Landforms and their Evolution

Que.1. Distinguish the terms pediments and pediplains. [Marks :(2)]

Ans. Pediments - Gently inclined rocky floors close to the mountains at their foot with or without a thin cover of debris, are called pediments.

Pediplains – Low featureless plains in desert areas.

Que.2. Differentiate barchans and parabolic dunes. [Marks :(2)]

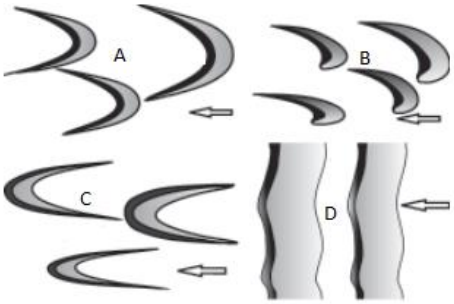
Ans. Barchans - Crescent shaped dunes with the points or wings directed away from wind direction.

Parabolic dunes - form when sandy surfaces are partially covered with vegetation. Parabolic dunes are reversed barchans with wind direction being the same.

Que.3. List any four erosional fratures carved out by wind. [Marks :(2)]

Ans. Caves, mushroom rocks, table rocks, pedestal rocks.

Que.4. Identify the type of sand dunes illustrated below. [Marks :(2)]



Ans. A - barchans

B - Seif

C - Parabolic dunes

D - Transverse dunes

Que.5. Categorise the following landforms as erosional and depositional [Marks :(2)]

Cliff, spit, beach, wave - cut terrace, caves, sand dunes

Ans. Erosional : cliff, wave cut –terrace, caves

Depositional: spit, beach, sand dunes

Que.6. Define the terms [Marks :(3)]

a. Off-shore bar

b. Barrier bar

c. Spit

Ans. a. A ridge of sand and shingle formed in the sea in the off-shore zone (from the position of low tide waterline to seaward) lying approximately parallel to the coast is called an off-shore bar.

b.An off-shore bar which is exposed due to further addition of sand is termed a barrier bar.

c. Sometimes barrier bars get keyed up to one end of the bay .They are called spits. Spits may alsodevelop attached to headlands/hills.

Que.7. Write down any four differences between high rocky coast and low sedimentary coast. [Marks :(4)]

Ans. High rocky coast

Along the high rocky coasts, the rivers appear to have been drowned with highly irregular coastline.

The coastline appears highly indented with extension of water into the land where glacial valleys (fjords) are present.

The hill sides drop off sharply into the water.

Shores do not show any depositional landforms initially. Erosion features dominate.

Low sedimentary coast

Along low sedimentary coasts the rivers appear to extend their length by building coastal plains and deltas.

The coastline appears smooth with occasional incursions of water in the form of lagoons and tidal creeks.

The land slopes gently into the water.

Marshes and swamps may abound along the coasts. Depositional features dominate.

Que.8. Categorise the following landforms as erosional and depositional. [Marks :(3)]

Cirque, fiord, moraines, drumlins, eskers, arêtes

Ans. Erosional: Cirque, fiord, arêtes

Depositional: Moraines, drumlins, eskers

Que.9. What are moraines? Identify different types of them. [Marks :(3)]

Ans. They are long ridges of deposits of glacial till. The different types of moraines are:

Terminal moraine

Lateral moraine

Ground moraine

Medial moraine

Que.10. What is the role glaciers play in shaping the surface of the earth? Substantiate your opinions with suitable examples. [Marks :(4)]

Ans. A glacier's weight, combined with its gradual movement, can drastically reshape the landscape over hundreds or even thousands of years. The material plucked from the land by glaciers get dragged along the floors or sides of the valleys and cause great damage through abrasion and plucking. As glaciers continue to move, debris gets removed, divides get lowered and eventually the slope is reduced to such an extent that glaciers will stop moving leaving only a mass of low hills and vast outwash plains along with other depositional features. Glaciers can cause significant damage to even un-weathered rocks and can reduce high mountains into low hills and plains. some interesting glacial landforms are cirque, U shaped valleys, moraines, eskers etc.

Que.11. Examine the difference between glacial valleys and river valleys. [Marks :(4)]

Ans. Glacial valleys are formed due to the movement of glaciers and the abrasion of the rock particles they carry. The formation of glacial valleys does not depend on the gradient but only the volume of the glacier. Larger glaciers carve larger, wider valleys.

River valleys are formed due to the kinetic energy of rivers falling from a steep height. The formation of the valley is dependent on the gradient as rivers carry less water during their youthful stages. Glacial valleys are usually U-shaped. They are wide. River valleys are V-shaped. They are deeper.

Que.12. How fiords are formed? [Marks :(1)]

Ans. Fiords are formed when very deep glacial troughs get filled with sea water and make up shorelines (in high latitudes).

Que.13. Categorise the following landforms as erosional and depositional. [Marks :(3)]

Sink hole, stalactite, doline, cave, stalagmite, pillar

Ans. Erosional – sink hole, doline, cave

Depositional – stalactite, stalagmite, pillar

Que.14. How do uvalas form? [Marks :(2)]

Ans. When sink holes and dolines join together because of slumping of materials along their margins or due to roof collapse of caves, long, narrow to wide trenches called valley sinks or Uvalas form.

Que.15. Define Karst topography. [Marks :(1)]

Ans. Any limestone or dolomite region showing typical landforms produced by the action of

groundwater through the processes of solution and deposition is called Karst topography.

Que.16. What are natural levees? [Marks :(2)]

Ans. Natural levees are found along the banks of large rivers. They are low, linear and parallel ridges of coarse deposits along the banks of rivers, quite often cut into individual mounds.

Que.17. Deltas and alluvial fans are depositional landforms by rivers. How do they differ?

[Marks :(3)]

Ans. Deltas are similar to alluvial fans in shape, but are deposited in a differentenvironment. Delta deposits are found at the mouths of streams or rivers as theyempty into lakes and oceans.

Alluvial fans are found at the base of mountain ranges, where high energy streams are reaching a plain.

Que.18. Meander is not a landform but is only a type of channel pattern. Examine the statement.

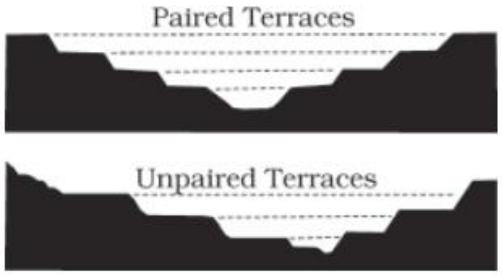
[Marks :(3)]

Ans. Meander is not a landform but is only a type of channel pattern. This is because of (i) propensity of water flowing over very gentle gradients to work laterally on the banks; (ii) unconsolidated nature of alluvial deposits making up the banks with many irregularities which can be used by water exerting pressure laterally; (iii) coriolis force acting on the fluid water deflecting it like it deflects the wind.

Que.19. What are river terraces? Classify and illustrate its types.

[Marks :(4)]

Ans. River terraces are surfaces marking old valley floor or floodplain levels. These are classified as paired and non-paired terraces.



Que.20. Differentiate between incised meanders and meanders over flood plains.

[Marks :(3)]

Ans. Very deep and wide meanders found cut in hard rocks are called incised or entrenched meanders . These are erosional landforms.

Meanders develop over flood and delta plains with active deposition on the convex bank. These are depositional landforms.

Que.21. Define the terms

[Marks :(2)]

a. gorge

b. canyon

Ans. a. gorge is a deep valley with very steep to straight sides.

b. canyon is characterised by steep step-like side slopes and may be as deep as a gorge.

Que.22. Classify the following landforms as erosional and depositional.

Pothole, braided channel, delta, river terrace, gorge, natural levees

[Marks :(3)]

Ans. Erosional- pothole, river terrace, gorge

Depositional- braided channel, delta, natural levees

Que.23. Identify the three stages of fluvial landform development and describe the characteristics of the first stage.

[Marks :(3)]

Ans. Youth, mature and old stage.

Youth Stage : Streams are few during this stage with poor integration and flow over original slopes showing shallow V-shaped valleys with no floodplains or with very narrow floodplains along trunk streams. Streams divides are broad and flat with marshes, swamp and lakes. Meanders if present develop over these broad upland surfaces. These meanders may eventually entrench themselves into the uplands. Waterfalls and rapids may exist where local hard rock bodies are exposed.

Que.24. The plains formed as a result of stream erosion is:

[Marks :(1)]

a. Pedeplain

b. Coastal plains

c. Peneplain

d. Out wash plains

Ans. Peneplain

Que.25. Categorise the following landforms according to geomorphic agents.

Mushroom rock, meanders, cirque, alluvial fan, esker, playa

[Marks :(3)]

Ans. Wind – Mushroom rock, playa

Glaciers – cirque, esker

Running water – meanders, alluvial fan

Que.26. Categorise the following landforms as erosional and depositional.

Barchan, U shaped valley, doline, delta, cliff, drumlins

[Marks :(3)]

Ans. Erosional : U shaped valley, doline, cliff

Depositional : Barchan, delta, drumlins

Que.27. Complete the table by choosing the correct one from brackets.

[Marks :(2)]

Landform	**Agent**
A Peneplain	
B Pedeplain	
C Outwash plain	
D Coastal plain	

(Running water, glacier, sea waves, wind)

Ans. A - running water, B - Wind, C - glacier, D - sea waves

Que.28. Distinguish the terms landform and landscape.

[Marks :(2)]

Ans. Small to medium tracts or parcels of the earth's surface are called landforms.

Several related landforms together make up landscapes.