Class 9th Social Science

Chapter :1

Change of the Earth's Surface

GEOGRAPHY

Textual questions and answers Exercise

Q.1: Give an outline of the distribution of continents and oceans of the world.

Ans: The distribution of continents and oceans of the world is as below :

(i) Continents/landmass: The continents account for 29% of the total earth's surface. These are non-uniform and includes plains,plateaus,deserts,hills, mountains,river valleys,coastal plains, etc.

(ii) Oceans/hydrosphere: Hydrospere comprieses the water portion of the earth's surface. These constitute 71% of the earth's surface and include lakes,ponds,rivers,seas,oceans, etc.
However,many forms of landness such as submerged plateaus,plains,ridges,trenches, coral reefs are found in the ocean depths and various islands on the ocean floor.

Q.2: Explain why there has been change over the earth's surface.

Ans: Natural factors or processes known as geomorphic processes bring about changes on the earth's surface. These factors cause physical pressure and chemical reactions on the earth's material and thus cause modification in the configuration of the earth's surface. There are mainly two types of geomorphic processes. They are :

(i) Endogenic factors: Endogenic factors are the internal factors that originate beneath the earth's crust. These forces remain active in the interior of the earth and ocean bottoms. These factors bring about variation on the earth's surface making it uneven,i.e.either result in raising the height of the landness or create depths by subsiding it.
e.g. earthquakes,volcanic eruption, movement of plates,etc.

(ii)Exogenic factors: Exogenic factors are the external factors or processes of gradation that originate on the surface of the earth.

Q.3: What is meant by exogenic factor ? Mention some exogenic factors.

Ans: Exogenic factors are the factors which originate on the surface of the earth. These factors are constantly levelling the ruggedness of the earth's surface and in course of time bringing about substantial change in the

physical features of the earth's crust. The main sources of these factors are sun and include :

(i) Biotic elements :

(a) Vegetation (or plants) (b) Animals (c) Microorganisms

(ii) Abiotic elements:

(a) Sunshine.

(b) Rainfall.

(c) Running water or rivers.

(d) Wind (e) Glaciers (f) Sea-waves

Q.4: Why are earthquakes and volcanic eruption called endogenic factors ?

Ans: Earthquakes and volcanic eruptions are called endogenic factors because :

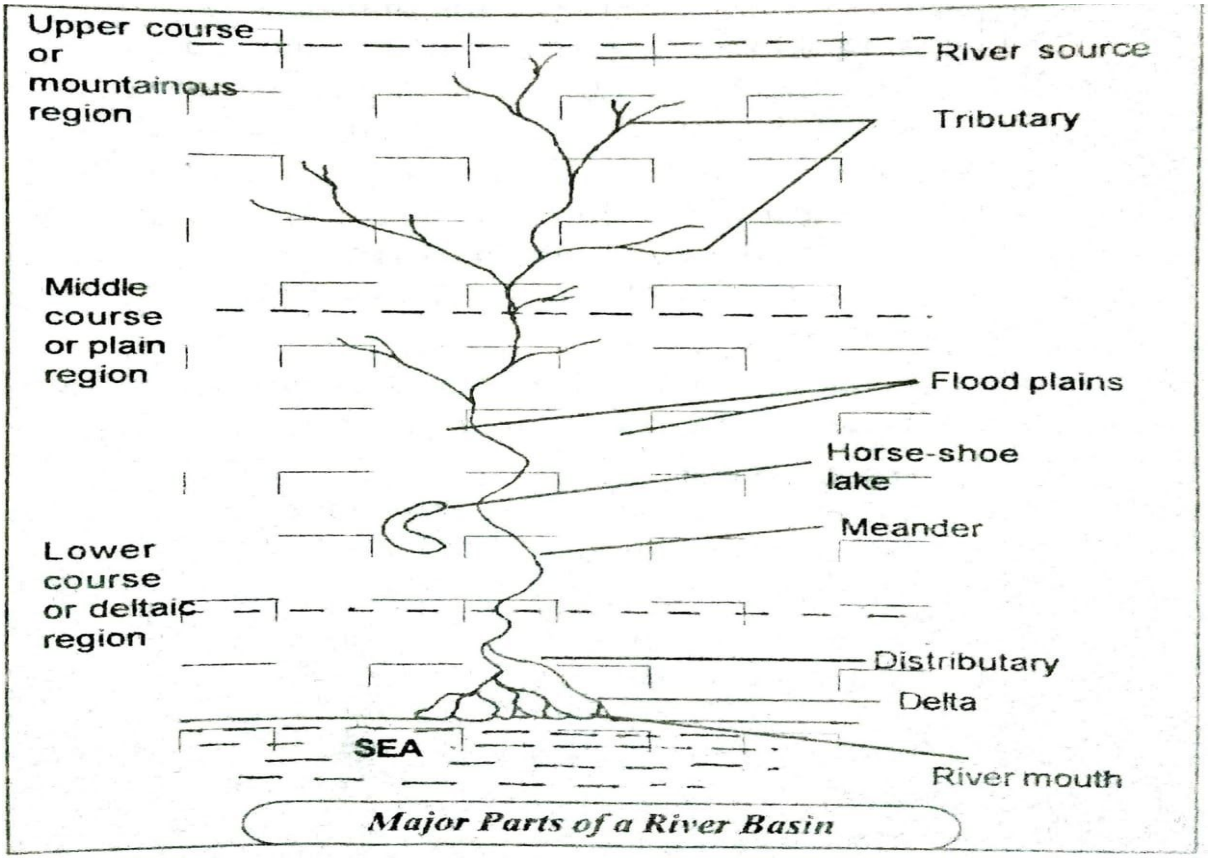
(i) They originate in the interior of the earth's crust.

(ii) They bring about variation on the earth's surface and depths of ocean making them uneven.

Q.5: What do you mean by a river basin ? Draw a diagram of a river basin.

Ans:A river basin an area of land where water flows through a river system,i.e. an area drained by a river

and its tributaries. Thus,it is an area where water flowing through various tributaries are drained into a central river and is finally channelled into a water body such as seas or oceans.Almost all the rivers are fed by a network of tributaries and hence form their respective basins. Thus,the work of a river,erosion, transportation and deposition are confined to its own basin and any change in the configuration of the basin is directly associated with the work of the river.



Q.6: What is a tributary ? Name two major tributaries of the Brahmaputra.

Ans: The smaller branches or streams of water that flow into the main river are called tributaries. Two major

tributaries of the river Brahmaputra are Dhansiri and Jia Bharali.

Q.7: Give an outline of river erosion.

Ans: Rainfall,snow deposits over the mountains or springs coming out from the earth's interior are the main water sources of rivers. In humid regions where heavy rainfall occurs,the role of running water in bringing about changes and degrading the earth's surface is considered to be the most significant of all the geomorphic agents.

(i) Overland: When rainwater flows overland or runs overland surface as a sheet,it naturally erodes away certain amount of top soil.

(ii) Linear surface: When rainwater flows over linear surface in the form of streams or rivers in valleys,the erosional activities of the running water begins in the river channel in various forms.
Moreover,the erosional activities of a river basically depend on the following factors:

(i) Structure of the river basin.

(ii) Hardness of the underlying rocks.

(iii) Amount of water flow.

(iv) Geological structure of the channel.

(v) Erosive capacity of water.

Q.8: What do you mean by lateral erosion a river ?

Ans: The eroding of the banks of the river,in such a way that the river valley is widened is called lateral or bank erosion. The valley becomes 'U' shaped from 'V' shaped.In the mountainous regions,the gradient is sleep,the velocity of flow is high and the channel is deep and narrow. However,the plains are characterised by:

(i) very gentle slope due to continued erosion;

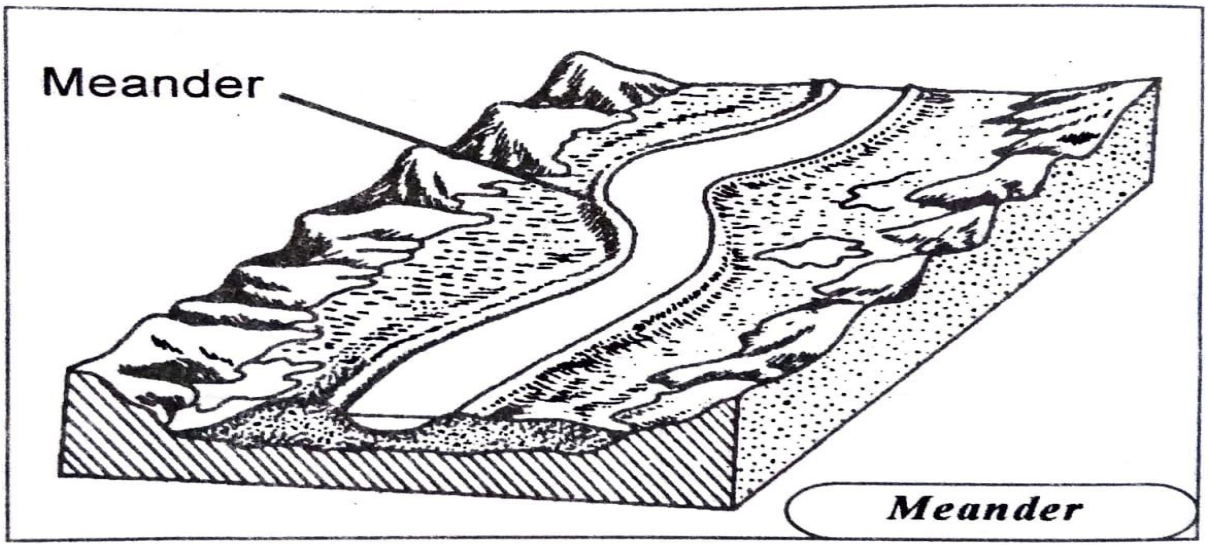
(ii) low channel depth due to deposition of sedimaents;

(iii) low velocity of water due to decline in slope.
As a consequence,when a river slopes into a plain from the valleys,it is fed by many tributaries which increase the volume of water. But due to the above mentioned features of plains,the river begins to widen its channel to maintain a steady flow. Thus,downward cutting gets reduced in the gentle slope of the plains and side cutting of the river increases to a great extent resulting in lateral erosion.

Q.9: What is ox- bow lake ? Draw a diagram to show how it is formed.

Ans: An ox- bow lake is also known as horse-shoe lake. It is shaped like a 'horse- show's and is formed due to the erosional activities of a river in the middle course. In

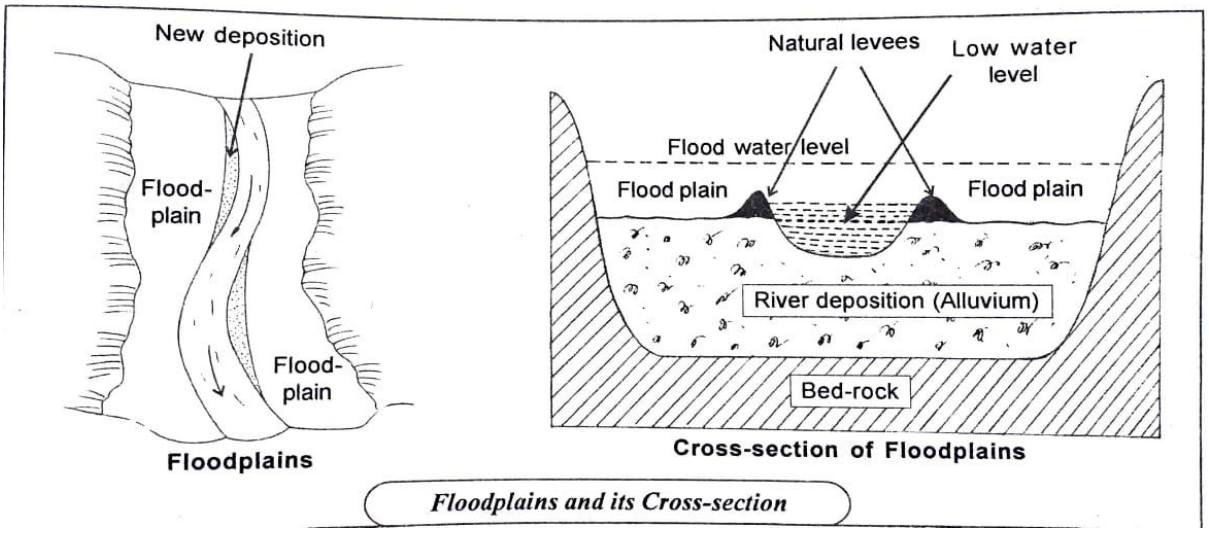
its middle course,the river changes its course very often leading to a zig-zag widening course called meandering course.Sometimes this course becomes so extensive that it takes the shape of the letter 'S'. The meandering course restricts the river from flowing evenly with its huge quantum of summer water. As a result,it tends to flow straight leaving aside the curved course. The abandoned section assumes the shape of a lake or beel which resembles an ox-bow or a horse-shoe. In this way,'an ox-bow lake' or 'a horse-shoe lake' is formed. e.g. ox-bow lakes are found in large numbers in the respective valleys of almost all the significant rivers like the Barak and the Brahmaputra in Assam.



Q.10: What is floodplain ? Write how is formed.

Ans: Floodplains are the plains or tracts of land surrounding a river on its two banks which consist of very fertile alluvium,most suitable for agriculture. These floodplains are created by the depositional activities of running water during the middle and lower course of the river channel. e.g. floodplains are found on the banks of the great rivers like the Brahmaputra,Indus,Ganges, Mississippi,etc.

During floods,a river overflows its banks and starts flowing over the bordering low-lying areas. As a consequence near the benks. When the floods recede,a widespread deposition of alluvium takes place. The area,thus,gets accumulated with a new layer of alluvium which makes the land highly fertile. Due to repetition of this process every year,the deposition fill up the low-lying areas on both the banks of the river and build up plains,known as floodplains.



Floodplains and its Cross-section

Q.11: Write how and where sandbars are formed in a river channel.

Ans: Sandbars are the long and narrow bars formed as a result of the constant deposition of sediments in the middle of the river bed or along the banks of the river. The main features of sandbars are :

(i) Have a temporary existence.

(ii) Formed by the deposition of sediments,viz.sand,gravel,silt, etc.

(iii) Their shapes and sizes are constantly being changed by the water currents or they may even get wiped away by the action of water currents.
e.g. sandars of various sizes are often seen in the Brahmaputra river bed during winter. The formation of sandbars takes place in the middle and lower course of rivers. During this course,the velocity of river flow declines and as a consequence,the river loses its capacity to carry sediments. These sediments like sand,gravel,silt,etc. get deposited in the river channel. After a long time,these sediments grow in size and rise above the sea water in the form of long and narrow bars, known as sandbars.

Q.12: How are the deltas formed ?

Ans: A river deposits most of the load carried by it into the shallow sea into which it flows forming islands. The depositions build up an alluvial cone which often resembles the English letter 'D' or the Assamese letter at its mouth.This island is called a delta. e.g. Sunderban delta formed at the common mouth of the Ganges and the Brahmaputra rivers.

Q.13: Write why the wind action is strong in the deserts.

Ans: The wind action is strong in the deserts because :

(i) Vegetain is very sparse in deserts.

(ii) Deserts are mostly dry and humid.

(iii) The wind can easily lift and blow away the loose soils.

Q.14: What is meant by deflation ?

Ans: Sand,silt,clay and dust particles are blown away by the action of wind from one place to another leaving behind the heavy,larger and course particles on the ground surface. This process of blowing away of debris is known as deflation. Deflation occurs mostly in desert and semi-arid regions having sparse vegetal cover.
The consequences of deflation are :

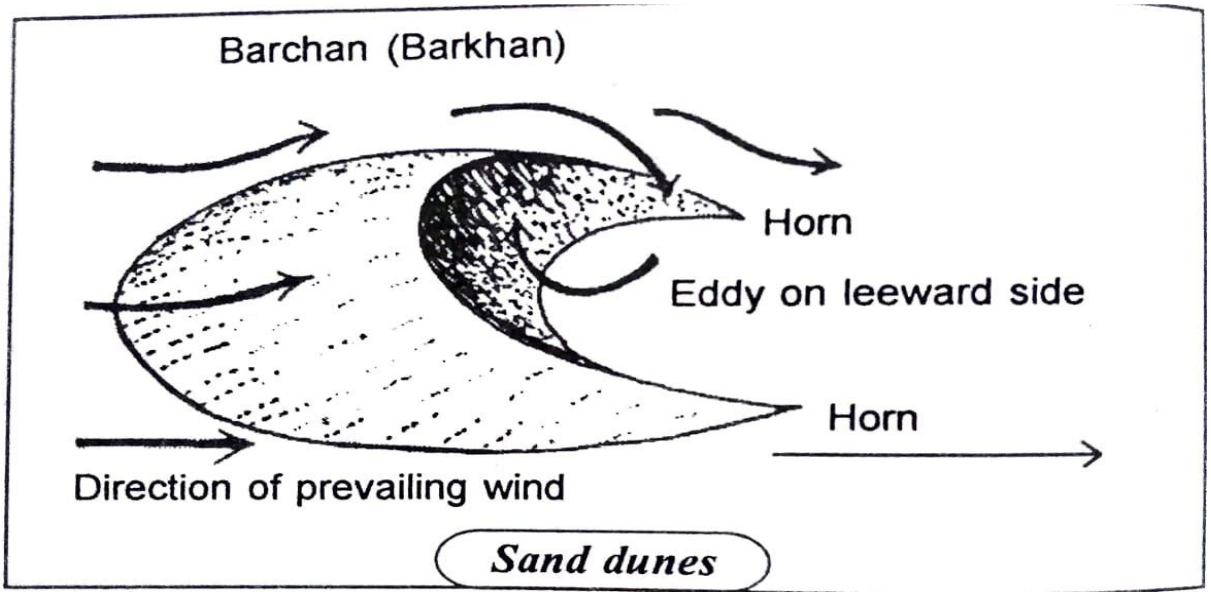
(i) Results in dust storms in the desert areas as the fine dust particles are blown along a considerable distance.

(ii) Leads to the formation of deflation hollows/blow outs/depression as the area from where sand has been lifted become very deep.

Q.15: How are the sand dunes formed ?

Ans: Sand dunes are the temporary mounds or ridges or hills of sand formed due to the depositional activities of wind in the desert areas. Sand dunes are predominantly found in the deserts with sandstones. There may be wide variation in the shape,size and structure of sand

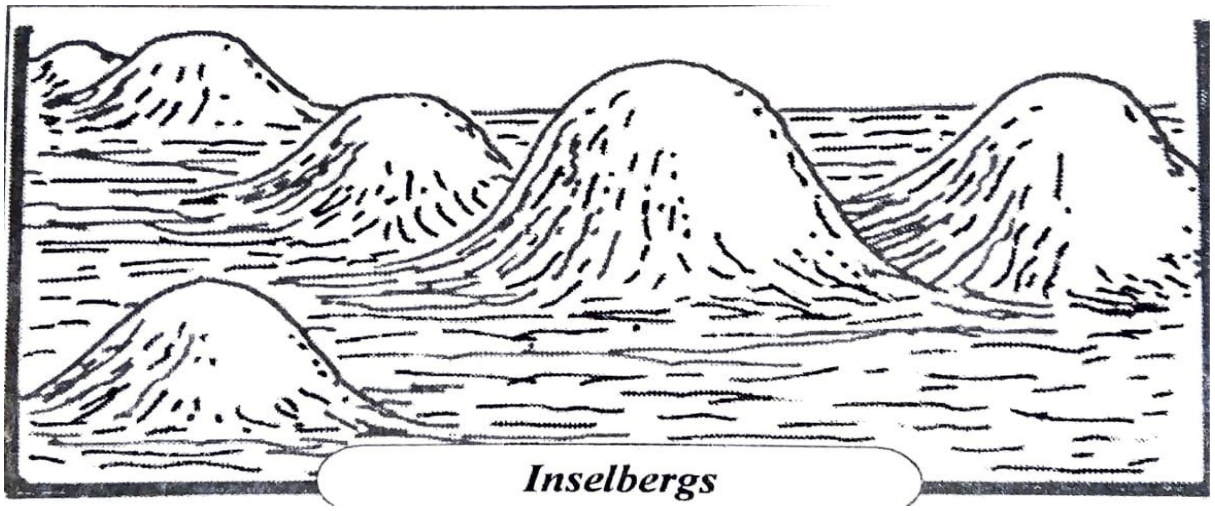
dunes due to the difference in the natural environment of various deserts,path of flow and strength of wind. Due to deflation,the dust,sand and clay particles are carried away by the wind. In the desert areas,the wind blows with greater velocity due to the absence of any high raised landforms. But when such wind meets an obstruction,viz a bush,a fence-post or a large rock,the speed of the wind gets reduced and it starts depositing the sand and dust fragments on the leeward side of such obstacles. In due course of time,the area starts gaining which results in the formation of sand dunes.



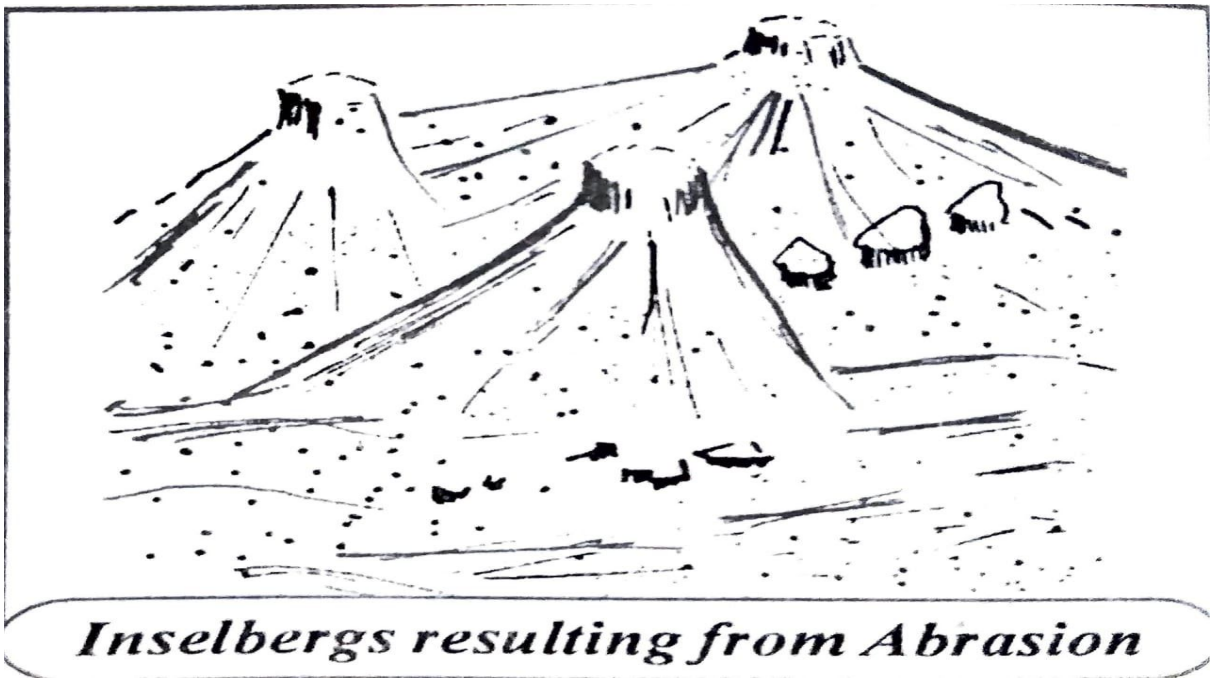
Q.16: What is inselberg ?

Ans: The term ' inselberg' is a German word which literally means an isolated island mountain. An inselberg is actually a steep-sided hill of hard rocks like granite left out from the solid rock structures in the deserts rising from a low-lying area. These are very steep and

dome-shaped cap of hard rocks formed due to the wind action of abrasion.e.g. inselberg in white desert of Egypt



Inselbergs



Inselbergs resulting from Abrasion

Q.17: Define glacier and state how it differs from a river.

Ans: Glaciers are the extensive masses of ice which move at a very slow pace over the land surface as sheets (in the polar regions) or move linearly through the mountain valley downwards (in the high

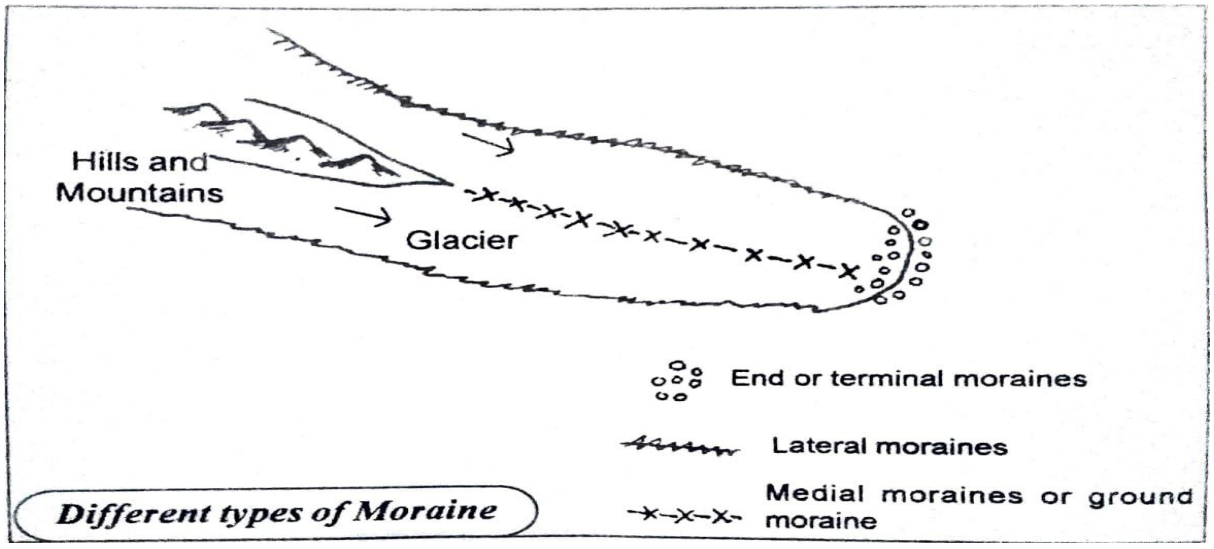
mountainous regions) due to the gravitational force of the earth.The differences between a river and a glacier are :

Sl. No.	Basis of difference	River	Glacier
(i)	Meaning	A natural stream of water.	A mass of ice formed by recrystallisation of snow.
(ii)	Movement	Its velocity is high in the highlands but it slows down in the plains.	Proceeds very slowly over the surface slopes.
(iii)	Ending part	The end of a river is called its mouth.	The end of a glacier is called snout.
(iv)	Eroding process	Solution, side cutting, down cutting and attrition.	Plucking, grooming, abrasion, grinding and polishing.
(v)	Location	Found in almost all parts of the world.	Found only in polar and high mountainous regions.
(vi)	Examples	Brahmaputra in India, Nile in Egypt, etc.	Found in the Antarctica and Greenland (polar regions) and the Alps in Europe, the Himalayas in Asia, etc.

Q.18: What is moraine ? Draw a diagram to show different types of moraine.

Ans: Moraines are the long ridges of deposit or till of glacial debris or sediments such as rock pieces,clay,sand and boulders which have been transported by a valley glacier besides ice. These are the depositional features of a glacier that bring about major changes on the earth's surface.
The different types of moraines are:

(i) Lateral moraine: Lateral moraine is a ridge of glacial debris formed along the sides parallel to the glacial valleys, i.e. these moraines lie on either side of a glacial valley between the moving ice and steep valley sides of a glacier.



(ii) Ground moraine: The deposition of glacial sediments on the floors of the glacial valley results in ground moraine. These are formed as a result of the deposition of sediments by a valley glacier which while moving rapidly fails to carry the sediment load and begins to leave an irregular sheet or till over the channel bed.

(iii) Medial moraine : When two glaciers join at a particular spot in the valley,their lateral moraines unite together and start flowing downward through the centre of the glacier valley. These moraines are called medial moraines.

(iv) Terminal or end moraine: Terminal moraine or end moraine marks the ultimate limit of an ice sheet or glacier and is formed at the snout of the glacier,from where it starts melting. It is actually a ridge formed by the deposition of sediments carried down by a glacier which gets accumulated at the end of a valley glacier.

Q.19: Write how a glacial horn a formed.

Ans:Mountain glaciers move linearly downwards through the valley between two mountain slopes. These glaciers perform erosional, transportational and depositional activities in their channel. The glaciers transfer boulders,pebbles ,sands and other organic matter along with ice. As the glacier erodes the slopes of the mountain,the mountain peaks assume a sharp conical shape. Such peaks are called glacial horns.
e.g. glacial horns are present in the Alps and the Himalayas.

Q.20: What is a coast ?

Ans: A coast is a strip of land which marks the margin of the oceans.

Q.21: What is a beach ? State its importance.

Ans: Beach is the coastal landform formed due to the depositional activities of continuous sea-waves. It comprises deposits ranging from fine sand particles to small pebbles that have accumulated by the erosional

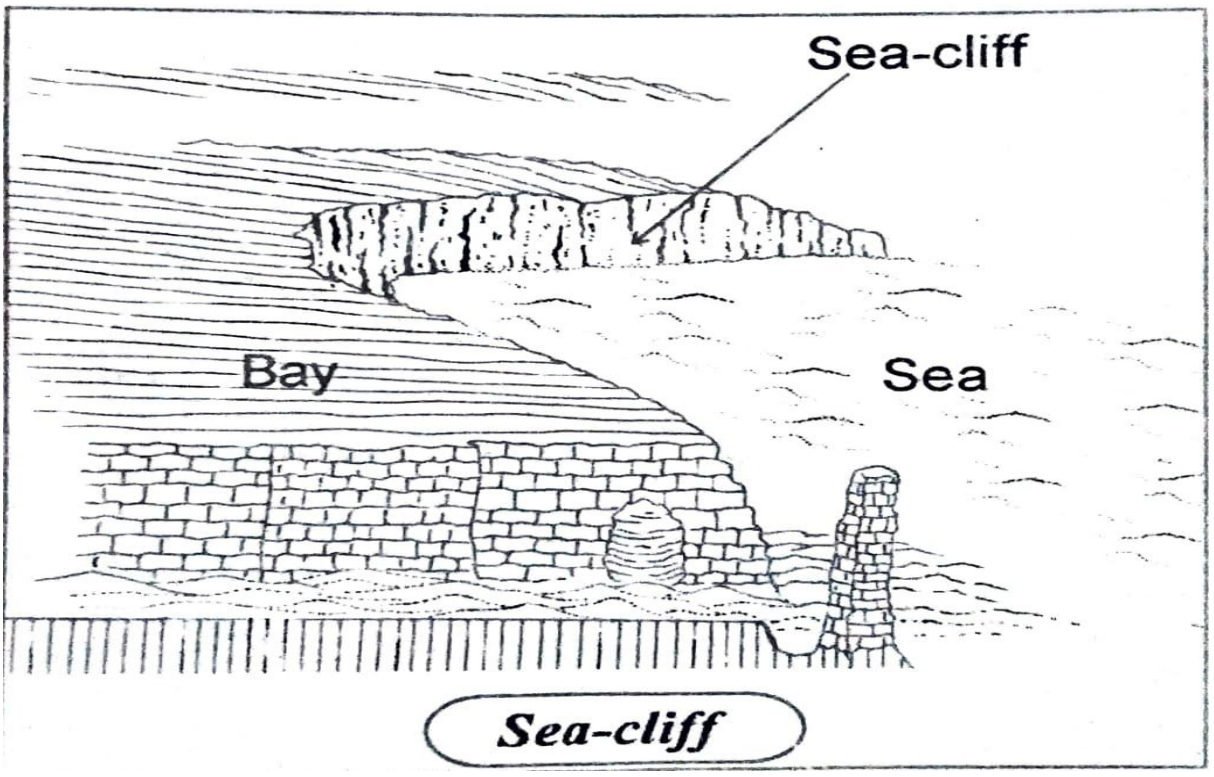
activities of sea-waves and by the sediments transported by streams and rivers. The importance of beach is that it is used for recreational purpose.

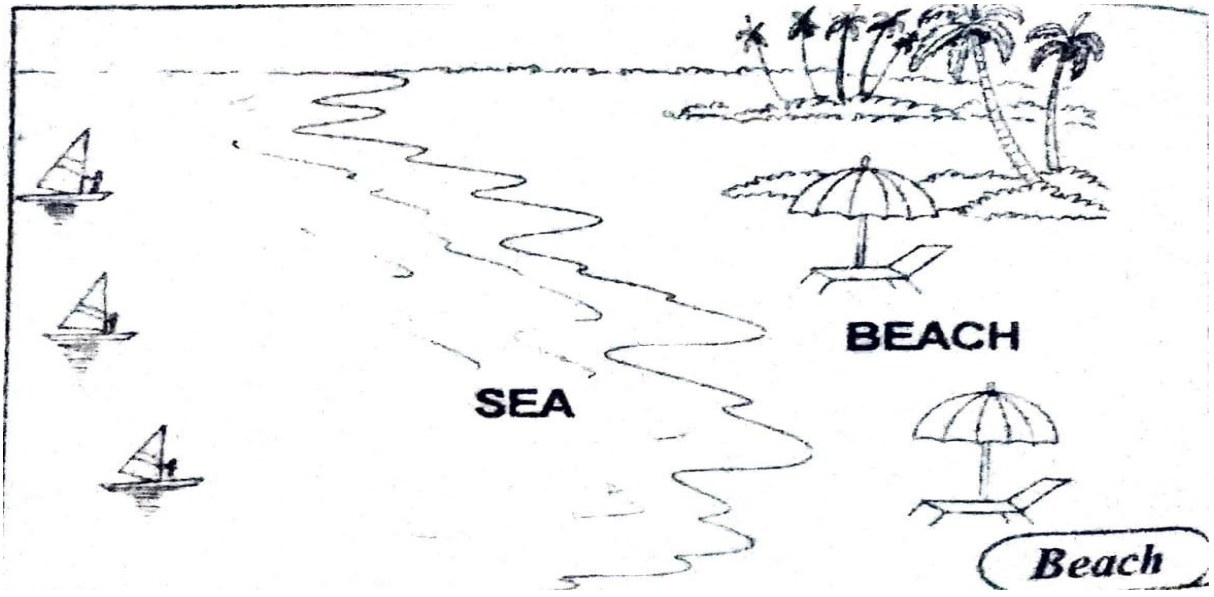
Q.22: Write how sea-waves bring about change in the coasts.

Ans: Sea-waves perform the three-fold activities of erosion, transportation and deposition,thereby affecting the pattern of coastal areas, Continuous action of sea-waves produces certain outstanding features or landforms which are :

(i) Sea-cliff(erosional landform): Sea-cliff has a very steep slope with rugged features and rises vertically above the sea water. These cliffs are formed due to the erosion of coastal solid rocks composed of basalt and granite.

(ii) Beach(depositional landform): Beach is the coastal landform formed due to the depositional activities of sea-waves. It comprises deposits ranging from fine sand particles to small pebbles that have accumulated by the erosional activities of sea-waves and by the sediments transported by streams and rivers.





Besides the above,the disastrous oceanic waves produced by the movement of earth on the sea floor called Tsunami,brings about significant change to coastal landscape. It creates strong waves which approach the coastline with great force, height and tremendous sound. These waves further break through

the coastline and destroy the adjacent coastal areas extensively.

Q.23: Connect by arrows the factors and the features on the basis of their cause- effect relation.

Factor	Feature
River	Flood plain
	Beach
	Inselberg
Wind	Delta
	Sand dune
	Lateral moraine

Factor	Feature
Glacier	Horn
	Sandbar
	V-shaped valley
	Ox-bow lake
Sea-waves	Coast
	U-shaped valley

Ans:

Factor	Feature
River	Floodplain Delta Sandbar Ox-bow lake
Wind	Inselberg Sand dune
Glacier	Lateral moraine Horn V-shaped valley U-shaped valley
Sea-waves	Beach Coast

Q.24: Think and write about the probable changes of the earth's surface in future.
Suggestion: Students should do themselves.

Ans: Do Your Self.

Q.25: Prepare a note on the surface characterstics of your village or town,Draw a sketch of the area and try to show there the major features (river,hill,wetland,plain, etc.)

Ans: Do Your Self.