

BT101- MID TERM (SOLVED PAST PAPERS)

Qno 1: Define weathering and enlist its types?

Ans: Weathering

Process of decomposition and disintegration that causes the rocks to break down in a natural way.

Following are the types of weathering:

- ❖ Chemical weathering
- ❖ Mechanical weathering
- ❖ Biological weathering

In cold climates mechanical weathering is dominant, while in tropical climates Chemical weathering is dominant.

Q no 2.write down three zones of river?

Ans: There are three river zones.

- 1 Source zone
- 2 Transition zone
- 3 Floodplain zone

Q no 3: Define eutrophication?

Ans: actually it is the excess of nutrients in water which produces harmful algal blooms which becomes toxic to living creatures.

Q no 4.define genetic diversity?

Ans: Genetic diversity is the total number of genetic characteristics in the genetic makeup of a species. It is distinguished from genetic variability, which describes the tendency of genetic characteristics to vary. Genetic diversity serves as a way for populations to adapt to changing environments

Q no 5.how red tides are produced?

Ans: Red tide is a phenomenon caused by algal blooms (Wikipedia definition) during which algae become so numerous that they discolour coastal waters (hence the name "red tide"). The algal bloom may also deplete oxygen in the waters and/or release toxins that may cause illness in humans and other animals.

Q no 6. Differentiate between Aquatic and terrestrial biomes?

Ans: Biomes are large regions characterized by a specific type of climate and certain types of plant and animal communities. Each biome is made up of many individual ecosystems. some of the major terrestrial biomes in the world; tropical forests, savannas, deserts, temperate grasslands, temperate deciduous forests,

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Mediterranean scrub, coniferous forests, and tundra. The aquatic biome is definitely the largest biome out there. Water covers nearly 75 per cent of the earth's surface, in the form of oceans, lakes, rivers, etc. Just like all other biomes, the aquatic biome can be divided into two categories: freshwater regions and saltwater regions.

Q no 7. Define Photosynthesis? (2)

Ans: Photosynthesis is the process by which plants, some bacteria and some Protists use the energy from sunlight to produce glucose from carbon dioxide and water. This glucose can be converted into pyruvate which releases adenosine triphosphate (ATP) by cellular respiration. Oxygen is also formed.

Q No 8: discuss soil characteristics?

Ans: Soils are a composition of mineral particles 45%, organic matter 5%, air 25%, and water 25%. Brown earths are fertile and very suitable for agriculture. Their suitability for agriculture is due to their characteristics of good texture, dark color, and pH value.

Q no 9: define Endotherms?

Ans: Animals that produce their own body heat through internal mechanisms, i.e., birds and mammals. In other words, the term endothermic process describes a process or reaction in which the system absorbs energy from its surroundings; usually, but not always, in the form of heat.

Q no 10: what do you mean by ecological pyramid?

Ans: An ecological pyramid is a graphical representation designed to show the biomass or bio productivity at each trophic level in a given ecosystem. Biomass is the amount of living or organic matter present in an organism.

Q no 11. what is Ecological diversity?

Ans: Ecological diversity is a type of biodiversity. It is the variation in the ecosystems found in a region or the variation in ecosystems over the whole planet. Ecological diversity includes the variation in both terrestrial and aquatic ecosystems.

Q no 12: write two examples of secondary succession

Ans: Secondary succession is the series of community changes which take place on a previously colonized, but disturbed or damaged habitat. Examples include areas which have been cleared of existing vegetation (such as after tree-felling in a woodland) and destructive events such as fires.

Q no 13. write Five Factors that influence biodiversity?

Ans: • Climate change Geology Natural selection Species evolution

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Q no 14.define interspecific competition?

Ans: Intraspecific competition is an interaction in population ecology, whereby members of the same species compete for limited resources. This leads to a reduction in fitness for both individuals. By contrast, interspecific competition occurs when members of different species compete for a shared resource.

Q No 15.define food chain with example?

Ans: Every organism needs to obtain energy in order to live. For example, plants get energy from the sun, some animals eat plants, and some animals eat other animals. A food chain is the sequence of who eats whom in a biological community (an ecosystem) to obtain nutrition.

Q no 16: what is the function of the cell membrane?

Ans:-The cell membrane is selectively permeable to ions and organic molecules and controls the movement of substances in and out of cells. The basic function of the cell membrane is to protect the cell from its surroundings. It consists of the phospholipid bilayer with embedded proteins.

Q no 17:- What is cell membrane and cell wall?

Ans: - The cell wall is the outer most covering of the cell. ... The cell wall is present in bacteria, fungi, algae and plant cell. It is absent in an animal cell and protozoa. The cell membrane is a biological membrane, which is semi-permeable.

Q no 18:-Write a note on soil horizon?

Ans: - A soil horizon is a layer generally parallel to the soil crust, whose physical characteristics differ from the layers above and beneath

Q. no 19:-Define detritivores with example?

Ans: - Detritivores are heterotrophs that obtain their nutrition by feeding on detritus. The detritus they consume includes decomposing plant and animal parts, as well as fecal matter. These organisms play an important role in all ecosystems by getting rid of decaying organic matter left behind by other organisms. In food webs, detritivores commonly play the role of decomposers. Some common **examples** of detritivores are earthworms, which eat rotten plant leaves and other debris, and dung beetles, which eat feces. Other examples are millipedes, woodlice, slugs, and sea stars.

Q no 20:- Define trophic level with example?

Ans: - A trophic level is the position in an ecosystem an organism occupies in relation to primary sources of energy and the food chain. The first trophic level is always composed of primary producers that convert either solar or chemical energy into biomass

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Q no 21. Define species with example?

Ans: species is a group of organisms that can produce fertile offspring's by sexual reproduction. Every organism is a member of a particular species with specific trait

Q. Mechanism of survival of endotherm in cold and hot environment?

Ans: Survival mechanisms in hot environment

- Sweating
- Panting
- Vasodilation
- Aestivation

Survival mechanisms in cold environment

- Fat deposits
- Fur
- Feathers
- Vasoconstriction
- Hibernation

Q no 22. What is the wind action on lentic water bodies?

Ans: Wind action is very vital in these water bodies because it increases the content of dissolve oxygen that is necessary for the aquatic life in these water bodies.

Q no 23: Explain torpor with example?

Ans: A condition in which the rate of metabolism, circulation and respiration of individuals decreases when they are not feeding. Torpor allows the individual to survival in non-feeding period. It is found in bats, hummingbirds, and other animals.

Q no 24 what are major components of ecology?

Ans: Major components of ecology are

- Species
- Population
- Community
- Ecosystem

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- Biome
- Biosphere

Q no 25. What are aquatic producers?

Ans: Organisms that manufacture food in aquatic environment.

In freshwater and marine ecosystems, algae and aquatic plants are the major producers. In open water, the dominant producers are phytoplankton.

Qno 26. : Explain marine water?

Ans: Marine aquatic systems are a great source of biodiversity. They include many different ecosystems, which host a great variety of species, genes, biological and chemical processes that occur in this ecosystem

Q no 27. Diff between keystone species and foundation species

Ans: A foundation species creates or provide a foundation of an ecosystem while keystone species regulates and maintains that ecosystem.

Qno 28.define the indicator species.

Ans: Species that provide early warnings of damage to a community or an ecosystem are called indicator species.

For example, the presence or absence of trout species in water at temperatures within their range of tolerance is an indicator of water quality because trout need clean water with high levels of dissolved oxygen.

Q no 29. Define ecology with examples?

Ans: the term ecology was derived by Ernst Hackle in 1866.it is defined as the branch of science that deals with the study of interactions between living components of the Earth with the Enviornment.Examples include the study of earths households i.e. animals, plants, microorganisms, people which live together.

Qno 30. Define atmosphere and role in ecosystem?

Ans: The mixture of gases that surrounds the solid earth is called the atmosphere.

Although it represents a very small fraction of the weight of the earth, it is very important because it is essential to life and is highly reactive.Circulates and plays an important role in the evolution of landscapes.

Role in ecosystem:

It contains Nitrogen (78%),Oxygen (21%) and 1% includes water vapor, carbon dioxide, and methane, all of which are called greenhouse gases, because they trap heat and thus warm the lower atmosphere. it compose 78% volume of total air and is relatively inert and it is unavailable to plants directly therefore it must undergo chemical reactions to make it useful for plants. oxygen is chemically reactive and important in breathing

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,weathering of rocks, combustion and in the decay of organic matters Carbon dioxide plays an important role by trapping heat, Causing the greenhouse effect, which keeps the earth warm and livable, for the most part and Raw material for photosynthesis. Water vapor plays an extremely important role in the hydrological cycle. Water vapors are highly variable. Air in desert areas may contain only 1 percent vapor by volume; in tropical areas, however, where the air is warm and moist, the content can be as high as 4 percent.

Q no 31.what do you know about intrinsic rate of increase?

Ans: The rate at which the population of a species would grow if it had unlimited resources. Individuals in populations with a high intrinsic rate of growth typically,

- Reproduce early in life
- Short generation times (the time between successive generations)
- Reproduce many times
- Have many offspring each time they reproduce

Q no 32. What is population dynamics?

Ans: Population dynamics is a study of how these characteristics of populations change in response to changes in environmental conditions.

Q no 33. Discuss types of soil?

Ans: In general soils are classified into two main groups on the base of climate,

1. Pedalfer soil
2. Pedocal soils

Q no 34: what is population dispersion?

Ans: Population dispersion is the observation of where individuals are found in a habitat. How individuals "disperse" themselves.

Q no 35. Diff btw generalist and specialist species?

Ans: Those species that occupy narrow range of niches are known as specialist species. For example, tiger salamanders breed only in fishless ponds where their larvae will not be eaten. Those species that have broad range of niches are known as generalist species. Flies, cockroaches, mice, rats, white-tailed deer, raccoons, and humans are Generalist species.

Q no 36.what do you meant by population growth?

Ans: population growth is the increase in the number of individuals in a population

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Q no 37.what is intrinsic rate of growth?

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Q no 38.write factors effecting stream flow?

Ans: The velocity of a stream depends on following factors

- i. Volume of water
- ii. Stream channel width and depth
- iii. Slope or gradient of stream

Q no 39.differentiate between plankton and phytoplankton?

Ans: A microscopic swimming and free floating organisms in water are termed as planktons. phytoplankton is actually a type of plankton, it is actually a microscopic swimming and free floating organisms in water are termed as planktons.

Q no 40.define tertiary consumers?

Ans: Tertiary consumers are carnivores that feed on the flesh of other carnivores. They are third- and higher-level consumers. Tertiary consumers eat the carnivores that ate the herbivores. Tigers, wolves, mice-eating snakes, hawks, and killer whales.

Q no 41.differentiate between niche and habitat?

Ans: the actual place where an organism lives is called its habitat or environment. Niche is defined as the role that a species plays in its environment including behaviour and influence.

Q no 42: write factors effecting population regulation?

Ans: Death rate	Birth rate	Food	Climate	Water
Competition	Predators	Emigration	Immigration	Disease

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Q no 43: define Demography?

Study of human population and the factors that regulate the growth of population.

Population of any ecosystem is regulated by certain biotic and a biotic factor which are necessary for the growth of population

Q no 44. Define species and write 4 basic concepts of species ? [5]

species is a group of organisms that can produce fertile offspring's by sexual reproduction. Every organism is a member of a particular species with specific trait

Four basic concepts about species are

1. Biological species concept
2. Ecological species concept
3. Morphological species concept
4. Phylogenetic species concept

Biological concept of species

Defines species on the base of their interbreeding potential not on similarity or appearance.

Example, Western meadowlarks (*Sturnella neglecta*) and Eastern meadowlarks (*Sturnella magna*) look almost identical to one another yet do not interbreed with each other thus; they are separate species according to this definition.

Ecological species concept

Two species are in the same area but live in different habitats like *viola arvensis* live in basic soil while *viola tricolor* lives in Acidic soils

Morphological species concept

Characterizes aspecies by body shape and other structural features and is applied to asexual and sexual organisms and useful when information on gene flow is unknown

Phylogenetic species concept

A species is the smallest part of lineages or populations that can be accepted by a unique combination of different traits.

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Q no 45. Define Primary secession?

Ans: The process by which a new community is propagated or initiated in an area where previously no life forms exist is termed as primary succession. Primary succession takes thousands of years to develop by the gradual accumulation of nutrients.

Q no 46. Differentiate winter sleep and hibernation?

Hibernation	Winter sleep
1.Body temperature falls	1.Body temperature does not falls
2.animals remains inactive for weeks or even for months	2.animals can awake and active quickly
3. animals become inactive usually in cold environments	3.hibernation in larger animals is winter sleep
4.includes small mammals like bats, rodents ,shrews etc.	4.includes lager reptiles like bear,hadgehoges,garter snakes etc.

Q no 47.differentiate between Species abundance and species evenness?

Ans: Species abundance is the number of individuals per species, and relative abundance refers to the evenness of distribution of individuals among species in a community. Species evenness is a measure of the relative abundance of the different species that contribute to the richness of an area.

Qno 48. Define environmental resistance?

Ans: The constraints that climate, food, space, and other environmental factors place on a population are called environmental resistance. It is the combination of all factors that act to limit the growth of a population. Together, biotic potential and environmental resistance determine the carrying capacity.

Q no 49.define primary species concept?

Ans: Defines species on the base of their interbreeding potential not on similarity or appearance. For example, Western meadowlarks (*Sturnella neglecta*) and Eastern meadowlarks (*Sturnella magna*) look almost identical to one another, yet do not interbreed with each other—thus, they are separate species according to this definition.

Q no 50. Define biotic potential?

Ans: Ability of a population to grow under ideal conditions is called as biotic potential.

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Q no 51.write role of light in different life running processes?

Ans: Light plays a vital role in following life running processes

1. Seed germination
2. Transpiration
3. Photoperiodism
4. Growth
5. Reproduction
6. Modification in leaf structures
7. Migration
8. Communication

Q no 53. Reproductive potential and factors affecting?

Ans: Reproductive potential

Ability of individuals to reproduce under ideal or optimum conditions. Exponential growth cannot occur indefinitely.

Factors influencing reproductive potential

- Number of offspring produced
- The likelihood of survival to reproductive age
- Duration of the reproductive period
- Length of time it takes to reach maturity

Q no 54.What are Ectotherms write its Characteristics? [5]

There are many organisms that are not able to maintain **their** own body temperature, and these are called **ectotherms**. **Ectotherms** depend on the external environment to either warm or cool themselves because **their** body does not do this for them.

Characteristics of Ectotherms

- Low metabolic rate
- Generate body heat from external environment
- Body insulation is very poor

Q no 55.define seral stage?

Ans: seral stage is actually a phase in the sequential development of climax community.

Q no 56.define pioneer community?

Ans: Communities begin to establish in areas which are devoid of life.

The first community to become established in an area is called the pioneer community.

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Q no 57.what do you meant by non-native species?

Ans: Species that are non-native to their environment and are deliberately or accidentally introduced into an ecosystem are called non-native species. These are also named as invasive, alien, or exotic species. An introduced species is occasionally successful in the new environment. Introduction of non-native species is a major cause of species loss.

Q no 58. What is the difference between photoautotrophs and chemoautotrophs?

Ans: Photoautotrophs are organisms that carry out photosynthesis. Using energy from sunlight. Chemoautotrophs are organisms that derive their energy from the oxidation or breakdown of various inorganic or organic food substances in their environment. The process releases energy which supports metabolic activity in the organism. phototrophs use sunlight while chemotrophs use hydrogen sulphide for their purpose.

Q no 59. Define Aestivation?

Ans: Aestivation or summer sleep is a period of inactivity and low metabolic rate in animals in response to high temperature and dry season. Aestivation is common in many invertebrates, reptiles, and amphibians.

Q no 60.describe primary succession in detail? What do you know about sere, seral stage and climax community? (Long question)

Ans: The process by which a new community is propagated or initiated in an area where previously no life forms exist is termed as primary succession. Primary succession takes thousands of years to develop by the gradual accumulation of nutrients. Communities begin to establish in areas which are devoid of life. The first community to become established in an area is called the pioneer community. The organisms that develop this pioneer community are called pioneers. Examples are lichens and moss whose seeds or spores are distributed by the wind and carried by animals. Death, decay, and additional nutrients add to the community. Over thousands of years nutrients accumulate, and the characteristics of the ecosystem changes.

Seral stage

Each successional stage is called a seral stage.

Sere

The entire successional sequence is termed as a sere. Biomass increases, nutrients are conserved more efficiently, and productivity declines in the course of succession.

Q no 61.define cell theory?

Ans: it has following postulate:

1. All organisms are made from living cells
2. They are made up of one or more living cells
3. All cells arise from preexisting cells.

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Q no 62.how decomposers work?

Ans: They release nutrients from the dead bodies of plants and animals and return them to the soil, water, and air for reuse by producers

Q no 63.what is the composition of geosphere?

Ans: The geosphere consists of

- The earth's intensely hot core
- A thick mantle composed mostly of rock
- A thin outer crust.

Q no 64.define filters feeders and deposit feeders with example?

Ans: Deposit feeders

Some of organisms found in Deep Ocean are deposit feeders. These organisms take mud into their guts and extract nutrients from it. Some worms' species are deposit feeders.

Filter feeders

Other organisms found in deep oceans are filter feeders. They take in large amount of water into the body and then filter nutrients from it. Organisms like oysters, clams, and sponges are filter feeders.

Q no 65.Write difference between Autogenic and Allogenic succession?

Ans: In autogenic succession the successional process is controlled by living or biotic component of an Ecosystem while the entire successional process is controlled by nonliving or abiotic components of ecosystem

Q no 66.Define Succession?

Ans: The change in composition and organization of community over period of time is known as succession or ecological succession.

Q no 67.what is Hibernation?

Ans: hibernation is a condition in which animals become inactive usually in cold environments for their survival

Q no 68.what is fjords?

Ans: it is a type of estuary that is formed in river valleys due to the action of valley glaciers. Mostly found in Norway.

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Q no 69. Write the name of some factors which influence population density?

Ans: these factors are:

1. Disease 2. Competition 3. Predation 4. Parasitism 5. Food 6. Migration

Q no 70. Write importance of water?(5)

Ans: Photosynthesis Irrigation Domestic use Industrial use for power generation

- Recreational purpose Drinking Transport of nutrients throughout body
- Removal of waste from body Lubricate body tissues
- Maintains the temperature of body
- Essential for proper functioning of body
- Maintenance of pH

Q no 71. Define exponential growth?

Ans: A rapid increase in number of individuals of a population at a constant rate.

Q No 72. Define survivorship curves?

Ans: Survivorship curves are a plot of number of survivors versus age.

Q no 73. Discuss about taxis with example?

Ans: response of an organism towards any abiotic factor is known as taxis. For example response of organism towards light.

Q no 74. Differentiate between prokaryotes and eukaryotes?

prokaryotes	Eukaryotes
1. single celled organisms	1. many celled organisms
2. lacks membrane bounded organelles	2. having membrane bounded organelles
3. nucleus absent	3. nucleus present
4. consist of one chromosome	4. consist of more than one chromosomes
5. partial-unidirectional transfer of DNA	5. meiosis and fusion of gametes
6. example. bacteria and archaea	6. animals and plants

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7.cell size is from 1-10nm	7.cell size is from 10-100 um
8.no membrane permeability	8.having permeable membrane
9.flagella is submicroscopic in size	9.falgella is microscopic in size

Q no 75.differentiate between Endemic species and indigenous species?

Ans.1. Endemic species

These species are found within a specific part of world only Blind Indus dolphin is only found in Indus river of Pakistan.

2. Indigenous species

These are found within the region and elsewhere in the world also. Snow leopard is found in Pakistan, Nepal, India, Russia and in some other countries of central Asia

Q no 76.write a note on ecological pyramid?

Ans: An ecological pyramid is a graphical relationship among different trophic structures or levels in an ecosystem.

Trophic structure means the different feeding levels of organism An ecological pyramid is further classified into three main types,

1. Pyramid of number
2. Pyramid of biomass
3. Pyramid of energy
1. Pyramid of number

It represents the number of individuals at each trophic level of an ecosystem. More number of individuals at base while a gradual decrease in number towards top of pyramid.

2. Pyramid of biomass

It indicates mass of living matter at each trophic level Of food chain.

High biomass at the base while lower at top of the pyramid.

3. Pyramid of energy

Determines the Flow of energy through each Trophic level in a food chain.

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Q no 77. How human influences any environment? 5 marks

Ans: Human impact on environmental health,

- Habitat destruction Habitat fragmentation Deforestation
- Pollution Soil erosion Ozone layer destruction
- Invasive species Oil spillage Coral reef destruction

Q no 78. Enlist the density independent factors

Ans: Some of these factors are,

- Weather Earthquake Floods Hurricanes
- Fire Pollution Habitat destruction
- Climate changes

Q no 79. Enlist some organism that inhabit in inland wetland?

Ans: Wetlands are important habitats for

- Game fishes Muskrats Otters Beavers Migratory water fowl

Q no 80. Discuss Influence of non-active species on environment or habitat?

- Non-native species can spread rapidly if they find a new more favourable niche.
- In their new niches, these species often do not face the predators and diseases they faced before
- They may be able to out-compete some native species in their new niches.
- Causes habitat loss and ecosystem disturbance.

Qno 81. : Difference b/w immigration, emigration?

Ans: Emigration is migration seen as and the exit of individuals from one region (to another where they will settle permanently or temporarily). Immigration is the Migration into a place (especially migration to a country of which you are not a native in order to settle there). The body of immigrants arriving during a specified interval; the increased immigration strengthened the colony.

Q no 82. How can we analyse kinds of soil?

Ans: Type of a soil can be determined by,

- Composition of the material 2. Topography 3. Climate 4. Time length

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Q no 83. Discuss one benefit of Cockroach and one drawback (2)

Ans: Although most of us think of cockroaches as vermin, they do have a useful ecological role. Cockroaches are professional recyclers, chowing down just about anything, including dead plants and animals, and animal waste. ... In the wild, the waste of roaches nourishes growing plants, continuing the cycle.

Q no 84. Is it better to be a generalist or a specialist?

Ans: It depends on environmental conditions. When environmental conditions are fairly constant, as in a tropical rain forest, specialists have an advantage because they have fewer competitors. But under rapidly changing environmental conditions, the generalist usually is better off than the specialist.

Q no 85: define Soil horizon?

Ans: A vertical section of soil that tells about various layers of the soils as zones. These zones are named as soil horizons

Q no 86. Define limiting factors.

Ans: When an abiotic factor becomes out of an organism tolerance range then it is said to be a limiting factor. For example oxygen, food and water.

Qno 87. define optimum range?

Range of optimum defines the conditions at which organisms are most successful in survival.

Organisms can perform their life activities well under these optimum conditions.

Q no 88. write types of energy quality?

Ans: Two types of energy on the base of energy

Quality,

1. High quality energy
2. Low quality energy

High quality energy

High-quality energy is concentrated form of

Energy and has a high capacity to do useful work.

- Examples are,
- Very high-temperature heat
- Nuclear fission

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- Concentrated sunlight
- High-velocity wind

Energy released by burning natural gas, gasoline, or coal

Low quality energy

A dispersed form of energy that has a little capacity to do useful work.

Heat energy of moving water molecules is of low quality because it is dispersed in water molecules

That lowers its temperature.

Q no 89. How the species composition act as indicators in environment

Ans: Species composition can be used as an indicator by two ways,

- Ecological indicators
- Management indicators

1. Ecological indicators

Species composition provides the essential description of the character of the vegetation at a site. Certain images are readily understood when major species are mentioned, eg pinon (*Pinus* sp.) - juniper (*Juniperus* sp.) woodland, and other common species are also presumed to be present as one becomes familiar with the vegetation.

These distinctions form the basis of rangeland mapping and the delineation of range site boundaries.

The relative contribution of a species also signifies its dominance in the vegetation and its ability to capture resources. Slightly different inferences of competitive ability are suggested if species composition is expressed on the basis of cover, density, or biomass measurements.

2. Management indicators:

Most objectives in rangeland management are directly concerned with the assessment or manipulation of species composition. For example, carrying capacity is influenced by the relative abundance of desirable forage species at a site. Wildlife habitat is also influenced by the relative contribution of various species that provide sources of shelter and food. Species composition is used to determine range condition and range trend, which are valuable tools to judge the impact of previous management and guide future decisions.

Q no 90. Write Types of electromagnetic radiations

On the base of wavelength there are two types of electromagnetic radiations.

1. Electromagnetic radiations with short wavelength

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2. Electromagnetic radiations with long wavelength

Electromagnetic radiations with short wavelength

Gamma rays

X rays

(UV) ultraviolet radiation

2. Electromagnetic radiations with long wavelength

- Visible light
- Infrared radiation (IR)

Q no 91. What is the role of ecological engineers?

Ans: Beavers are another good example of a foundation species. Acting as “ecological engineers,” they build dams in streams to create ponds and other wetlands used by other species

Q. What is the role of population is we study?

A **population** is a group of individuals of a single species that live in a particular area and interact with one another. Many of the central issues in **ecology** concern questions about how and why the locations and abundances of **populations** change over time

Q. Write a short note on population dispersion [5]

Populations differ in factors such as their distribution, numbers, age structure (proportions of individuals in different age groups), and density (number of individuals in a certain space). Population dynamics is a study of how these characteristics of populations change in response to changes in environmental conditions. Examples of such conditions are temperature, presence of disease organisms or harmful chemicals, resource availability, and arrival or disappearance of competing species.

Three general patterns of population distribution or dispersion in a habitat are

- Clumping
- Uniform dispersion
- Random dispersion

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Clumping:

In most populations, individuals of a species live together in clumps or patches. Examples are patches of desert vegetation around springs, cottonwood trees clustered along streams, wolf packs, flocks of birds, and schools of fish. The locations and sizes of these clumps and patches vary with the availability of resources. Southern sea otters for example, are usually found in groups known as rafts or pods ranging in size from a few to several hundred animals.

Uniform dispersion:

The tendency for populations to be found evenly distributed about their habitat. This is generally caused by a species ability to survive anywhere in their habitat. They use the resources found immediately around them, and spread out as to use all of the available resources.

Random dispersion:

Distribution of populations in a random fashion throughout their habitat. Generally randomly distributed populations are rare while clumped distribution is common.

Q. Write one Advantage and Drawback of Cockroach.

Advantage Cockroaches are an integral part of the food chain. Cockroaches are an **important** source of food for a number of organisms, such as arthropods, birds, and mammals. As such, they are an **important** part of the food chain. Cockroaches also play an **important role** in nutrient recycling

Drawback or Disadvantage: of cockroach live in homes and can carry viruses and bacteria that cause diseases