

CSS-2022

Q2)

a) What do you know about volcanoes? Discuss the causes and effects of volcanic eruptions.

Ans) **Formation of Volcano =**

Earth's mantle is full of molten rock known as magma. Magma within the mantle is not uniform ~~to~~ especially in terms of temperature. ~~When~~ When magma gets too hot its pressure increases, and as a result it rises, and if the crust is too thin or has cracks, causes magma to flow outwards in the form of lava. As lava cools over time it forms a volcano.

Types of volcano =

There are several types of volcanoes, namely; Cinder cones, composite volcanoes, shield volcanoes and lava domes. These types are different based on several factors like lava viscosity, geography etc.

Causes of volcanic eruptions =

Movement of the tectonic plates is one of the major causes of volcanic eruptions. Divergent or convergent movement of the tectonic plates causes the earth's crust to crack and as a result lava flows out resulting in an volcanic eruption. Another reason is the magma pressure, as magma heats up it rises and when the ~~magma~~ ^{pressure} gets too much it forces its way up the earth's crust resulting in an eruption.

Effect of Volcanic Eruptions =

Volcanic Eruptions cause ~~all~~ a lot of damaged to the area around it. Firstly, the ash pollutes the air, causing health diseases not just to the people but to the eco-system as well. The ash also pollutes the water, rendering it ~~it~~ useless. Secondly the lava causes damages to human ^{life} and eco-system as well as the infrastructure.

b) Differentiate between renewable and non-renewable sources of energy. Briefly explain wind energy, solar energy and biofuels.

Ans) Non-renewable energy sources =

Non-renewable energy is generated through non-renewable resources that cannot be readily replaced by natural means at a pace quick enough to keep up with consumption. These resources include all the fossile fuels i.e. crude oil, natural gas and coal etc.

Renewable energy =

Renewable energy is generated through renewable energy resources that are naturally replenished ^{by} ~~at~~ natural means. These resources can be utilized over and over again.

Wind Energy

This is a type of ^{renewable} energy that utilizes the wind to generate electricity. Wind turbines turn the wind energy into mechanical energy and then into electrical energy. Wind turbines are placed in windy areas like open fields etc.

Solar energy

This ^{is} another type of renewable energy that utilizes the sun's rays to generate electricity. Solar panels and solar cells turn the heat energy into electrical energy. This is the most easily available/accessible form of energy.

Biofuels

Biofuels are a form of fuel that is created through human-generated waste. For example agricultural waste, industrial waste etc. Biofuels can be divided into different types; Biodiesel, Biogas, BioPetrol. Biofuels are not easily interconvertible into energy mix due to lack of potency, mechanical requirements etc.

c) What is a Tornado? How is it formed and what are the effects of tornadoes? Explain briefly.

Ans) **Definition:**

A tornado is a violently rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud.

Formation =

During a storm, warm air and cold air collide, accompanied by strong wind, the warm air rapidly rises while cold air drops, resulting in spiralling of wind into a funnel shape.

Effects =

Major effects of a tornado are; damage to human life and infrastructure, and destruction of natural eco-system. Strong tornado are capable of destroying houses and buildings, flip cars, unroot trees, blow away animal life and cause pollution in the form of debris etc.

d) Discuss various factors which affect the variations in the climate of a place.

Ans) **Elevation/Altitude affect climate.**

Climate of a place depend on altitude/elevation, meaning as the altitude increase, ~~so does~~ the climatic conditions become colder. The closer one get to sea level the warmer the climate gets.

Prevailing global wind patterns =

The pattern followed wind on a global scale affect the climate of a place. For example, during the monsoon east to west bring along rain clouds and tropical winds. Different wind patterns bring different weather conditions and seasons.

Topography =

Features of land have a significant influence ^{on climate} of a place. Areas near mountains experience colder temperatures while areas near oceans ~~experience~~ experience warmer temperatures.

Vegetation =

Areas with denser vegetation have a more humid climate while areas with thin/lighter vegetation have a dry climate.

Surface of the Earth

Darker areas like forests, fields etc ~~absorb~~ absorb more light and heat, resulting ~~are~~ in a warm and humid climate. Lighter areas like snow capped mountains or the arctic absorb less light, resulting in cold and dry climate