Hydrosphere

Improve your learning

Q. 1. A. Find the odd one out and give an explanation for your choice.

i) Evaporation ii) Condensation iii) Salination iv) Precipitation

Answer : Salination

Salination is the term used to find the involvement of salt content in water. It is mainly used to determine the salt content in the sea water.

But the evaporation, condensation and precipitation are the stages involved in the water cycle.

Evaporation: Water gets transformed into liquid gaseous form and it gets mixed to the atmosphere. This process is known as evaporation.

Condensation**:** It is the process which involved in bringing back the water to the earth surface which has evaporated to the atmosphere. The water reaches the earth's surface in the form of tiny droplets.

Precipitation**:** it is the mechanism or transportation process in which the condensed water is reached the earth's surface. Main forms of precipitation are drizzling, rain, snow, sleet and hail.

Q. 1. B. Find the odd one out and give an explanation for your choice.

i)Tectonics ii) centrifugal force iii) solar energy iv) precipitation

Answer : Tectonics

Centrifugal force, solar energy, precipitation and effects of wind are factors affecting ocean current. But tectonics is the plates which are on the earth's surface.

• Centrifugal force: Centrifugal force is the outward force on mass when the earth is rotating. It is the force away from the axis, opposite to the direction of the gravity in the equator. It is necessary to keep the masses in a straight line.

• Precipitation: It is the mechanism or transportation process in which the condensed water is reaches the earth's surface. The equatorial areas receive the greatest rainfall hence the sea level is higher. This contributes majorly towards the sea level in the earth.

• Solar Energy: solar energy is the conventional source of energy which increases energy by the way of heating. Heating by solar energy causes the water to expand. And also the evaporation takes place due to solar energy and increases the salt content in the soil.

• Tectonics: The lithosphere is broken into a number of plates which is known as tectonic plates. These plates move slowly because of the movement of molten magma inside the earth's surface.

Q. 2. Correct the false statements.

a. Oceans trenches can be located near the continents
b. Relief features of the oceans are like plains
c. Most salts in the seas are washed into it from the land over centuries
d. The temperature of ocean water remains the same across the globe

Answer : (a) TRUE

These areas are the deepest parts of the oceans. The trenches are relatively steep-sided, narrow basins. They occur at the bases of continental slopes and along island arcs and are associated with active volcanoes and strong earthquakes

(b) True

Ocean relief is largely due to the tectonics, volcanic, erosional and depositional processes and their interactions. The ocean relief is divided into minor and major relief features. Major ocean relief is divided into four parts. They are Continental Shelf, Continental slope, Deep Sea plain and Trenches. Minor ocean relief features are Ridges, hills, seamounts, trenches, island arcs, submerged volcanoes and sea craps.

(c) True

Most of the salt in the ocean water is because of the rainwater discharged from the land. The rainwater is not in the purest form. It contains small portions of salts, particles and nutrients that make it salty. The surface run-off also comprises small amounts of sodium chloride or salts from the minerals thus depositing it in the sea. Since the rate of evaporation is higher in the sea, large amounts of salts are left behind which is again reinforced by the salts from the surface run-off making the sea salty.

(d) False

Ocean water does not always have a unique temperature in the overall globe. But they do not have major changes such as earth surface has, even these minor changes will show a great impact. The temperature of the ocean water varies from 2°C to 29°C. El-Nino and Al-Nino are the effects caused by the changes in the temperature of the

Pacific Ocean. Even the temperature varies inside the ocean water when we go deep inside the ocean temperature falls.

Q. 3. Describe any one impact of ocean currents for the region you live.

Answer : Ocean current is the large masses of surface water movement that takes place in a regular pattern around the ocean. Those flows from the equatorial regions poleward have higher surface temperature and are warm current. Those flow from polar region to equatorial have lower surface temperature and are cold currents.

El-Nino is the ocean current which takes place in the Pacific Ocean. Warming and cooling are the most important in terms of general atmospheric circulation. The warm water of the central Pacific Ocean gradually drifts towards the South American coast and replaces the cool Peruvian current. Such an appearance of warm current in Peru is known as El-Nino. El-Nino is closely related to the pressure that changes in the Central Pacific and Australia.

The change in pressure in Pacific is known as southern oscillation. The combined condition of southern oscillation and El-Nino is known as ENSO. The ENSO cycle brings both changes in global temperature and rainfall. Developing countries mostly bordering the Pacific Ocean that is depending on agriculture and fishing are severely affected by this ocean current.

The changes of El-Nino phenomenon have a major impact on the Southwest monsoon across India. According to the Weather Risk Management Services (WRMS) 60 to 70 per cent of the Indian weather is affected by the El-Nino in the Southwest region. It brings the rainfall in the South West region of India by generating warm current in the Indian Ocean. It also affects the summer of the Indian climate.

Over the Indian subcontinent, EL-Nino during the winter results in the development of the warm condition. During summer, it leads to dry condition and defiant monsoon. India experienced a deficient rainfall during El-Nino years 2002 and 2009 whereas the monsoon was normal during the El-Nino years of 1994 and 1997. In India, 50% of the years with El-Nino is occurred during summer, India experience droughts during monsoon.

Q. 4. Do you think the description of a blue planet is accurate? Describe any one way your activity impacts its oceans.

Answer : The description of the blue planet is accurate for the earth. It is said to be a blue planet because most of the surface is covered with water and hence it makes a blue colour. 71% of the earth's surface is covered with water and only 29% is land. Earth is the fifth largest planet in the solar system and third when compared to the distance from Sun. Earth is the unique planet which supports life for human sustenance. Water is the main reason for the availability of life on earth.

The ocean is the main water body which makes the planet earth blue. There are many human activities which have an adverse effect on the oceans, water bodies and ice glaciers. One such activity which has the most impact on the ocean is global warming. Global warming increases in the earth's temperature due to an increase in human activities. It occurs due to the climate changes that happen in the earth.

The average earth's temperature is increased due to global warming by the greenhouse gases. The greenhouse effect is the absorption and emission of infrared radiation and CFCs gases that are emitted by human beings on the planet.

The atmosphere gets polluted and these gases get trapped in the ozone layer which will increase the temperature of the earth by depleting the ozone layer. The ozone layer is the layer which protects the earth from the harmful rays of the Sun. When the temperature of the earth raises the ice glaciers in the Arctic region and Antartic region starts melting and increases the sea level which is harmful to the earth.

In this way, human activity has an adverse impact on the oceans and earth.