

**ICSE Board**  
**Class IX Geography**  
**Sample Paper – 2 Solution**

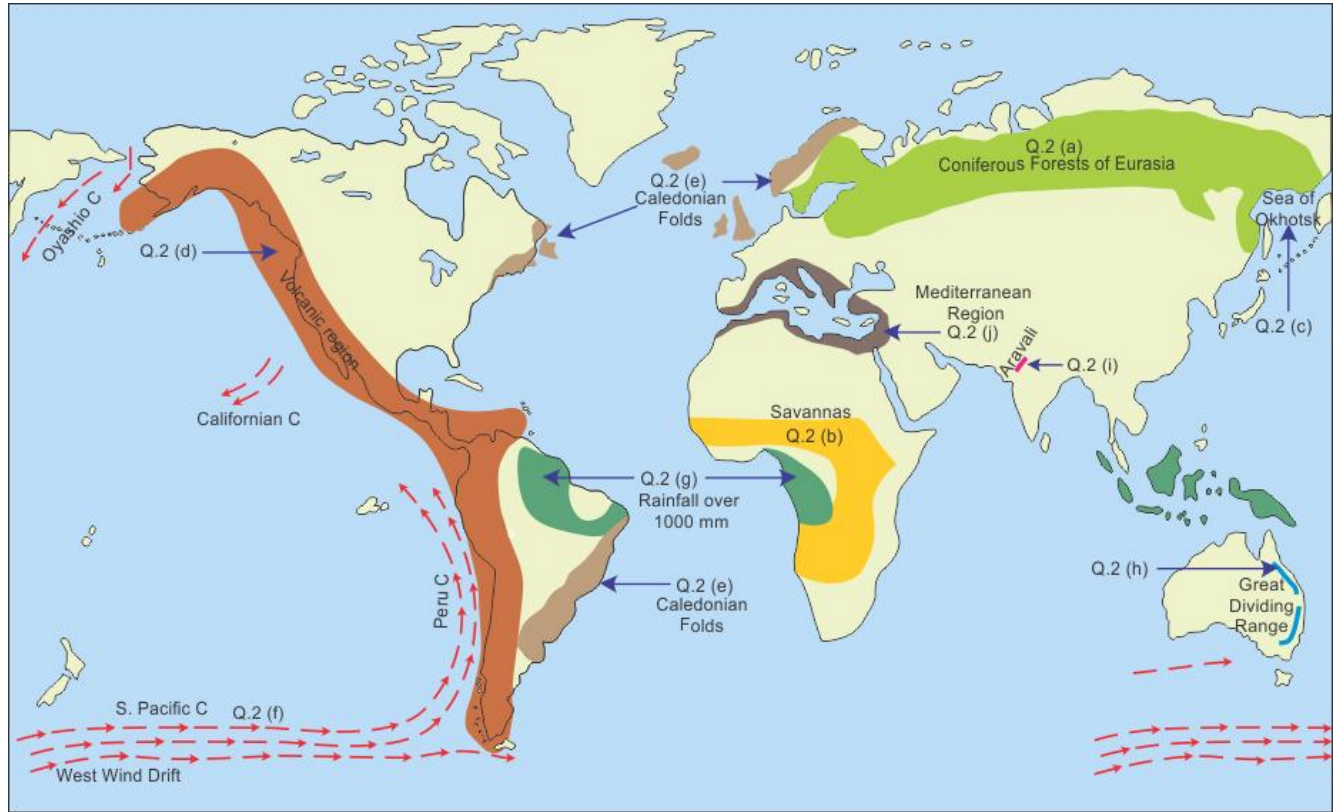
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**PART – I (30 Marks)**

**Answer 1**

- a) The planet Venus is hotter than Mercury, because the atmosphere of Venus is mainly composed of carbon dioxide which traps the sun's heat. It does not allow the sun's rays to escape, making it the hottest planet in our solar system.
- b) Two characteristics of the rotation of the Earth are:
  - The Earth takes 23 hours, 56 minutes and 4.09 seconds to complete one rotation.
  - The speed of the rotation of the Earth decreases towards the poles.
- c) Igneous rocks are also known as primary rocks because of two reasons:
  - Igneous rocks are formed due to the cooling and solidification of lava and thus are directly produced in nature.
  - All the other rocks are formed from igneous rocks.
- d) An earthquake can be defined as tremors or vibrations caused on the surface of the Earth due to internal forces.
- e) Weathering is the gradual wear and tear of rocks on the surface of the earth. Main agents of weathering are temperature, humidity and precipitation.
- f) The Dead Sea has the maximum salinity of 240 per thousand. It has such a high content of salt because it lies in the tropical region which is hot and consequently the rate of evaporation is high.
- g) Only 51% of the insolation reaches the surface of the earth as out of the remaining 49%. 35% of the insolation is directly reflected back into space by the atmosphere and the balance 14% is absorbed by the ozone layer.
- h) Since the earth is spherical in shape, all parts of earth do not receive equal sunlight. As the lower latitudes or the equatorial regions receive maximum sunlight, the temperatures are high. The higher latitudes receive slanting rays of the sun and hence temperatures are low.
- i) Urban commercial wastes are the wastes disposed from households, industries and commercial institutions.
- j) Four types of equipments that are used to control air pollution are:
  - Gravitational Settling Chambers
  - Electrostatic Precipitators
  - Scrubbers
  - Cyclone Separators

**Answer 2**



**PART - II (50 Marks)****Answer 3**

- a) A natural region is a basic geographic unit which is characterised by its natural vegetation, soil structure, wild life and climatic conditions. The physical and biological components of a natural region are generally uniform though some minor variations may occur.
- b) We divide the world into major climatic regions so that we get a simple frame of reference. It is by locating various climatic regions that we are able to observe the similarities and differences between them. For example, while dividing the world into major natural regions, we know that the hot deserts of the world are found on the western margins of the continent.
- c) The three thermal or basic natural regions of the world are:
- i. The Tropical Regions: These regions lie between  $30^{\circ}\text{N}$  and  $30^{\circ}\text{S}$  latitudes. This region includes the Tropical Grasslands, Tropical Deserts, the Equatorial type of climate and the Monsoon type of climate.
  - ii. The Sub tropical Region: These lie between  $30^{\circ}$  and  $45^{\circ}$  latitudes in each hemisphere. These regions include the temperate grasslands, Mediterranean type and the China Type of Climate.
  - iii. The Temperate Regions: These extend between  $45^{\circ}$  and  $60^{\circ}$  latitudes in each hemisphere. This includes the West European type, the Laurentian type and the Temperate Desert.
- d) The local conditions that produce variations in the Mediterranean type of climate are:
- i. Many local winds are produced on account of the indented coast line of the countries located in this region.
  - ii. The temperate cyclones and the Westerlies bring rainfall to the region.
  - iii. At times, the Polar winds are drawn into depressions like Mistral in the Rhone Valley and Bora in the northern Adriatic Sea region. These result in great devastation.
  - iv. The southern winds like Sirocco cause damage to crops.
  - v. Such a weather pattern is also common in Oregon in USA, California, Cape Town in South Africa and central Chile.

**Answer 4**

- a) When quantities of harmful substances like pesticides and insecticides increase in the food chain of marine and aquatic organisms, they are consumed by other living beings. This is known as the process of biomagnification.

For example, in the last few decades, the number of vultures in India has reduced considerably. It was later discovered that cows and other livestock were treated with a veterinary drug known as diclofenac for various diseases. When these animals died, their carcass was eaten by vultures. The presence of diclofenac in the carcass of animals proved hazardous for the vultures and their numbers quickly declined in India.

- b)
- i. When a person is exposed to radioactive pollution, damage may be caused to his or her organs. It may also result in lung cancer, brain cancer, thyroid cancer, sterility and reduced or defective eyesight.
  - ii. As the radioactive wastes cannot be destroyed they remain in our environment for a longer period of time. This leads to discolouring of trees in the forests.
- c) Pathogens are bacteria and viruses that can cause diseases. Most wastes that are disposed off into water, like sewage, human and animal excreta contain pathogens. These pathogens generally enter into the human body from contaminated drinking water and cause many water born diseases like cholera, typhoid, jaundice, hepatitis etc.
- d) Yes, I agree that global warming may lead to droughts. This is true particularly in dry regions. Due to the excessive heat, water will evaporate quickly from the land. Similarly, the rate of transpiration (loss of water from the leaves of the plants) will also increase. Soil in the dry regions with scanty vegetation will lose moisture quickly resulting in droughts.

**Answer 5**

- a)
- i. A sea can be described as a salt water body which is usually located on the margins of the continent.
  - ii. Some major seas in the world are Arctic Sea, Arabian Sea, Sea of Japan, Kara Sea, Red Sea and the Andaman Sea.
- b)
- i. The highest summit on land is Mount Everest with a height of 8,848 meters.
  - ii. The deepest bottom of the ocean is the Mariana trench located at 11,033 meters below sea level in the Pacific Ocean.
- c)
- i. An island is a piece of land that is surrounded by water on all sides.
  - ii. Australia is an island continent.
- d) Any tree characteristics of the Arctic Ocean are:
- i. It is located around in the North Pole and remains frozen during winter.
  - ii. It is connected to the Atlantic Ocean by the eastern and the western Greenland channels and to the Pacific Ocean by the Bering Strait.
  - iii. The Arctic Ocean is not navigable as it is covered with ice for most parts of the year.

**Answer 6**

- a) Three main characteristics of the Earth's core are:
- i. It is the densest part of the Earth. It is divided into the inner and the outer core.
  - ii. The core of the Earth has a diameter of approximately 7000km.
  - iii. It is made up of Nickel (Ni) and iron (Fe) and thus it is also known as NIFE. Due to the high temperature in the core, these metals are found in the molten state.
- b) i. Mantle is also known as the Barysphere. This layer lies between the crust and the core of the Earth.
- ii. Its two main characteristics are:
- The mantle is divided into two parts, upper mantle and the lower mantle. The upper mantle extends from Moho Discontinuity to a depth of about 700 km. The lower mantle extends from about 700 km to 2,900 km.
  - At the depth of 400 km, the mantle is partially molten and hence it is known as asthenosphere.
- i. Asthenosphere found in the mantle at the depth of 100-250 km.
  - ii. It exists in a semi molten (liquid) state.

The Himalayans are the young fold mountains that were formed when the Indo Australian plate collided with the Eurasian plate. This resulted in the compression or folding of the layers of the Earth which in turn resulted into the formation of the Himalayas.

**Answer 7**

a) As the earth rotates from west to east, those places that lie to the east of Greenwich are ahead of places that lie to the west of Greenwich. The earth rotates  $1^\circ$  in four minute. Thus if Lucknow is located to the east of Greenwich at  $82^\circ\text{E}$ , we will multiply 82 by 4 which will be 328 minutes or 5 hrs and 28 minutes. Therefore, time at Lucknow is 5 hrs and 28 minutes ahead of London (since Lucknow is located to the east of Greenwich). So if the time in London is 12: 00 pm, we will add 5 hrs and 28 minutes to it which will be 5: 28 in the evening.

Therefore, it will be 5:28 pm in the evening when it is 12:00 pm in London.

b) There is a difference of four minutes per  $1^\circ$  longitudes. This is because there are  $360^\circ$  of longitudes. The Earth takes 24 hours to complete one rotation or  $360^\circ$  of longitudes. This means that the Earth covers  $15^\circ$  of longitude every hour. Thus, one degree of longitude takes 4 minutes (1 hour = 60 minutes, divided by  $15^\circ$  per hour = 4 minutes per longitude).

c)

i. International Date line is an imaginary line that runs across the surface of the Earth at  $180^\circ$  longitude. Since this longitude is diametrically opposite to that of the Greenwich Meridian, it results in a difference of 24 hours on crossing the line.

ii. In order to avoid the confusion of having different dates (difference of 24 hours result in the changing of date) in the same country, according to the international agreement, the International Date Line has been outlined.

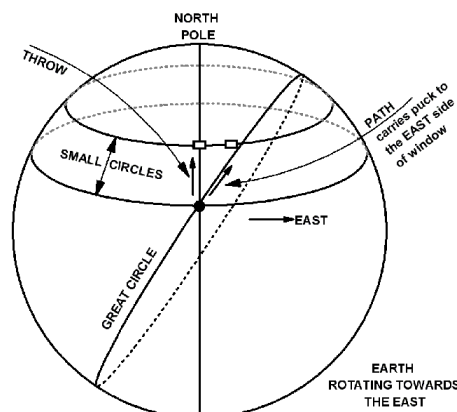
The International Date Line bends and goes zigzag at the Bering Strait between Siberia and Alaska, Fiji, Tonga and in some other islands.

d)

i. A Great Circle is a circle that is drawn on the surface of the Earth in such a way that the centre of the Earth also becomes the centre of a circle.

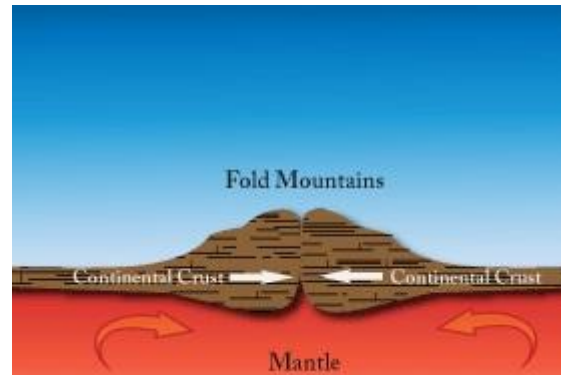
ii. The main characteristics of the Great Circle are:

- A great circle is the largest circle that can be drawn on the surface of the Earth.
- Many Great Circles can be drawn on the surface of the Earth.
- All the Great Circles divide the Earth into two hemispheres.



**Answer 8**

- a) When the two tectonic plates move against each other, the compressional cause forces the crust of the earth to fold. This leads to the bending of the crustal rocks resulting in the formation of fold mountains. Fold mountains are formed in a zone where the crust of the Earth is the weakest.



- b) Two examples of each of the following are:
- Fold Mountains: The Himalayas and the Alps.
  - Block Mountains: The Vosges Mountains and the Black Forest Mountains.
  - Rift Valleys: The East African Rift Valley and the Narmada valley.
- c) According to the theory related to plate tectonics, the outer shell of the Earth is made up of a number of lithospheric plates. Each plate moves slowly in the asthenosphere which is a semi molten sphere existing under the surface of the Earth. Each plate move as a single independent body.
- d) Two chief characteristics of block mountains are:
- Block Mountains have flat tops or slightly sloping surfaces.
  - They have steep slides and they are associated with rift valleys.



**Answer 9**

## a) Uses of Nitrogen:

- i. Nitrogen is essential for the survival of the plant. Since plants cannot directly take in nitrogen from the atmosphere, the bacteria that live in the soil and roots of the plants convert it into a form that can be used by the plants.

## Uses of Carbon dioxide

- ii. Plants prepare their food with the help of carbon dioxide through the process of photosynthesis.

## b)

- i. Ozone is a layer in the stratosphere which extends from 20-50 km from the Earth's surface.
- ii. It absorbs the harmful ultra violet rays of the sun coming towards the surface of the earth. Without the ozone layer, the sun rays may cause skin cancer, cataract etc.

## c)

- i. CFC's are Chlorofluorocarbons. They are chemical substances that are held responsible for the fast depletion of the ozone layer.
- ii. CFC gases are used in aircrafts, air conditioners and refrigerators. The compounds of CFC's after escaping into the atmosphere break down in the stratosphere. They produce chlorine atoms which results in the destruction of the ozone layer.

- d) In a greenhouse, the plants which need protection from the cold and chilling weather are grown. A green house is made of glass which traps the heat of the sun in the house but does not allow the heat to escape back. This increases the temperature within the building. Similarly, the greenhouse effect is experienced on the earth when gases like carbon dioxide trap some part of the sun's heat coming to the surface of the earth and do not allow it to escape back into space. This increases the temperature of the earth. This is known as the greenhouse effect.



**Answer 10**

- a)
- i. Two instruments used for measuring the air pressure are the Fortin's barometer and the Aneroid barometer.
  - ii. While Fortin's barometer uses Mercury to find out the air pressure, the Aneroid barometer does not use any liquid for the same purpose.
- b) The Ferrel's Law states that as a result of the earth's rotation on its axis from west to east, wind or any other moving object in the Northern hemisphere is deflected to the right, and in the Southern hemisphere it is deflected to the left of its original course.
- c)
- i. The wind vane or the weather cock is used to indicate the direction of the wind.
  - ii. This instrument has to be erected in an exposed position to get the correct direction of the wind.
- d) Due to the rotation of the earth on its axis, which is inclined at  $23\frac{1}{2}^{\circ}$ , the heating of the continents, oceans and pressure conditions vary greatly in January and July. On 21 June, when the sun is directly over the Tropic of Cancer, the pressure belts shift  $5^{\circ}$  northwards. When the sun shines vertically over the Tropic of Capricorn on December 22, the pressure belts shift  $5^{\circ}$  south wards from their original position. This shifting of the pressure belts results in the seasonal climatic changes particularly between  $30^{\circ}$  and  $40^{\circ}$  in the Northern and Southern hemisphere.