

NCERT MOST IMPORTANT QUESTIONS CLASS – 11

GEOGRAPHY CHAPTER- 12 WATER (OCEANS)

Question 1.

Differentiate between continental shelf and continental slope.

Answer:

Continental shelf:

- It is an extended margin of each continent occupied by shallow sea, gulfs, etc. It is a submerged part of the land adjoining the coast.
- It is shallow and is about 800m deep with an average gradient 1° or even less.
- Its edges extended upto the depth of 150-200 m. ‘
- It contains the sediments deposited with land its average width is 80km.
- The largest continental shelf is a Siberian shelf in Arctic Ocean which stretches upto 1500 km of width.
- About one-fourth of the petroleum is produced from oil wells on the continental shelves.
- It is important for coastal transport and trade.

Continental slopes:

- It represents the edge of continental block.
- It connects continental shelf and ocean basin.
- The depth varies from 200-300 m.
- Its average gradient is $2-5^\circ$.
- It has a steep slope linking continental shelf and deep sea floor lying at an average depth of 3600 m.
- Canyons are formed here.

Question 2.

Write a short note on variation in salinity.

Answer:

The salinity for normal open ocean ranges between 33% and 37%. In the land locked Red Sea, it is as high as 41%, while in the estuaries and the Arctic, the salinity fluctuates from 0 – 35 %, seasonally. In hot and dry regions, where evaporation is high, the salinity sometimes reaches to 70%. Salinity decreases from 35% – 31% on the western parts of the northern hemisphere because of the influx of melted water from the Arctic region. In the same way, after $15^\circ - 20^\circ$ south, it decreases to 33%.

The average salinity of the Atlantic Ocean is around 36%. The highest salinity is recorded between 15° and 20° latitudes. Maximum salinity (37%) is observed between 20° N and 30° N and 20° W – 60° W. It gradually decreases towards the north. The North Sea, in

spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift. Baltic Sea records low salinity due to influx of river water in large quantity. Highest salinity is found in water bodies as Lake Van in Turkey, Dead Sea, Great Salt Lake.

Question 3.

The average temperature of water on oceans floor keeps on falling from equator to poles systematically. Explain.

Answer:

The average temperature of surface water of the oceans is about 27°C and it gradually decreases from the equator towards the poles. The rate of decrease of temperature with increasing latitude is generally 0.5°C per latitude. The average temperature is around 22°C at 20° latitudes, 14° C at 40° latitudes and 0° C near poles.

The oceans in the northern hemisphere record relatively higher temperature than in the southern hemisphere. The highest temperature is not recorded at the equator but slightly towards north of it.

The average annual temperatures for the northern and southern hemisphere are around 19° C and 16° C respectively. This variation is due to the unequal distribution of land and water in the northern and southern hemispheres.

Question 4.

Explain about horizontal distribution of salinity.

Answer:

Horizontal distribution of salinity:

- The salinity for normal Open Ocean ranges between 33% and 37%. In the land locked Red Sea records higher salinity due to high evaporation.
- Salinity is, however, very low in Black Sea due to enormous fresh water influx by rivers.
- The average salinity of the Indian Ocean is 35 %.
- The low salinity trend is observed in the Bay of Bengal due to influx of river water.
- On the contrary, the Arabian Sea shows higher salinity due to high evaporation and low influx of fresh water.

Question 5.

Explain about vertical distribution of salinity.

Answer:

Vertical distribution of salinity

- Salinity changes with depth, but the way it changes depends upon the location of the sea. Salinity at the surface increases by the loss of water to ice or evaporation, or decreased by the input of fresh waters, such as from the rivers.
- Salinity at depth is very much fixed, because there is no way that water is 'lost', or the salt is 'added.'

- There is a marked difference in the salinity between the surface zones and the deep zones of the oceans. The lower salinity water rests above the higher salinity dense water.
- Salinity, generally, increases with depth and there is a distinct zone called the halocline, where salinity increases sharply.
- Other factors being constant, increasing salinity of seawater causes its density to increase. High salinity seawater, generally, sinks below the lower salinity water. This leads to stratification by salinity.

Question 6.

Explain about vertical distribution of temperature.

Answer:

The temperature structure of oceans over middle and low latitudes can be described as a three-layer system from surface to the bottom.

- The first layer represents the top layer of warm oceanic water and it is about 500 m thick with temperatures ranging between 20° and 25° C. This layer, within the tropical region, is present throughout the year but in mid-latitudes it develops only during summer.
- The second layer called the thermocline layer lies below the first layer and is characterised by rapid decrease in temperature with increasing depth. The thermocline is 500 – 1,000 m thick.
- The third layer is very cold and extends upto the deep ocean floor. In the Arctic and Antarctic circles, the surface water temperatures are close to 0 C and so the temperature change with the depth is very slight.

Question 7.

Explain the features of the deep sea plains, submarine ridges, ocean deeps and seamount.

Answer:

Abyssal plains (the deep sea plains):

- These are the world's flattest and smoothest regions.
- About 40% of the oceanic floor is flat.
- It is formed accumulation of sediments on the sea floor.
- Its depth varies from 3000-6000 m.

Submarine ridges:

- Oceanic floors have submarine narrow and elongated ridges.
- They resemble mountain ridges on the earth surface.
- Peak of these ridges may rise above the sea level to form islands.
- Eg-Philippines Ice land is a mid-Atlantic ridge.

Oceanic deeps of submarine trenches:

- Deep narrow steep sided depression is found along the abyssal plain.

- The depth of these trenches may vary from 6,000 to 11,000 m. Example, Mariana trenches is the deepest trench in Pacific Ocean.
- Trenches are formed as a result of tectonic forces and normally occur along the margins of Pacific Ocean.
- They occur at the base of the continental slopes and along the island area. Normally associated with volcanoes and strong earthquake.
- There are 32 trenches in Pacific Ocean, 19 in Atlantic Ocean and just 6 in Indian Ocean.

Seamount:

- It is the mount with a pointed summit rising from the sea floor but do not reach the surface of ocean. For example
 - Emperor seamount, an extension of Hawaiian islands in Pacific Ocean
 - The tallest seamount between Somalia and New Zealand.
- Seamounts are volcanic in origin and can be 3000 to 4500 m tall.

Question 8.

“Ocean seems to be water body but it has many types of landforms within it”. Justify the statements by giving some examples.

Answer:

The statement is absolutely right. Like the surface of the earth ocean floor is neither level or flat, it is undulating and varying. It comprises of different types of landforms below it. Some of these are:

- Continental shelf: It is an extended margin of each continent occupied by shallow sea, gulfs, etc. It is a submerged part of the land adjoining the coast.
- Continental slopes: It represents the edge of continental block. It connects continental shelf and ocean basin. The depth varies from 200-300 m.
- Abyssal Plains (The Deep Sea Plains): These are the world's flattest and smoothest regions. About 40% of the oceanic floor is flat. It is formed by accumulation of sediments on the sea floor. Its depth varies from 3000-6000m.
- Sub Marine Ridges: Oceanic floors have sub-marine narrow and elongated ridges. They resemble mountain ridges on the earth surface. Peak of these ridges may rise above the sea level to form islands. Eg- Philippines Ice land is a mid-Atlantic ridge.
- Oceanic deeps or sub-marine trenches: Deep narrow steep sided depression found along the abyssal plain. The depth of these trenches may vary from 6,000 to 11,000 m. Example, Mariana trenches is the deepest trench in Pacific Ocean.

Question 9.

Explain hydrological cycle.

Answer:

The hydrological cycle is a conceptual model that describes the storage and movement of water between the biosphere, atmosphere, lithosphere, and the hydrosphere. Water on our planet can be stored in any one of the following major reservoirs: atmosphere, oceans, lakes, rivers, soils, glaciers, snowfields,

and groundwater. Water moves from one reservoir to another by way of processes like evaporation, condensation, precipitation, deposition, runoff, infiltration, sublimation, transpiration, melting, and groundwater flow. The oceans supply most of the evaporated water found in the atmosphere. Of this evaporated water, only 91% of it is returned to the ocean basins by way of precipitation. The remaining 9% is transported to areas over landmasses where climatologically factors induce the formation of precipitation. The resulting imbalance between rates of evaporation and precipitation over land and ocean is corrected by runoff and groundwater flow to the oceans.

Question 10.

Show different types of ocean floors.

Answer:

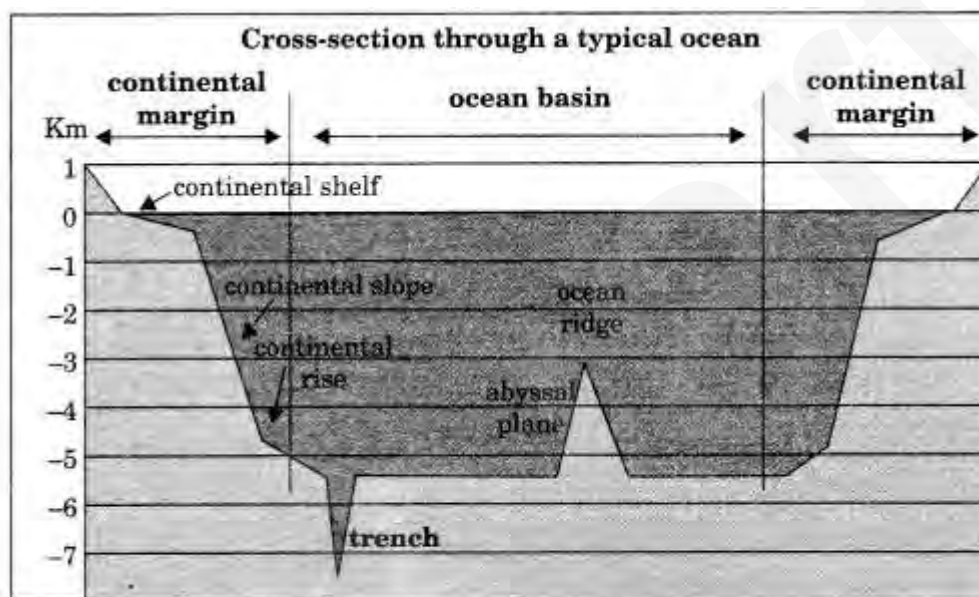


Fig: Types of Ocean Floors.