

These are pebbles sharpened or faceted by sandblasting. Wind abrasion shapes and polishes the pebbles and new facets develop when wind direction changes. Ventifacts with three wind faceted surfaces are called **dreikanters.**

7. **Deflation Hollows or Depression:**

**Characteristics:** They are formed by wind deflation. It is a desert landform with varying depths. There may be the presence of sand dunes on the leeward side. It has a basin and a saucer shape. It is very extensive and can form an oasis in deserts.

**Mode of formation:** As a result of wind deflation, large depression or hollows are produced by the scooping away of loose sand materials by wind, sometimes below the water table. When this happens, water seeps out and oasis or swamps are formed.

**FEATURES OF WIND DEPOSITION IN DESERTS**

1. **Dunes:**

Dunes are hills or ridges of sand formed by the piling up of sand into hill shape by the action of wind. They are initiated when an obstacle of some kind prevents free movement of the wind. Thus, creating a certain shape against the obstacle until it covers the latter and falls over to the other side. There are two main types of dunes, these are:

**(a) Barchan:**

**Characteristics:** A barchan is a crescent or moon-shaped structure. They may occur in groups or singly. A barchan has a convex shape on the windward side and a concave shape on the leeward side with horns of 15-30 metre long. It is formed by wind deposition in deserts.

**Mode of Formation:** A barchan is formed when an obstacle like rock impedes or prevents the movement of wind, resulting in the accumulation of sand materials. Later the sand begins to accumulate on the other side of the obstacle, leading to a crescent or moon-shaped structure with horns called Barchan. The windward side of a barchan is convex and gentle, while the leeward side, being sheltered is concave and steep.

**(b) Seifs or Longitudinal Dunes:**

**Characteristics:** Seifs are sword-shape. They have long and narrow ridges of sand usually of hundreds of kilometres. They are formed by wind deposition in the desert e.g. Sahara desert.

**Mode of formation:** Seifs are formed during wind deposition. They lie parallel to the prevailing wind which clears the corridors between dunes of sand. Eddies blow towards the side of the corridor and build up seif dunes.

**2. Loess:**

These are fine soil particles carried by the wind. They are deposited outside the desert as loess. Loess is a fine loam, very fertile and porous.

**GENERAL EVALUATION**

1. What is a desert?
2. State three causes of a desert.
3. Mention four types of desert.
4. Explain the action of wind erosion in desert regions.
5. Describe a rock pedestal.