Natural Resources

Periodic Test

Q.1. Name three parameters that decide which type of plants will thrive on that soil.

Answer: Plants require nutrients, gases (carbon di oxide) and water for their growth.

Nutrients and water are two factors that plants receive from soil. Gases are exchanged via air with the help of stomata. Other than that, presence of fertile upper layer HUMUS and depth of soil are some parameters that decide which type of plants will survive on it.

Q.2. What causes global warming?

Answer: Global warming in simpler terms, is increase in the overall temperature of Globe. When we talk about global level, even a 1-degree temperature increase can cause adverse effect on the environment. Main reason behind global warming is the increase in the greenhouse gases which are, carbon-di-oxide, methane etc. Due to their accumulation, solar heat reaching earth is unable to escape and gets trapped within the surroundings leading to overall increase in the global temperature and ultimately causing global warming.

Q.3. What are the different states in which water can be found during the water cycle?

Answer: Evaporation of water from water bodies, condensation of these water vapours in the form of clouds and then returning back to earth in the form of water droplets (rain) are the basic steps of water cycle. Within this cycle water can be found as

- Liquid in oceans, rivers and other water bodies.
- In form of vapours in the clouds and in air also.
- Solid in the form of snow at high altitudes.
- Water droplets at the period of rain fall.

Q.4. Name two biologically important compounds that contain both oxygen and nitrogen.

Answer: DNA (Deoxy ribonucleic acid) and RNA (Ribonucleic acid) are two biologically important compounds that contain both oxygen and nitrogen. Oxygen is present in pentose sugar (Ribose in case of RNA and Deoxy ribose in case of DNA) and nitrogen is present in nitrogenous bases (purines and pyrimidine).

Q.5. How is our atmosphere different from the atmosphere on Venus and Mars?

Answer: Atmosphere is created by mixture of gases and water vapours around the planet that makes it habitable. On earth, the oxygen percentage is mainly responsible for the habitable atmosphere. Presence of water and water vapours is another factor that makes earth habitable. These factors prevent the sudden temperature and climate changes which would have been there due to outer space effects and rotation and revolution of earth. Without them, earth would have existed but not as a life supporting planet. However, these factors have still not been found on Venus and Mars which makes them inhabitable planets for now.

Q.6. Give Reason for the following:

Why do organisms need water?

Answer: Every living organism has certain metabolic processes occurring inside the cells. Processes like metabolites transportation, cell turgidity, membrane viscosity etc are some life supporting processes which are mediated by water. If water will not be there, these processes will not occur and cells will die.

Q.7. Give Reason for the following:

Why is the atmosphere essential for life?

Answer: every living organism's life is supported by certain environmental factors like air, water, wind, climate temperature, gravity etc. and in order to maintain these factors we need an atmosphere. E.g. – due to no atmosphere the temperature on moon varies between -190 to 110 degree Celsius, this variable cannot be tolerated by any kind of living organism. Hence atmosphere is essential for survival.

Q.8. Give Reason for the following:

Why is it said that nitrogen is very important for us?

Answer: Firstly, nitrogen is required by plants for their growth and preparation of food and we derive products from them, so it becomes important for us. Other factor is, most of our metabolic and biological compounds like DNA, RNA and proteins contains nitrogen hence, it becomes an essential part of our life. Also, some vitamins, alkaloids and urea contain nitrogen.

Q.9. Give Reason for the following:

Oxygen is considered vital for all living organisms. But it is considered dangerous also in few cases. Why is it so?

Answer: The air we inhale or live in contains 21% of oxygen. If this percentage is increased it could lead to the formation of oxygen free radicals which are a highly reactive form of oxygen. Inside a living system these free radicals can lead to membrane disintegration, protein breakdown, slower exchange rate of gases, chest pain and many more lethal issues. In bacteria nitrogen fixation occurs anaerobically and elemental oxygen can be poisonous for them.

Q.10. Give Reason for the following:

Why decomposers are considered as an important part of biogeochemical cycles?

Answer: Any biogeochemical cycle has certain basic components, like producers, decomposers etc.

Producers are required because they convert simple form of molecules to complex form while decomposers decompose these complex molecules into simpler ones again. In nature, molecules exist in simpler form and the complex form is unstable. Hence for this process, decomposers plays and important part of every biogeochemical cycle.

Q.11. Differentiate between afforestation and deforestation.

Answer:

Afforestation	Deforestation
It is process of planting of trees in an area where they were earlier present or in a barren land.	It is the cutting of trees in an area, which could be a forest, a garden, a plot etc.
Leads to healthier environment and increased oxygen content.	Leads to an unhealthier environment with less greenery and increased harmful gases.
Increases the soil moisture and prevents soil erosion.	Leads to decreased soil moisture, makes it barren and exposed to erosion.
Helps in maintaining nature balance and ecological niches of animals and other organisms.	It destroys the niches and disrupts ecological balance.

Q.12. Differentiate between nitrification and de-nitrification.

Answer:

Nitrification	De-nitrification
The process of conversion of ammonia into nitrates and nitrites is called nitrification.	The process of conversion of nitrates and nitrites into atmospheric nitrogen (N_2) is called de-nitrification.
This process is done mostly by nitrifying bacteria under aerobic conditions.	This is done by the help of de-nitrifying bacteria under anaerobic conditions.
Precursor in this process is ammonia while end product is nitrates and nitrites.	Here the precursor are nitrates and nitrites while the end product is atmospheric nitrogen.
This process is useful to plants for nitrogen fixation because they cannot absorb free nitrogen from the atmosphere.	This process has its application in waste water treatment plants and is beneficial for aquatic life.
Nitrobacter, Nitrosomonas are some examples of nitrifying bacteria.	***Pseudomonas, Thiobacillus*** are some examples of de-nitrifying bacteria.

Q.13. Differentiate between renewable and non-renewable natural resources.

Answer:

Renewable resources	Non- renewable resources
Resources which can be renewed or can be reused are renewable resources.	Resources which cannot be renewed or reused once utilized are called non-renewable resources.
These include components like air, water, wind, sunlight etc.	These include components like fossil fuels, LPG gases.
They are sustainable resources.	They are exhaustible resources.
Their rate of renewal is greater than the rate of getting exhausted.	Their rate of renewal is slower than the rate of getting exhausted.
They are mostly environmental friendly and does not cause pollution.	They are the main cause of pollution.

Q.14. Differentiate between biodegradable and non-biodegradable resources.

Answer:

Biodegradable resources	Non-biodegradable resources
The resources which can be degraded by natural processes are called biodegradable resources.	Resources which cannot be degraded by biological and natural process are called non-biodegradable resources.
These include resources like paper, dead bodies, plant waste like leaves twigs etc.	These include resources like plastic, rubber, DDT, chemicals, radioactive wastes etc.
They do not get accumulated in the environment and are easily degraded by microbes.	They get accumulated in the environment and causes problems like eutrophication and disruption of food chain.
Most of these resources are natural.	All of these are man-made resources.
Their recycling is very cheap, fast and occurs naturally in the environment.	Their recycling is very expensive, time consuming and may lead to formation of toxic substances.

Q.15 A. How are clouds formed?

Answer: When water evaporates from water bodies, it gets converted into its lightest physical state called water vapours. These water vapours float in the air and meanwhile due to atmospheric pressure, they keep on moving to a higher altitude. Due to this, at higher altitudes atmospheric pressure decreases and these vapours along with some dust and air gets condensed into clouds. Clouds attain some electric charge also, due to which when 2 clouds strike thundering occurs.

Q.15 B. What causes wind?

Answer: The wind we feel is nothing but the flowing air due to a very simple but important phenomenon called “convection currents”. When air above the land gets heated during daytime it becomes light in weight and starts moving up and an area of low pressure is created.

We know that air moves from an area of high pressure to an area of low pressure, so the air from over the sea which is at high pressure moves towards the land, while at night opposite occurs.

So, during day air flows from sea to land while at night air flows from land to sea.

Q.16. How is soil formed?

Answer: Soil forms the upper most part of the earth surface called “crust”. Formation of soil is a very complex and time-consuming process which involves a number of factors.

Basically, breakdown of rocks with time leads to the formation of soil and this process is called “Weathering” of rocks.

For this breaking down of rocks a number of factors are needed like,

● **Sun: -** During daytime sun heats up the rocks due to which a little bit expansion of rocks occurs. At night when temperature falls rocks tend to contract, due to this simultaneous and subsequent heating and cooling cracks are formed inside the rocks. This phenomenon can be easily observes at hilly areas during rainy season. After the rain when sun emerges it heats up the wet and cool mountains but they tend to resist due to which breaking of mountains occur.

● **Water: -** Water is another factor that helps in soil formation. Water fills up the cracks developed due to heating and cooling of rocks and at causes the cracks to widen up more.

Also, water takes away the smaller rocks and cause them to grind over one another ultimately causing them to break.

● **Wind: -** wind also works the same way by taking away the sand from one place to another.

● **Living organism: -** Some living organisms like lichens are the pioneer community i.e. they colonize the rocks first as the first living organism and they secrete certain acids when they grow on these rocks. Due to this secretion rocks becomes weak and breaks down easily. Roots of bigger trees can penetrate these rocks and can help in their breakdown. Along with them, another microorganisms and mosses help in weathering of rocks.

Q.17. What is soil erosion? What are the methods of preventing or reducing soil erosion?

Answer: Soil erosion is the removal of the top most fertile layer of the soil. Due to factors like floods, heavy blowing winds the topmost fertile layer is removed and the land left becomes barren.

In order to prevent this,

1) Plant more and more tress. Roots of trees tend to bind the soil along with them and doesn’t allow its runoff.

2) Growth of grasses, herbs, shrubs, and smaller plants like bryophytes helps in prevention of soil erosion since their roots are present only in the upper layer.

3) At hilly areas, for farming step farming should be done so that even if water erodes soil from top step, it gets trapped at the subsequently created steps.

Q.18 A. What are the two forms of oxygen found in the atmosphere?

Answer: Oxygen found in the atmosphere exist in 2 forms,

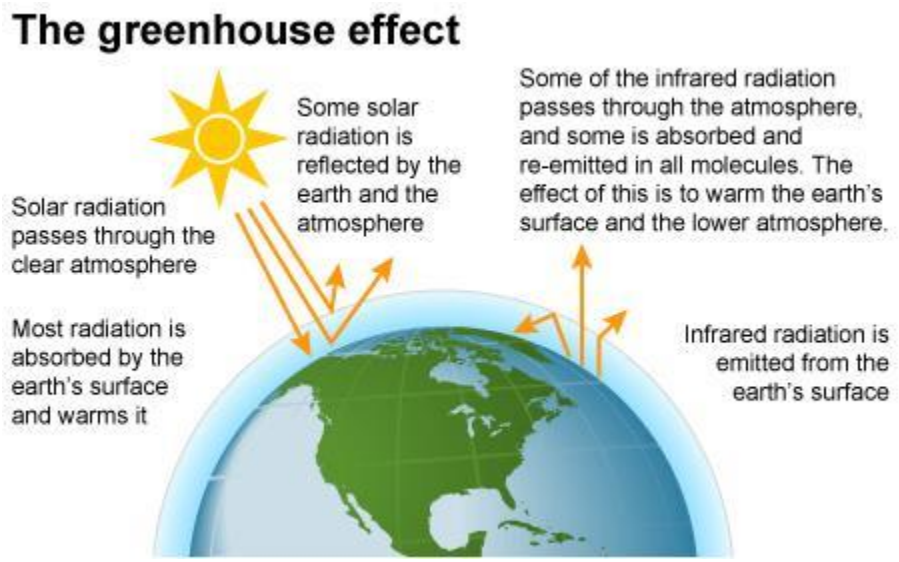
1) Elemental: - this form of oxygen exists as di-oxygen molecule or O_2. It forms 21% of the total air present on the earth. This form is present in the lower part of atmosphere where we live, it is non-poisonous and we inhale this form only. Plants also consume this form of oxygen.

2) Ozone: - this form of oxygen is formed by the combination of 3 oxygen molecule, O_3. It is present in the stratosphere region of earth's atmosphere and forms a protective layer around earth to protect us from the harmful U.V radiations coming from the sun. It is toxic and highly unstable, in the stratosphere also it keeps on breaking and forming in the presence of sunlight.

O_2 + O ⟶ O_3
(Elemental Oxygen) (ozone)

Q.18 B. What is greenhouse effect?

Answer: The greenhouse effect is a process in which the temperature of the Earth's surface increases. When the Sun's energy reaches the Earth's atmosphere, some of it is reflected back to space and the rest is absorbed and re-radiated by greenhouse gases, like carbon dioxide, methane, nitrous oxide, ozone etc. In short, it is explained in the diagram:



Q.19. Why is the atmosphere essential for life?

Answer: If we talk about the outer space, the temperature conditions are highly variable. At those conditions any biotic component or an organism cannot survive. Atmosphere of a planet acts as a barrier against these conditions.

1) It maintains a range of temperature at which organisms can survive.

2) It maintains other factors like steady state of components like water, specific percentage of gases, gravity.

3) Prevents us from the harmful U.V radiations coming from sun.

4) Maintains surface components like soil which are essential for survival.

Q.20. How forests influence the quality of our air, soil and water resources? Explain.

Answer: Forests covers around 18-19% of earth's surface. They help in improving our air, soil and water quality by,

● Plants intake carbon-di-oxide and release oxygen.

● They help in bringing rain since a large amount of water is released from plants during transpiration.

● After oceans forests are the largest carbon reserves.

● They help in preventing soil erosion by holding the soil firm.

● They provide shelter to animals and microorganisms.

● They help in maintaining water purity, since some plants have ability to purify water.

● Increases the soil moisture content making it habitable for microorganisms and ultimately microorganisms increase the soil fertility.

Q.21. What is the major source of freshwater in the city/town/village where you live? Do you know of any activity which may be polluting this water source?

Answer: Ground water is the major source of fresh water in my city, but from past few years due to anthropogenic activities it is getting polluted.

Waste is being dumped on wastelands in my area due to this activity with time, when the waste gets decomposed, waste material is mixed within the soil and the harmful chemicals also get mixed. With time these chemicals move further in the ground and ultimately gets leached into the water table polluting ground water.

Q.22. List any three human activities that you think would lead to air pollution.

Answer: Air pollution is the increase in the harmful substance in air like carbon-di-oxide, carbon mono oxide etc. it is caused due to,

1) Gaseous emissions from vehicles releases carbon-di-oxide and carbon mono oxide in the air which are highly toxic.

2) Smoke coming out from factories and industries also releases more toxic gases into the air making it highly toxic.

3) In villages and other backward areas, still wood and cow dung are burnt as a source of fuel which pollutes air.

Q.23. Name the various forms of carbon found on the Earth. How the carbon cycle may get disrupted?

Answer: On earth oceans are the largest reserves of carbon, after oceans forests are the second largest reserves.

● Carbon can be found in its combined form as gas, CO_2.

● Elemental state of carbon is in form of compounds like diamond and graphite.

● All life supporting molecules like, proteins, fats, nucleic acids etc. are made of carbon.

● Process of photosynthesis i.e. formation of complex sugars from carbon di oxide and water in the presence of sunlight cannot be completed without carbon.

● Carbon is present in soil as minerals, it forms the exoskeleton of a number of organisms.

● Carbonates, coral reefs, animal shells everything inside oceans consists carbon.

Comprehensive Exercises (MCQ)

Q.1. Which of the following is not a greenhouse gas?

A. CO_2

B. N_2O

C. CH_4

D. O_2

Answer: Greenhouse gases are those which tend to trap the heat coming from sun by absorbing the infrared radiations and doesn't allow it to escape called greenhouse effect, ultimately leading to increase in the global temperature. Except oxygen all other gases has the potential to create the greenhouse effect.

Q.2. Which parts/belongings of animals are particularly susceptible to temperature changes?

A. Eggs and larvae

B. Eggs and feathers

C. Eggs and hair

D. Eggs and skin

Answer: Temperature variations affects the life cycles of animals. Every animal has a fixed period of reproduction, some reproduce during summers while some during winter. Since, only eggs and larvae forms the components of reproductive cycle, hence A is the correct option.

Q.3. Which of the following is the major factor in deciding soil structure?

A. Particle size

B. Humus

C. Water table

D. Moisture content

Answer: Structure of soil depends upon the particle size, or the size of soil particles. Depending upon the size of soil particle other properties like their arrangements, pore size, aggregation, water retention, air flow and water movement varies. Hence size of particles classifies a specific type of soil.

All other factors comes into play after this only.

Q.4. The factor which decides the type of soil is

A. Amount of humus

B. Amount of moisture

C. Average size of particles

D. Microscopic organisms

Answer: Structure of soil depends upon the particle size, or the size of soil particles. Depending upon the size of soil particle other properties like their arrangements, pore size, aggregation, water retention, air flow and water movement varies. Hence size of particles classifies a specific type of soil.

All other factors come into play after this only.

Q.5. The large-scale deforestation that is happening all over the world is causing:

A. Loss of biodiversity

B. Soil erosion

C. Global warming

D. All of these

Answer: Deforestation is the cutting/removal of trees either naturally or by anthropogenic activities. Since roots of trees holds soil firm, in their absence soil is vulnerable to erosion by any calamity or human influence.

Plants evolve oxygen by the intake of greenhouse gases like carbon-di-oxide, hence when trees are cut greenhouse gasses increases and cause global warming.

Also, forests are the house of biodiversity since they support them by providing everything they need naturally. Hence deforestation is the main reason behind all of them.

Q.6. Which type of soil is more likely to be removed very quickly?

A. The soil having a vegetative cover

B. Topsoil that is base of vegetation

C. The soil covered with grass

D. All of these

Answer: Roots of plants and trees hold soil firm and without them soil is exposed to any kind of calamity whether natural or man-made.

Q.7. Name an important factor that decides biodiversity in a particular area:

A. The quality of topsoil

B. The quantity of topsoil

C. The quality of groundwater

D. The quantity of groundwater

Answer: A teaspoon of topsoil typically contains a vast range of different species and up to 6 billion microorganisms. Soil contains a large variety of organisms which interact and contribute too many global cycles, including the carbon and nitrogen cycles.

Q.8. Carbon containing molecules present in all life forms includes:

A. Carbon dioxide, carbonates and hydrogen carbonates

B. Nucleic acids, carbon dioxide, carbonates and hydrogen carbonates

C. Proteins, carbohydrates, fats, nucleic acids and vitamins

D. Hormones, carbohydrates, carbonates and hydrogen carbonates

Answer: Being an organic molecule, carbon acts as a key element of nucleic acids. Carbon atoms appear in the sugar of the nucleic acid backbone, and the nitrogenous bases. Carbon dioxide consists of a carbon atom covalently double bonded to two oxygen atoms. Carbon dioxide is soluble in water, in which it readily and reversibly

converts to carbonic acid. The conjugate bases of a carbonic acid are known as the bicarbonate and carbonate ions.

Q.9. In nature, carbon is found in elemental forms as:

A. Carbon dioxide and carbonates

B. Diamond and graphite

C. Hydrogen carbonates and graphite

D. Carbon dioxide and graphite

Answer: There are natural and synthetic diamonds. The Earth makes natural diamonds, and people make synthetic diamonds. Diamonds are the hardest natural substance known to man. Diamonds are made of pure carbon, the same chemical element as graphite. Natural graphite occurs in three distinct forms in the nature - crystalline, amorphous, and lump graphite.

Q.10. The endoskeletons and exoskeletons of various animals are also formed from:

A. Carbonate salts

B. Sulphate salts

C. Nitrate salts

D. Chloride salts

Answer: The carbon compound which forms the endoskeleton and exoskeleton of animals is calcium carbonate. Seashells are the exoskeletons of mollusks such as snails, clams, oysters and many others. Such shells have three distinct layers and are composed mostly of calcium carbonate with only a small quantity of protein--no more than 2 percent.

Q.11. The nitrogen molecules present in air can be converted into nitrates and nitrites by:

A. A biological process of nitrogen fixing bacteria present in soil

B. A biological process of carbon fixing factor present in soil

C. Any of the industries manufacturing nitrogenous compounds

D. The plants used as cereal crops in field

Answer: Nitrifying bacteria in the soil convert ammonia into nitrite (NO_2-) and then into nitrate (NO_3-). This process is called nitrification. Compounds such as nitrate, nitrite,

ammonia and ammonium can be taken up from soils by plants and then used in the formation of proteins.

Q.12. One of the following processes is not a step involved in the water cycle operating in nature:

A. Evaporation

B. Transpiration

C. precipitation

D. Photosynthesis

Answer: Since all of the mentioned options involve the steps in which water is either evaporated in the form of water vapours, condensed as clouds and precipitates down in the form of rain.

But photosynthesis is a completely different process in which complex sugars are formed by plants with the help of carbon-di-oxide and water in the presence of sunlight. So, it doesn't contribute to the process of water cycle.

Q.13. The term "water pollution" can be defined in several ways. Which of the following statements does not give the correct definition?

A. The addition of undesirable substances to water bodies

B. The removal of desirable substances from water bodies

C. A change in pressure of the water bodies

D. A change in temperature of the water bodies

Answer: Pollution in simpler words is any activity that can result in harmful consequences or can cause disruption in the normal environmental conditions. Whether it is addition of undesirable substance or removal of desirable ones, harmful substances are getting accumulated in either way. Also change in temperature of water bodies can also adversely affects the plants growing in the bodies and indirectly affecting the animal life and disrupting the food chain. However, pressure in the water bodies varies naturally as me moves more closer towards the base of sea, so it doesn't affect the conditions much.

Q.14. Soil erosion can be prevented by:

A. Raising forests

B. Deforestation

C. Excessive use of fertilizer

D. Overgrazing by animals

Answer: Roots of trees holds the soil tight and firm and thus prevents it from getting eroded by any natural or man-made calamity.

However, deforestation and overgrazing both leads to removal of plants hence they increase the erosion of soil. Excessive use of fertilizers makes soil barren and plants will no longer grow on it, ultimately leading to soil erosion.

Q.15. What happens when rain falls on soil without vegetation cover?

A. Rainwater percolates in soil efficiently

B. Rainwater causes loss of surface soil

C. Rainwater leads to fertility of the soil

D. Rainwater does not cause any change in soil

Answer: Soil without vegetation cover is like a body without immune system. Any natural or man-made activity can easily drain away the topmost region of soil thus making a barren land. Same is the case here, rain will take away most of the soil along with it thus causing soil erosion.

Q.16. Oxygen is harmful for:

A. Ferns

B. Nitrogen fixing bacteria

C. Chara

D. Mango tree

Answer: Nitrogen fixing bacteria are prokaryotic organisms. Their property of nitrogen fixation depends upon a specific protein they possess called “leg-hemoglobin”. Under the influence of oxygen this protein is altered and nitrogen fixing ability is gone. All other are eukaryotic organism and oxygen is not harmful for them.

Q.17. The atmosphere of the earth is heated by radiations which are mainly:

A. Radiated by the sun

B. Re-radiated by land

C. Re-radiated by water

D. Re-radiated by land and water

Answer: Earth’s surface gets heated by the energy received from sun in short wave form, then earth itself becomes a radiating body and start radiating heat in long wave forms. This energy heats up the atmosphere from below and phenomenon is called “terrestrial radiation”.

Q.18. If there were no atmosphere around the earth, the temperature of the earth will:

A. Increase

B. Go on decreasing

C. Increase during day and decrease during night

D. Be unaffected

Answer: This is because in space there are no gases to trap heat or to maintain a particular temperature by stopping the harmful radiations of sun. So if no atmosphere would have been there on earth, region where sunlight was going to fall would have been heated to more than 100 degree Celsius while region away from sun would have cooled down to -90 degree Celsius.

Q.19. Major source of mineral in soil is the:

A. Parent rock from which soil is formed

B. Plants

C. Animals

D. Bacteria

Answer: Since we know soil is formed by a process called "weathering of rocks", I.e. breakdown of rocks occur and soil is fomed. So the minerals present in the rocks, would also be present in the soil formed from it. While other factors like bacteria, plants and bacteria helps in soil formation by helping in brekaing down the rocks.

Q.20. Total earth's surface covered by water is:

A. 75%

B. 60%

C. 85%

D. 50%

Answer: Total earth surface under water is around 75% which includes all our water bodies I.e oceans, rivers, ponds, lakes etc. Out of this 75%, 95% of earths total water is present in oceans and only 1% is potable water/fresh water.

Q.21. Topsoil contains the following:

A. Humus and living organisms only

B. Humus and soil particles only

C. Humus, living organisms and plants

D. Humus, living organisms and soil particles

Answer: This is because, humus is nothing but the topmost fertile layer. This layer is fertile because it has all the nutrients required for the growth of plants, also microorganisms are also present in this layer because it is more airy as compared to the soil layers below. Since it is the fertile layer, plants are also found in it and the dead decay of plants is received by top layer only leading to the formation of more humus.

Q.22. Choose the correct sequences:

A. CO_2 in atmosphere → decomposers → organic carbon in animals → organic carbon in plants

B. CO_2 in atmosphere → organic carbon in plants → organic carbon in animals → inorganic carbon in soil

C. Inorganic carbonates in water → organic carbon in plants → organic carbon in animals → scavengers

D. Organic carbon in animals → decomposers → CO_2 in atmosphere → organic carbon in plants

Answer: This is due the fact that, plants have the ability to use atmospheric carbon do oxide and convert it into organic compounds by the help of process called "photosynthesis". Now these organic forms of carbon I.e. sugars are stored by plants which are then consumed by animals. As animals die, their bodies are decomposed by the scavengers and the organic carbon returns to the environment in inorganic form.

Inorganic carbonates cannot be used by plants and thus can't be processed. Decomposers cannot feed on the combined form of CO_2 present in the atmosphere

Q.23. The process of nitrogen-fixation by bacteria does not take place in the presence of:

A. Molecular form of hydrogen

B. Elemental form of oxygen

C. Water

D. Elemental form of nitrogen

Answer: Nitrogen fixation is done by nitrogen fixing bacteria. these bacteria possess this property because of the presence of an enzyme called " Nitrogenase". Nitrogenase activity is dropped down in the presence of oxygen because of alterations in its structure and thus nitrogen fixation occurs anaerobically.

Q.24. Rainfall patterns depend on:

A. The underground water table

B. The number of water bodies in an area

C. The density pattern of human population in an area

D. The prevailing season in an area

Answer: This is because amount of rainfall depends upon the amount of evaporation occurred in a specific area. More water bodies means more evaporation and more evaporation means more precipitation. Water table and population density pattern do have some effect on the precipitation but it is considered as negligible.

Q.25. Among the given options, which one is not correct for the use of large amount of fertilizers and pesticides?

A. They are eco-friendly

B. They turn the fields barren after sometime

C. They adversally affect the useful component from the soil

D. They destroy the soil fertility

Answer: Fertilizers are basically chemical compounds. Because of their addition, soil fertility may get increased for a short time period, but in a long run they make the land barren. Due to their addition the pH of soil becomes unfavorable for the Microorganisms and they die. No Microorganisms means no nitrogen fixation and we will need to add more fertilizers and successive use makes the soil unfertile and barren.

Q.26. Growth of Lichens on barren rocks is followed by the growth of:

A. Moss

B. Fems

C. Gymnosperms

D. Algae

Answer: In an ecological succession I.e. the process by which a barren ecosystem is converted into a living ecosystem, lichens are the pioneers for xerophytic succession. This is because the nutritional requirement of lichens is very less, so they bind to the rocks and release some acids that helps in the weathering of rocks and soil formation. Now on this soil, mosses are the first to grow since they feed on the dead lichens. Mosses are very tiny autotrophs and can easily grow on this soil.

Q.27. Marked temperature changes in aquatic environment can affect:

A. Breeding of animals

B. More growth of aquatic plants

C. Process of digestion in animals

D. Availability of nutrients

Answer: Due to increased or decreased water temperature, gases present in water mainly oxygen's solubility varies. This varied gaseous condition is a stress environment for aquatic life. Breeding of an organism is the first that gets affected under any kind of environmental stress.

Q.28. Biotic component of biosphere is not constituted by:

A. Producers

B. Consumers

C. Decomposer

D. Air

Answer: Biotic component is defined as any component that is living, requires nutrition for its survival and respires in any way and may reproduce. This nutrition can be of any type. Air doesn't need any nutrition, cannot not be touched, is non-living and doesn't reproduce.

Q.29. An increase in carbon dioxide content in the atmosphere would not cause:

A. More heat to be retained by the environment

B. Increasing in photosynthesis in plants

C. Global warming

D. Abundance of desert plants

Answer: CO_2 is a green house gas , thus it's increase will trap more heat and will cause global warming. Also increased CO_2 will increase the rate of photosynthesis however, CO_2 increase doesn't contribute towards deserted conditions. Instead l, lack of water and increased temperature causes deserted conditions and will promote the growth of desert plants.

Q.30. What would happen, if all the oxygen present in the environment is converted to ozone?

A. We will be protected more

B. It will become poisonous and kill living forms

C. Ozone is not stable, hence it will be toxic

D. It will help harmful sun radiations to reach earth and damage many life forms

Answer: Ozone is O_3, in its elemental form or even in its combined form it is highly toxic. Ozone can damage lungs and even low amounts of ozone can cause chest pain, coughing, shortness of breath and lung irritation.

However, at the stratospheric level, no life form exists and there ozone

prevent us from the harmful U.V radiations of the sun.

Q.31. One of the following factors does not lead to soil formation in nature:

A. The sun

B. Water

C. Wind

D. Polythene bags

Answer: Soil formation occurs by a process called weathering off rocks.

For this breaking down of rocks a number of factors are needed like,

● **Sun: -** During daytime sun heats up the rocks due to which a little bit expansion of rocks occurs. At night when temperature falls rocks tend to contract, due to this simultaneous and subsequent heating and cooling cracks are formed inside the rocks. This phenomenon can be easily observes at hilly areas during rainy season. After the rain when sun emerges it heats up the wet and cool mountains but they tend to resist due to which breaking of mountains occur.

● **Water: -** Water is another factor that helps in soil formation. Water fills up the cracks developed due to heating and cooling of rocks and at causes the cracks to widen up more.

Also, water takes away the smaller rocks and cause them to grind over one another ultimately causing them to break.

● **Wind: -** wind also works the same way by taking away the sand from one place to another.

● **Living organism: -** Some living organisms like lichens are the pioneer community i.e. they colonize the rocks first as the first living organism and they secrete certain acids when they grow on these rocks. Due to this secretion rocks becomes weak and breaks down easily. Roots of bigger trees can penetrate these rocks and can help in their breakdown. Along with them, another microorganisms and mosses help in weathering of rocks.

While polythene doesn’t play any role during this process.

Q.32. The two forms of oxygen found in the atmosphere are:

A. Water and ozone

B. Water and oxygen

C. Ozone and oxygen

D. Water and carbon dioxide

Answer: Combined form of oxygen is present in the form of O_2 while other form which is unstable is present in the form of ozone O_3.

Q.33. Which step is not involved in the carbon cycle?

A. Photosynthesis

B. Transpiration

C. Respiration

D. Burning of fossil fuels

Answer: Transpiration is the process in which water is lost from the plants via. Stomata. It is an essential process for the survival of plants since it maintains the thermostat of plants. All other options include the use of carbon or carbon movement in some way, but transpiration does not.

Q.34. 'Ozone'-hole means:

A. A large sized hole in the ozone layer

B. Thinning of the ozone layer

C. Small holes scattered in the ozone layer

D. Thickening of ozone in the ozone layer

Answer: Normally ozone breaks into oxygen under the influence of sunlight, and reforms into ozone again. Ozone hole is created when the rate of formation of ozone is slower than the rate of its depletion. Hence, when the CFCs accumulate in a specific region, ozone depletion becomes faster the rate of its formation ultimately leading to formation of ozone hole.

Q.35. Ozone layer is getting depleted because of:

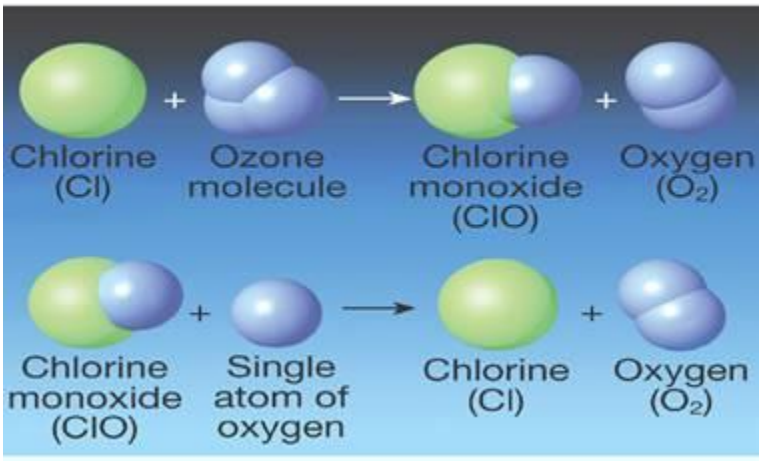
A. Excessive use of automobiles

B. Excessive formation of industrial units

C. Excessive use of man-made compounds containing both fluorine and chlorine

D. Excessive deforestation

Answer: As explained in the following picture is how chlorine molecules deplete ozone, similar is the case with fluorine also.



Q.36. Oxygen is returned to the atmosphere mainly by:

A. Burning of fossil fuel

B. Respiration

C. Photosynthesis

D. Fungi

Answer: During the process of photosynthesis, plants lead to the formation of complex sugars (food) using water and carbon-di-oxide in the presence of sunlight and releases oxygen into the environment. While processes like burning fuels and respiration releases carbon-di-oxide into the air.

Q.37. Low visibility during cold weather is due to:

A. Formation of fossil fuel

B. Unburnt carbon particles or hydrocarbons suspended in air

C. Lack of adequate power supply

D. None of these

Answer: During cold weather, water droplets instead of moving up at a higher altitude stays near the earth's surface and cause fog. Along with this, a lot of vehicular emissions and smoke from industries include unburnt carbon and hydrocarbons, these particles get mixed with the already suspended fog and lead to the formation of smog. This smog suspends closer to the surface of earth causing visibility issues along with nasal congestions and other nasal infections.

Q.38. Which of the following is a recently originated problem of environment?

A. Ozone layer depletion

B. Greenhouse effect

C. Global warming

D. All of these

Answer: Broadly saying, all of these issues are just a side effect of one major issue, i.e. “greenhouse effect” `. Due to greenhouse effect earth’s temperature increases, causing “global warming” and due to greenhouse effect only the CFC’s deplete the ozone layer. So yes, all of these are recently originated problems.

Q.39. When we breathe in air, nitrogen also goes inside along with oxygen. What is the fate of this nitrogen?

A. It moves along with oxygen into the cells

B. It comes out with the Co during exhalation

C. It is absorbed only by the nasal cells

D. Nitrogen concentration is already more in the cells so it is not at all absorbed

Answer: When we breathe, nitrogen do enter our body along with oxygen and carbon-di-oxide but is not exchanged at the alveolar level. This is because our body cannot utilize the free nitrogen present in the air. We full fill our nitrogen requirements via. Food we consume since they have nucleic acids and proteins which provide us the required nitrogen. Also, blood don’t have any mechanism of carrying free nitrogen.

So, the nitrogen inhaled is exhaled out as it is.

Q.40. Smog is a combination of:

A. Smoke and fog

B. Smoke and light

C. Fog and light

D. All are correct

Answer: Smog is formed when the smoke particles combines with the already occurring fog. Fog is nothing but the water droplets suspended in the environment near the earth’s surface.

Smoke and light will cause the scattering of light, while fog and light will have no effect on the formation of smog.

Comprehensive Exercises (T/F)

Q.1. Write true or false for the following statements:

Oxygen is returned to the atmosphere in only one major process, that is, respiration.

Answer: False

Photosynthesis is the major process by which oxygen is returned to the atmosphere. During the process of respiration carbon di oxide is being released into atmosphere.

Q.2. Write true or false for the following statements:

The process of nitrogen-fixing is done by bacteria in the presence of oxygen.

Answer: False

Process of nitrogen fixation is done by prokaryotic bacteria. These bacteria possess a specific enzyme called “Nitrogenase”. Due to the presence of oxygen enzymatic structure is disrupted and nitrogen fixing property is lost.

Q.3. Write true or false for the following statements:

Oxygen is necessary to life for most of the organisms in the process of respiration but some forms of life, especially bacteria, are poisoned by elemental oxygen.

Answer: True

Q.4. Write true or false for the following statements:

Carbon dioxide is one of the greenhouse gases.

Answer: True

Greenhouse gases are those which have the ability to trap heat, carbon di oxide has the ability to trap heat and that is why is kept in the category of greenhouse gases.

Q.5. Write true or false for the following statements:

Another process that adds to the CO_2 in the atmosphere is the process of photosynthesis where fuels are burnt to provide energy for various needs.

Answer: False

Photosynthesis is the process in which complex sugars are formed with the help of carbon-di-oxide and water, while oxygen is being released.

Q.6. Write true or false for the following statements:

Plants generally take up nitrates and nitrites and convert them into amino acids which are used to make carbohydrates.

Answer: False

Q.7. Write true or false for the following statements:

Nitrogen gas makes up 78% of our atmosphere and nitrogen is also a part of many molecules essential to life like proteins, nucleic acids (DNA and RNA) and some vitamins.

Answer: True

Q.8. Write true or false for the following statements:

All the movements of air resulting in diverse atmospheric phenomena are caused by the uneven heating of the atmosphere in different regions of the earth.

Answer: True

Q.9. Write true or false for the following statements:

The heating of the air causes the water vapour in the air to condense in the form of tiny droplets.

Answer: False

Heating of air causes an increase in the kinetic energy of vapours present in the air due to which they get lighter and moves up at a higher altitude. While lowering of temperature at higher altitude cause condensation of water vapours.

Q.10. Write true or false for the following statements:

Nitrogen is also found in other biologically important compounds such as alkaloids and urea.

Answer: True