ACTION OF WIND AND WATER IN ARID AREAS

1. a) (i) X- horns

(ii) Y- Eddie currents

(iii) Z- Steep leeward slope

b) Traction

Suspension

Surface Creep

2. a) (i) Processes through which wind erodes the surface.

-Deflation

-Abrasion

-Attrition

ii) Ways through which wind transports its load

Suspension

- The fine dust particles are lifted and suspended in the air
- Eventually they are blown away by wind currents

Saltation

- Larger fragments/sand particles are lifted from the ground by eddy actions
- They are moved in a series of hops/jumps by wind currents

Surface creep/attraction

- The heavy materials /small stones/pebbles are dragged along the ground by wind currents

b) (i) How oasis is formed

- A pre-existing depression formed through faulting or otherwise is exposed to wind erosion
- Wind eddies remove unconsolidated materials through deflation
- As deflation continues, the depression is deepened and enlarged.
- The process of deflation is aided by weathering
- With continued deflation, the level of the water table is reached.
- Water oozes out of the ground collects into the depression to form a lake known as oasis.

ii) Zeugens

- Zeugens are formed in desert areas where alternating horizontal layers of hard and soft rocks occur
- The top layer of hard rock is jointed/has cracks.
- Weathering opens up the joints
- Wind abrasion erodes the joints deepening them to reach the soft layer of rocks
- Abrasion continues, farrows are formed and gradually widened
- The hard/resistant rock forms ridges separating the fallows
- This process creates a ridge-furrow landscape

c) (i) Ways through which students would prepare for field study

- Reading from the relevant written materials.
- Assembling relevant tools/equipments/materials for the study.
- Formulating hypothesis/objectives
- Grouping /appointing group leaders
- Planning a schedule of activities

- Carrying out reconnaissance
- Studying /drawing a route map
- Identifying methods of data collected

ii) Information that would be collected through observation of the arid area.

- Sparse vegetation/large patches of bare soil
- Sparse settlements
- Presence of drought resistant crops
- Stunted trees/tufts of grass
- Dust storms/land storms
- Evidence of wind erosion/deposition

iii) Measure s to be recommended for controlling desertification.

- Planting of trees
- Controlling overgrazing
- Avoiding bush fires
- Controlling tree cutting
- Practicing appropriate methods of cultivation/planting cover crops
- Irrigation/mulching/terracing/strip cropping/contour farming
- Gabion construction

3. Abrasion- Wind picks loose weathered, material and transports them. During the course of transportation the material scrubs other tock surfaces it comes into contact with.

4.

- Zeugen
- Rock pedestal
- Yardangs
- Deflation hollows
- Mushroom blocks

5. - Occurs in alternating soft and hard layers
   - The hard layer is underlain by soft layers
   - Weathering breaks the hard cap in the well joined rock.
   - Wind abrasion deepens and widens the joints to produce a landscape of furrows and ridges
   - The ridges are called zeugens

6.

- Barchans
- Seif dunes
- Transverse and wake dunes
- Loess
- Drass

7. - Sheet floods develop on gently sloping surfaces surrounding upland areas
   - On steep sided and undulating landscape flash floods cut out rills which are then enlarged to form gullies.
- Continues erosion of gullies enlarges them to form a steep sided rocky valley or ravine known as wadi.

8. Differentiate between suspension and saltation

Suspension

Fine particles are carried within the turbulence of wind while in

Saltation

Saltation- Medium size particles are tolled along the group and when they collide they bounce off into the air and cause other particles to be lifted in the air.

9. Name four types of desert surface

- Erg desert
- Reg desert
- Hamada
- Badlands

10. i) **Abrasion**- materials carried by wind scours/grinds against the desert surfaces leading to removal rock particles.

ii) **Deflation**- strong winds blows away dry unconsolidated materials.

iii) **Attrition**- Heavy materials carried by wind hits against each other leading to reduction of size facilitating their transportation.

11. a) **Suspension** – fine and light materials are picked by the wind and carried within the air turbulence.

Saltation – medium sized materials are transported through a series of hops and jumps along the surface.

b) - Wind speed and force
- Nature of the load
- Presence/absence of obstacles
- Weather changes

12. **Bajadas**- Bajada starts with formation of alluvial fans when alluvial cones coalesce along the edge of a depression

The margin leads to formation of gently surface.

Due to erosion, land mass waste a high area recedes

The retreating mountain leave a gentle sloping rock known as pediment.

13. i)

- Sparse vegetation/large patches of bare soil
- Sparse settlements
- Presence of drought resistant crops
- Stunted trees/tuff grass
- Dust storms/sand storms
- Evidence of wind erosion and deposition features.

ii)

- Planting trees
- Controlling tree cutting
- Practicing appropriate farming methods-strip, cropping, mulching, gabion
- construction.