

Delhi Public School, Jammu
Question Bank
(2017 – 18)

Class: XI

Subject: Geography

Q1 You have already studied geography, history, civics and economics as parts of social studies. Attempt an integration of these disciplines highlighting their interface.

Answer

- **Geography and History:** Geography influences historical events. Spatial distance itself has been a very potent factor to alter the course of history of the world. Spatial depth provided defence to many countries, particularly in the last century. In traditional warfare, countries with large size in area, gain time at the cost of space. Every geographical phenomenon undergoes change through time and can be explained temporally. The changes in landforms, climate, vegetation, economic activities occupations and cultural developments have followed a definite historical course.

- **Geography and Civics:** The core concern of political science is territory, people and sovereignty while political geography is also interested in the study of the state as a spatial unit as well as people and their political behaviour.

- **Geography and Economics:** Economics deals with basic attributes of the economy such as production, distribution, exchange and consumption. Each of these attributes also has spatial aspects and here comes the role of economic geography to study the spatial aspects of production, distribution, exchange and consumption.

Q2 What is the basic difference in the arguments related to the origin of the earth given by:

- (a) Kant and Laplace
- (b) Chamberlain and Moulton

Answer

The Nebular Hypothesis, proposed by Immanuel Kant and later revised by Laplace in 1796 considered that the planets were formed out of a cloud of material associated with a youthful sun, which was slowly rotating while, in 1900, Chamberlain and Moulton considered that a wandering star approached the sun. As a result, a cigar-shaped material separated from the solar surface. As the passing star moved away, the material separated from the sun, continued to revolve around the sun and it slowly condensed into planets.

Q3 What are the effects of propagation of earthquake waves on the rock mass through which they travel?

Answer

The earthquake waves cause vibration in the body of the rocks through which they pass. P-waves vibrate parallel to the direction of the wave. This exerts pressure on the material in the direction of the propagation. As a result, it creates density differences in the material leading to stretching and squeezing of the material. Other three waves vibrate perpendicular to the direction of propagation. The direction of vibrations of S-waves is perpendicular to the wave direction in the vertical plane. Hence, they create troughs and crests in the material through which they pass. Surface waves are considered to be the most damaging waves.

Q4 Name the direct sources of information about the interior of the earth.

Answer

The direct sources of information about the interior of the earth are:

- Mining: It is the process of extracting valuable minerals from the earth. Surface rock or the rocks we get from mining areas provide most easily available solid earth material.
- Drilling: Scientists are working on two major projects such as “Deep Ocean Drilling Project” and “Integrated Ocean Drilling Project”. This and many deep drilling projects have provided large volume of information through the analysis of materials collected at different depths.
- Volcanic eruption: It forms another source of obtaining direct information. As and when the molten material (magma) is thrown onto the surface of the earth, during volcanic eruption it becomes available for laboratory analysis.

Q5 What were the forces suggested by Wegener for the movement of the continents?

Answer

Wegener suggested that the movement responsible for the drifting of the continents was caused by pole-fleeing force and tidal force. The polar-fleeing force relates to the rotation of the earth. The earth is not a perfect sphere; it has a bulge at the equator. This bulge is due to the rotation of the earth. The second force, the tidal force is due to the attraction of the moon and the sun that develops tides in oceanic waters. Wegener believed that these forces would become effective when applied over many million years.

Q6 What relationship explained by rock cycle between the major type of rock?

Answer

Rock cycle is a continuous process through which old rocks are transformed into new ones.

- Igneous rocks are primary rocks and other rocks (sedimentary and metamorphic) form from these primary rocks.
- Igneous rocks can be changed into sedimentary rocks or metamorphic rocks.
- The fragments derived out of igneous and metamorphic rocks form into sedimentary rocks.
- Sedimentary rock can change into metamorphic rock or into igneous rock.
- Metamorphic rock can change into igneous or sedimentary rock.

Q7 Exogenic geomorphic processes derive their ultimate energy from the sun’s heat. Explain.

Answer

The exogenic processes derive their energy from atmosphere determined by the ultimate energy from the sun and also the gradients created by tectonic factors. All the exogenic geomorphic processes are

covered under a general term, denudation. Weathering, mass movements, erosion and transportation are included in denudation.

- Weathering: It is action of elements of weather and climate over earth materials. The components of weather and climate are temperature, pressure, winds, humidity and precipitation. All these components

directly or indirectly derive their energy from the sun.

- Mass Movement: These movements transfer the mass of rock debris down the slopes under the direct influence of gravity. Weathering is not a pre-requisite for a mass movement. However, weathering aids in mass movement.
- Erosion and deposition: Erosion involves acquisition and transportation of rock debris. The erosion and transportation of earth materials are brought about by the wind, running water, glaciers, waves and ground water. Of these, the first three agents are controlled by climatic conditions while climate is decided by the energy of the sun.

Thus, All exogenic geomorphic processes derive their ultimate energy from the sun's heat. However, the gravitational force of earth aids in all exogenic geomorphic processes because gravity makes mobility possible.

Q9 Glacial valleys show up many linear depositional forms. Give their locations and names.

Answer

Glacial valleys show up many linear depositional forms:

- Terminal moraines: formed at the end (toe) of the glaciers.
- Lateral moraines - formed along the sides parallel to the glacial valleys
- Ground moraines - many valley glaciers retreating rapidly leave an irregular sheet of till over their valley floors.
- Eskers - flow over the ground with ice forming its banks.
- Outwash Plains - The plains at the foot of the glacial mountains or beyond the limits of continental ice sheets.
- Drumlins - form beneath heavily loaded ice through fissures in the glacier.

Q10 Describe the composition of the atmosphere.

Answer

The atmosphere is composed of gases, water vapour and dust particles. The given table specifies the constituent of atmosphere with their volume.

Constituent	Formulae	% by Volume
Nitrogen	N ₂	78.08
Oxygen	O ₂	20.95
Argon	Ar	0.93
Carbon-dioxide	CO ₂	0.036
Neon	Ne	0.002
Helium	He	0.0005
Krypton	Kr	0.001
Xenon	Xe	0.0009
Hydrogen	H ₂	0.0005

Nitrogen and Oxygen gases together constitute 99% of the atmosphere. Other gases include are Carbon dioxide, Neon, Helium, Krypto, Xenon and Hydrogen. The proportion of gases changes in the higher layers of the atmosphere in such a way that oxygen will be almost in negligible quantity at the height of

120 km. Similarly, carbon dioxide and water vapour are found only up to 90 km from the surface of the earth.

Carbon dioxide absorbs a part of terrestrial radiation and reflects back some part of it towards the earth's surface. It is largely responsible for the green house effect. Ozone is another important component of the atmosphere which absorbs the ultra-violet rays radiating from the sun and prevents them from reaching the surface of the earth.

Q11 How does the unequal distribution of heat over the planet earth in space and time cause variations in weather and climate?

Answer

The earth receives almost all of its energy from the sun. The earth in turn radiates back to space the energy received from the sun. As a result, the earth neither warms up nor does it get cooled over a period of time. Thus, the amount of heat received by different parts of the earth is not the same. This variation causes pressure differences in the atmosphere. This leads to transfer of heat from one region to the other by winds. Thus, the unequal distribution of heat over the planet earth in space and time cause variations in weather and climate.

Q12 Discuss the factors affecting the speed and direction of wind.

Answer

The speed and direction of the wind is controlled by the combined effects of three forces:

- Pressure Gradient Force: The differences in atmospheric pressure produces a force. The rate of change of pressure with respect to distance is the pressure gradient. The pressure gradient is strong where the isobars are close to each other and is weak where the isobars are apart.
- Frictional Force: It affects the speed of the wind. It is greatest at the surface and its influence generally extends upto an elevation of 1 - 3 km. Over the sea surface the friction is minimal.
- Coriolis Force: The rotation of the earth about its axis affects the direction of the wind. This force is called the Coriolis force after the French physicist who described it in 1844. It deflects the wind to the right direction in the northern hemisphere and to the left in the southern hemisphere.

Q13 Explain the evolution of valley sinks or uvalas.

Answer

Generally, the surface run-off simply goes down swallow and sink holes and flow as underground streams and re-emerge at a distance downstream through a cave opening. When sink holes and dolines join together because of slumping of materials along their margins or due to roof collapse of caves, long, narrow to wide trenches called valley sinks or Uvalas form.

Q14 Make a comparison of the climatic conditions between the "A" and "B" types of climate.

Answer

"A" Type of Climate	"B" Type of Climate
It belongs to tropical climate.	It belongs to sub-tropical climate.

It exist between Tropic of Cancer and Tropic of Capricorn.	These are found in low or mid latitudes in the area of subtropical high where subsidence and inversion of temperature do not produce rainfall
Annual range of temperature is very low and annual rainfall is high.	Very low rainfall that is not adequate for the growth of plants.
The tropical group is divided into three types, namely (i) Af-Tropical wet climate; (ii) Am - Tropical monsoon climate; (iii) Aw- Tropical wet and dry climate.	Dry climates are divided into steppe or semi-arid climate (BS) and desert climate (BW).

Q15 When you move into the ocean what thermal layers would you encounter? Why the temperature varies with depth?

Answer

When we move into the ocean we will encounter three thermal layers. The temperature varies with the depth because the temperature structure of oceans over middle and low latitudes can be described as a three layer system. The first layer is about 500m thick with temperatures ranging between 20° and 25° C. The second layer is 500 -1,000 m thick. The third layer is very cold and extends upto the deep ocean floor

Q16 How are various elements of the hydrological cycle interrelated?

Answer

Water is a cyclic resource. It can be used and re-used. The hydrological cycle, is the circulation of water within the earth’s hydrosphere in different forms i.e. the liquid, solid and the gaseous phases. It also refers to the continuous exchange of water between the oceans, atmosphere, landsurface and subsurface and the organisms. The distribution of water on earth is quite uneven. Many locations have plenty of water while others have very limited quantity. About 71 per cent of the planetary water is found in the oceans. The remaining is held as freshwater in glaciers and icecaps, groundwater sources, lakes, soil moisture, atmosphere, streams and within life. Nearly 59 per cent of the water that falls on land returns to the atmosphere through evaporation from over the oceans as well as from other places. The remainder runs-off on the surface, infiltrates into the ground or a part of it becomes glacier

Q17 How do currents affect the temperature? How does it affect the temperature of coastal areas in the N. W. Europe?

Answer

The currents directly affect the temperature. The temperature varies depending on whether currents are warm or cold:

- Cold currents bring cold water into warm water areas. These currents are usually found on the west coast of the continents in the low and middle latitudes (true in both hemispheres) and on the east coast in the higher latitudes in the Northern Hemisphere
- Warm currents bring warm water into cold water areas and are usually observed on the east coast of continents in the low and middle latitudes (true in both hemispheres). In the northern hemisphere they are found on the west coasts of continents in high latitudes.

In North West Europe, warm currents are present which increase the temperature in coastal areas in the North West Europe.

Q18 How are tides related to navigation?

Answer

Tides help the navigators and fishermen plan their activities. Tidal flows are of great importance in navigation. Tidal heights are very important, especially harbours near rivers and within estuaries having shallow 'bars' at the entrance, which prevent ships and boats from entering into the harbour.

Q19 What are bio-geochemical cycles? Explain how nitrogen is fixed in the atmosphere.

Answer

The balance of the chemical elements is maintained by a cyclic passage through the tissues of plants and animals. The cycle starts by absorbing the chemical elements by the organism and is returned to the air, water and soil through decomposition. These cycles are largely energised by solar insolation. The cyclic movements of chemical elements of the biosphere between the organism and the environment are referred to as biogeochemical cycles. Bio refers to living organisms and geo to rocks, soil, air and water of the earth.

Ninety per cent of fixed nitrogen is biological. The principal source of free nitrogen is the action of soil micro-organisms and associated plant roots on atmospheric nitrogen found in pore spaces of the soil. Nitrogen can also be fixed in the atmosphere by lightning and cosmic radiation. In the oceans, some marine animals can fix it.

Q20 What is an ecological balance? Discuss the important measures needed to prevent ecological imbalances.

Answer

Ecological balance is a state of dynamic equilibrium within a community of organisms in a habitat or ecosystem. It can happen when the diversity of the living organisms remains relatively stable.

Ecological imbalances: Ecological balance may be disturbed due to the introduction of new species, natural hazards or human causes.

The important measures to prevent ecological imbalances are:

- By not interfering in nature.
- By controlling population.
- By reusing and recycling things.
- By using natural resources judiciously.
- Afforestation should be encouraged.

Proper knowledge and management are necessary for protecting and conserving the ecosystems.

Q21 What are the roles played by biodiversity in the shaping of nature?

Answer

Biodiversity has contributed in many ways to the development of human culture and, in turn, human communities have played a major role in shaping the diversity of nature at the genetic, species and

ecological levels. Biodiversity plays the following roles:

- **Ecological Role of Biodiversity:** Species capture and store energy, produce and decompose organic materials, help to cycle water and nutrients throughout the ecosystem, fix atmospheric gases and help regulate the climate. These functions are important for ecosystem function and human survival.
- **Economic Role of Biodiversity:** Biodiversity is seen as a reservoir of resources to be drawn upon for the manufacture of food, pharmaceutical, and cosmetic products.
- **Scientific Role of Biodiversity:** Biodiversity also helps in understanding how life functions and the role of each species in sustaining ecosystems of which we are also a species.

Q22 What are the major factors that are responsible for the loss of biodiversity? What steps are needed to prevent them?

Answer

The major factors that are responsible for the loss of biodiversity are:

- Growth in human population has increased the rate of consumption of natural resources which accelerated the loss of species and habitation in different parts of the world.
- Overexploitation of resources and deforestation.
- Destruction of natural habitats.
- Natural calamities such as earthquakes, floods, volcanic eruptions, forest fires, droughts, etc.
- Pesticides and other pollutants such as hydrocarbons and toxic heavy metals.

The steps which are needed to prevent them are:

- Efforts should be made to preserve the species that are endangered.
- Prevention of extinction requires proper planning and management.
- Varieties of food crops, forage plants, timber trees, livestock, animals and their wild relatives should be preserved.
- Each country should identify habitats of wild relatives and ensure their protection.
- Habitats where species feed, breed, rest and nurse their young should be safeguarded and protected.
- International trade in wild plants and animals be regulated.

Q23 Why does tropical cyclone originate over the seas? In which part of the tropical cyclone do torrential rains and high velocity winds blow and why?

Answer

Tropical cyclones originate and intensify over warm tropical oceans. The conditions favourable for the formation and intensification of tropical storms are:

- (i) Large sea surface with temperature higher than 27° C.
- (ii) Presence of the Coriolis force.
- (iii) Small variations in the vertical wind speed.
- (iv) A pre-existing weak low-pressure area or low-level-cyclonic circulation.
- (v) Upper divergence above the sea level system.

The torrential rains and high velocity winds, occur in the region of the 'eye-wall'. The eye is a region of calm with subsiding air. Around the eye is the eye wall, where there is a strong spiralling ascent of air to greater height reaching the tropopause. The wind reaches maximum velocity in this region, reaching as high as 250 km per hour.

Q24 What are mass movements that are real rapid and perceptible? List.

Answer

Mass movements transfer the mass of rock debris down the slopes under the direct influence of gravity. No geomorphic agent like running water, glaciers, wind, waves and currents participate in the process of mass movements.

The mass movements that are real rapid and perceptible are:

- Earth flow
- Mud flow
- Landslide

Q25 Briefly explain the indirect sources of information of the interior of the earth other than those of seismic activity.

Answer

The indirect sources of information of the interior of the earth are:

- Temperature, Pressure and Density: These increase with the increasing distance from the surface towards the interior in deeper depths.

The rate of change of Temperature, pressure and density are known. Knowing the total thickness of the earth, scientists have estimated the values of temperature, pressure and the density of materials at different depths.

- Meteors: These are not from the interior of the earth but the material and the structure observed in the meteors are similar to that of the earth. This makes them another source of information about the interior of the earth.

- Gravitation force: It is greater near the poles and less at the equator. The gravity values also differ according to the mass of material. The uneven distribution of mass of material within the earth influences this value.

- Magnetic Field: Magnetic surveys also provide information about the distribution of magnetic materials in the crustal portion, and thus, provide information about the distribution of materials in this part.