CHAPTER 25

Ecosystem

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Exercise Short Answers

Q:1 What are the biogeochemical cycles?

Ans: Biogeochemical cycle:

The nutrient cycle is called biogeochemical cycle in which nutrients move from living to nonliving portion of the ecosystem in cyclic manner.

OR

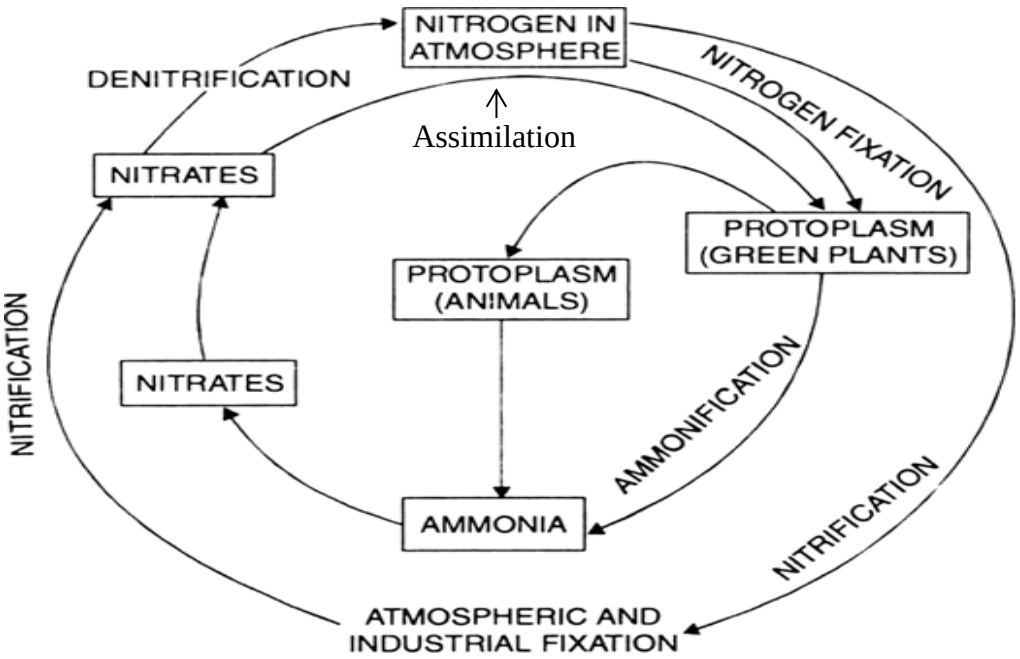
The back and forth movements of chemical elements between organism and environment along particular circular paths are known biogeochemical cycles.

Example: carbon cycle & nitrogen cycle.

Q:2 Sketch three main steps in nitrogen cycle.

Ans: Three main steps in nitrogen cycle are

Ammonification, Nitrification, Assimilation



Q:3 Define grazing.

Ans: Grazing:

Many animals like rabbits, goat, sheep, cow, buffalo and horses feed on grasses. This mode of feeding is called grazing and these animals are called grazers.

Q:4 What percentage of sun energy reaches to plants?

Ans: The percentage of sun energy that reaches the plants is 1%.

Q:5 What is autecology?

Ans: Autecology: When one is studying a single population's relationship to its environment it will be called as autecology.

For example, we are studying 50 to 100 plants of soyabean for effect of water pollution on their growth and yield, we are studying the single or one population of soyabean plant, and this is autecology.

Q6: Define synecology?

Ans: Synecology:

Study of relationship of different communities with environment is called synecology or community ecology.

Important Short Answers

Q:1 Differentiate between Ecology and Ecosystem.

Ecology	Ecosystem
• .Ecology is the study of relationships between different organisms and their environment. OR • The study of the interaction between living organism themselves and with their non-living environment is called ecology.	• An ecosystem is a natural unit comprising all living and non-living things in the area and how biotic and abiotic components function together influencing each other. OR • A living community along with its non-living environment work as a unit in a specified area.
• Ecosystem is thus subset of ecology which is a vast subject area.	• Ecology is thus a subset of ecology which is a vast.

Q:2 Differentiate between Species and Population.

Species	Population
• A group of closely related organisms that are very similar to each other and are usually capable of interbreeding and producing fertile offspring.	• Population is a group of interbreeding individuals (same species) occurring together in space and time.
• Species do not change; if it does a new species is formed.	• Population is subjected for change.
• Species do not have temporal and spatial limits.	• Population has temporal and spatial limits but species do not.
• Species is indicated using a defined methodology.	• There is no particular set of regulations to indicate a population.

Q:3 What is Community?

Ans: Community: All population of different species within an ecosystem are known as a community and are in one or another manner interconnected to one another.

Example: all the producers, consumers and decomposers of a pond ecosystem constitute a community.

- Synecology is study at community level.

Q:4 Differentiate between Biome and Biosphere.

Biome	Biosphere
• Major types of ecosystem those that occupy broad geographical regions are called biomes. OR • A large regional community primarily determined by its climate is called biome. • A biome is the collection of a particular ecosystem. • Biomes have been named after the type of major plants or major features of the ecosystem. • Combined the biomes of earth together form the planetary ecosystem. • Example: Grassland, forests, desert etc.	• Biosphere is a thin layer of earth in which all living organisms live. OR • Earth and surrounded area where life can exist is referred to biosphere. • A biosphere is the collection of all the biomes. • It extends 8-10 km. to upper atmosphere and 8-10 km into the depth of the ocean. • Organisms within the biosphere not only adapt themselves but also interact to modify and control chemical and physical conditions of the biosphere.

Q:5 Differentiate between Habitat and Niche.

Habitat	Niche
• The actual location of place where an organism lives is called its habitat. OR • Habitat is a specific locality with particular set of environmental conditions where organisms live. • An organism responds to a variety of environmental factors. When all these factors are within the range of tolerance, the organism can inhabit the location.	• Niche is defined as "the ultimate distributional unit within which a species is restrained by the limitations of its physical structure and its physiology." OR • Charles Eton, considered the niche, the basic role of an organism in the community what it does in and for living community, its relationship to its food and enemies. In other words, he defined the niche as the species' occupation. OR • A niche is defined as the role a species plays in a community

	including behavior and influence.
• Habitat is a part of the ecosystem.	• Niche is everything about ecosystem.
• A habitat could not be that specific.	• A niche is always species/individual specific.
• Habitat is a part of niche.	• Niche is not a part of habitat.

Q:6 Differentiate between Autecology and Synecology.

Autecology	Synecology
• The study of single population's relationship to environment is called autecology.	• The study of the relationship of different communities grouping of populations) to their environment is called synecology.
• It is also called population ecology.	• It is also called community ecology.
• In it we can only study about the species level.	• During studying the community we come across three levels of integration: a) Individual b) Population c) Community • The various aspects of community like the origin, structure and composition of the community are studied in synecology.
• Example: When we are studying 50 to 100 plants of soyabean for effect of water pollution on their growth and yield, we are studying the single or one population of soyabean plant, and this is autecology.	• Example: Studying about different species in forest interacting with one another and non-living environment.

Q:7 Name subdivision of Biotic and Abiotic components?

Ans. Biotic Components:

- Producers
- Consumers
- Decomposers

Abiotic Components:

- Atmosphere
- Hydrosphere
- Lithosphere

Q:8 How many basic interaction components of ecosystem are there?

Ans: The ecosystem consists of two basic interacting components:

- The living or biotic.
- The physical or abiotic factors.

Q:9 Define and describe biotic components of an ecosystem.

Ans: Biotic components: These are including all living organisms of an ecosystem. These include

Produces:

- These are the green photosynthetic plants, which capture and bring light energy into the ecosystem.
- They are able to manufacture organic food from simpler inorganic substances.
- Example: plants and autotrophic organisms.

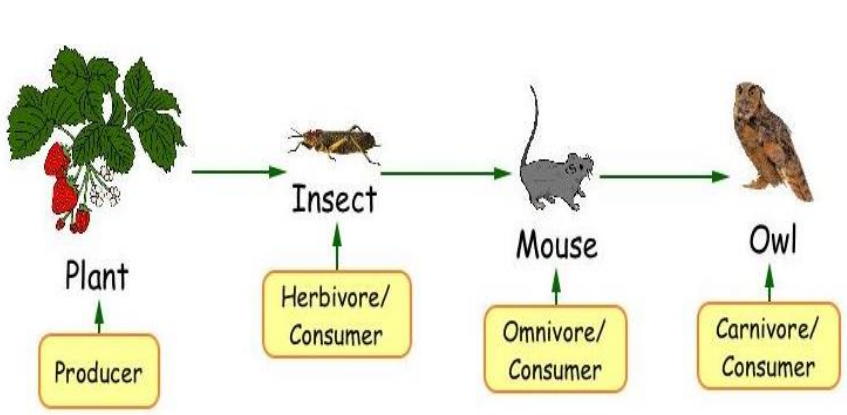
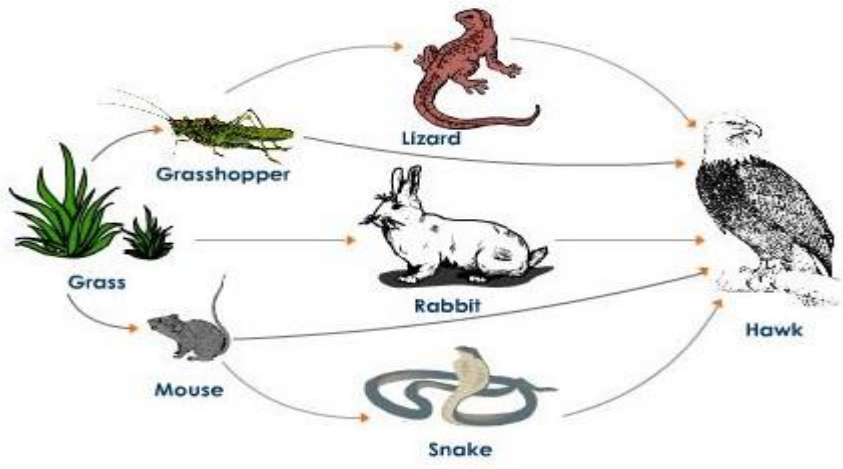
Consumers:

- They are all the organisms, primarily animals, which obtain energy directly or indirectly from the producers as ready-made organic food.
- They are mainly heterotrophic organism.
- Example: Animals.

Decomposers:

- These are mainly the fungi and bacteria which obtain their energy from the dead and decaying plants and animals.
- They release chemical elements as ions.
- The main chemical ions are nitrates ammonia phosphates potassium and calcium.
- Example: Fungi and bacteria.

Q:10 Differentiate between Food chain and Food web.

Food chain	Food web
• Process and sequence of eating and being eaten of organisms y other organism is called food chain. OR • The transfer of energy from the source (plants) to different trophic level with the repeated stages of eating and being eaten.	• Food web is actually "the combination of many food chains". OR • There is not food chain but scores of food chains that are cross linked with many more chains. This makes a food web of interconnected chains that look like a spider's web.
• Food chain show a single linear path as animals eat each other to have a large carnivore at the top.	• Food web show a complex interconnected paths how plants and animals are linked.
• A short food chain of 2 to 3 links, support a community more efficiently.	• Food we allows several pathways to obtain food so complex food we with many links determine a stable ecosystem.
• Example:  	• Example: 

Q:11 What type of food chain better supports a community? And why?

Ans: A short food chain of 2 to 3 trophic levels supports a community more efficiently than a long food chain of 5 links.

- As in each trophic level about 80 to 90 % energy is lost into outer space so in long food chain very little energy is available for higher trophic levels supporting less number of individuals.

Q:12 Define succession; Differentiate between Primary and Secondary succession.

Ans: Succession: Succession is a sequence of in the community structure of an ecosystem over a period of time.

OR

It is a kind of community relay in which assemblage of plants and animals replace the earlier ones in a sequence that is at least somewhat predictable.

- Succession is initiated by a few hardy invaders called pioneers and it ends with a diverse and stable climax community.

Primary succession	Secondary succession
• During primary succession, an ecosystem is forged from bare rock or a clear glacial pool, where there is no trace of previous life.	• During secondary succession, a new ecosystem develops after an existing ecosystem is disturbed as in case of forced fire or abandoned farmland.
• It is slow process as soil conditions are not suitable and little nutrients are available.	• It happens much more rapidly because the previous community has left its marks in the form of improved soil and seeds.
• Primary colonizers are involved during this succession.	• No need of primary colonizers in secondary succession.
• Primary succession is rarer than the secondary succession.	• Secondary succession is more frequent than primary succession.

Q:13 Differentiate between Pioneer and Climax community.

Ans:

Pioneer community	Climax community
• Succession begins by a few hardy invaders called pioneer community.	• At the end of succession the diverse and stable community is climax community.

• Example: Crustose lichen in xerosere.	• Example: Trees or forest at the end of xerosere.

Q:14 Differentiate between Hydroxere and Xeroxere.

Hydroxere	Xeroxere
• Primary succession occurring in a hydric or wet habitat (pond) is called hydroxere.	• Primary succession occurring on a xeric or dry habitat (soil) then it is termed as xerosere.
• Plants growing in wet condition or in water are called hydrophytes.	• Plants growing in xeric condition are called xerophytes.

Q:15 What do you mean by Seral community?

Ans: Seral community: Each stage of succession is called sere, and the community at each stage of succession is called seral communities.

- First seral community is called pioneer while last seral community is called climax community

Q16: Differentiate between Predator and Prey.

Predator	Prey
• An animal that preys on other animals is called as predator.	• The animal that is caught and eaten is called prey.
• Predator kills the pray at once and eats it soon after killing.	• Prey is killed by predator readily.
• Predator could be either small or larger than the prey.	• Usually prey is smaller and less competent than predators.
• Predators reproduce slowly.	• Usually reproduction potential of prey is greater than predator.
• Example: lion is predator of deer etc.	• Deer is prey of lion.

Q:17 How a predator is related to its prey?

Ans: In predator-prey relation, the populations of both the organisms are interrelated. As the population size of prey increases that can support more predators so population of predators also increases.

- But when the predators increase in number due to rapid predation the size of prey decreases. In this way ecosystem is kept balanced.

Q:18 Differentiate between Predation and Parasitism.

Predation	Parasitism
• An animal that preys on other animals is called as predators. So the predators are a tertiary or secondary consumers or a carnivore. • The animal that is caught and eaten is called as prey. The overall process is called as predation e.g. cat/mouse, fox/rabbit. OR • It is an association between two animals in which one (predator) kills the other pray) to get food. • **Significance:** 1. This relationship helps to maintain a balance in the wild populations of predator and prey in limits. 2. It produces competent predators and prey surviving through natural selection. • **Example**: Cats eats rat, fox eats rabbit etc.	• This is an association between a host and parasite, which involves providing the parasite, with food, protection and conditions for its survival. The parasite mostly harms the host. • The parasites are of two types. 1. Ecto-parasites e.g. fungi causing dandruff. 2. Endo-parasites e.g. tape worm in intestine of man. • **Significance:** 1. This relationship helps to maintain a balance in the wild populations of parasite and host in limits. 2. It produces competent hosts and parasites surviving through natural selection. • **Example:** plasmodium parasites man, ticks suck blood of animals.

Q:19 What is infestation?

Ans: Infestation:

Diseases in living organisms, which are caused by parasites, are called infestations.

- In general, the term "infestation" refers to parasitic diseases caused by animals such as arthropods (i.e. mites, ticks, and lice) and worms.
- Infestations can be classified as either external or internal with regards to the parasites' location in relation to the host.

Q:20 What is symbiosis? Discuss its types?

Ans: Symbiosis: It is an association between two organisms, in which both get benefit from each other (mutualism) or one get benefit and other is not harmed (commensalisms).

- Symbiosis is an association between two dissimilar organisms which live together for mutual benefit.
- Symbiosis means "living together".
- This type of association may be continuous or transitory obligate or facultative.

Types: It can be mutualism or commensalisms.

Q:21 Differentiate between Mutualism and Commensalism.

Mutualism	Commensalism
• It is an association between two organisms (partner) in which both get benefit from each other.	• In this kind of symbiotic association, one of the partners is benefited while the other is neither benefited.
• Such partners are called Mutuals.	• Such partners are called Commensals.
• Example: relationship like lichen (Algae and fungi), Mycorrhizae (fungi and roots of vascular plants), Root nodules (Rhizobium and roots of Leguminous plants) and between insects and following plants.	• Example: a small fish called remora may attach itself to some shark. As the shark feeds,, the remora picks up the scrap (small pieces). The remora is benefited from this relationship whereas the shark is not affected in any way.

Q:22 Differentiate between Lichens and Mycorrhiziae.

Lichen	Mycorrhiziae
• Lichen is a dual organism composed of symbiotic, mutualistic association of an alga living within a fungus mycelium. OR • It is a mutualistic association between fungi and certain photoautotrophs like algae/blue green algae.	• Mycorrhiza is an association between the roots of plants growing in acid soil and certain fungi.
• The host provides the fungus with an enzyme to digest carbohydrates in leaf litter.	• These lichens may grow on exposed rock surface and are important colonizers of bare ground,, and help in succession.
• In return the fungus provides mineral ions from soil to the host (plant).	• Fungi provide protection to algae and get food from algae.

Q:23 Write the significance of root nodules in plants.

Ans: Significance of root nodules:

- Association between roots of leguminous plants and nitrogen fixing bacteria from root nodules.
- The legume plants, pea and bean are the hosts of symbiotic bacteria.
- These bacteria inhabit the roots of these plants and form root nodules.
- The root nodules bacteria fix nitrogen in soil air. They convert this nitrogen into amino acid. These amino acids are used by the host.
- In return, host provides bacteria with food and protection.
- Root nodules increase the soil fertility.

Q24: Define grazing. How grazers affect the ecosystem?

Ans: Grazing:

Many animals like rabbits, goat, sheep, cow, buffalo and horses feed on grasses. This mode of feeding is called grazing and these animals are called grazers. These animals live in pastures land where they feed on grasses, herbs and shrubs.

- The overgrazing may result in barren-land or desert.

Effect of Grazers on Ecosystem:

- The hooves of grazing animals trample the soil into hard layer as a result of which rain water will not penetrate this soil; it runs off from upper surface removing the top soil with it.
- The final result of over-grazing is total barren land.
- Moderate grazing is very helpful to maintain grassland ecosystem.
- It destroys the competition and helps the grass to grow well.
- Over-grazing may lead to the transformation of grassland into a desert.

Q:25 What are the advantages and disadvantages of grazing?

Ans: Grazing is very important factor in determining the ecosystem.

Advantage: Moderate grazing is very helpful to maintain grassland ecosystem. It destroys the competitors and helps the grass to grow well.

Disadvantage: Over grazing may lead to the transformation of grassland into a dessert.

Q:26 Define biogenic elements. Differentiate between Micronutrients and Macronutrients.

Ans: Biogenic elements: The chemical elements essential for life in living organisms are called biogenic elements or nutrient element.

Micronutrients	Macronutrients
• The nutrients which are required by the organisms in small amount are called micronutrients.	• The nutrients which are required by the organisms in large amount are called macronutrients.
• These elements or nutrients makeup a little amount of our body.	• These elements or nutrients makeup a large amount of our body.
• Example: zinc molybdenum iron, iodine.	• Example: water, carbon, hydrogen, oxygen, nitrogen, phosphorus, sulphur and calcium.

Q:27 How the balance in nutrient cycle is upset?

Ans: All nutrient cycles involve the circulation (Recycling) of elements between living organisms and non-living environment. If these materials are taken by organisms and are not returned to environment then these materials would not be available to next generations and recycling will stop. This will result into the balance upset in nutrient cycles.

Q:28 Name some ways of nitrogen depletion from soil and its remedy.

Ans: Nitrogen depletion: Take place due to

- Soil erosion
- Water percolation
- Fire
- De-nitrification.

Remedies of nitrogen depletion:

Soil nitrogen improved by:

- Nitrogen fixation by nitrogen fixing bacteria.
- Addition of artificial nitrogen fertilizers.
- Improving soil aeration.
- Preventing soil erosions fire and water percolation.

Q:29 What is meant by Ammonification and Nitrification?

Ammonification	Nitrification
• The soil-dwelling decomposers like bacteria and fungi use amino acids, proteins, nucleic acid and nucleotides from debris and release excess of ammonia and ammonium ions. This process is called ammonification. OR • Conversion of molecular nitrogen (N_2) into ammonia and ammonium ions is called ammonification.	• Several nitrifying soil bacteria like Nitrosomonas and Nitrobacter are able to oxidize ammonia and ammonium compounds. This oxidation is termed as nitrification. OR • Conversion of ammonia and ammonium ions into nitrites and nitrates with the help of decomposers.
• Some green plants can take ammonium ions directly into their roots.	• It increases the fertility of the soil by adding nitrates.

Q:30 Describe Assimilation and Denitrification?

Assimilation	Denitrification
• The highly soluble nitrates are dissolved in the soil water and are taken up by the roots of the plants. This absorption and utilization of ammonia or nitrates by plants is called assimilation. OR • The plants when absorb nitrogen from soil, it is used up to produce to update amino-acids,, proteins and nucleic acid and other organic compounds. This is known as assimilation. OR	• Certain bacteria (denitrifying in soil breakdown nitrates in soil releasing nitrogen back into the atmosphere and use this oxygen for their own respiration.

• When nitrogen becomes part of the body this is called assimilation.	
• The plants can utilize ammonium directly. But most of the nitrogen moves from the soil in the roots in the forms of nitrates.	• This process depletes nitrates from soil and hence lowers the soil fertility but maintains N_2 level in atmosphere.

Q:31 Why the process of assimilation is called reverse of nitrification?

Ans: In nitrification, ammonium ion is converted into nitrites and nitrates in soil. When these nitrites and nitrates are taken up by plant for assimilation, they convert them back into ammonium ions for further utilization. So both processes are reverse of each other.

Q:32 What are the function of Nitrosomonas and Nitrobacter?

Ans: **Nitrosomonas:** It converts ammonia and ammonium ions to nitrites.

Nitrobacter: It converts Nitrites into Nitrates.

Q:33 Define Denitrification.

Ans: Denitrification: In the absence of oxygen denitrifying bacteria break down nitrates releasing nitrogen back into the atmosphere and using oxygen for their own respiration. This process is known as denitrification in poorly drained soils.

Q:34 Define productivity of an ecosystem and differentiate between Gross primary production and Net primary production.

Ans: Productivity: The rate of production of new organic matter by the living organism of an ecosystem is called productivity.

OR

The rate of production of new biomass during a specific period is called productivity.

- Productivity I generally expressed in terms of grams of kilocalories per square meter.
- The productivity can be indicated by consumption of CO2 and evolution of O2 in the process of photosynthesis.

Gross primary production	Net primary production
• It is total amount of energy in the form of sunlight fixed by plants into food. OR • The rate of production of new organic matter by the autotrophs of an ecosystem.	• It is amount of energy left after plants have met their respiratory need. OR • The amount of energy (organic matter) left after the plants have met heir respiratory need.
• It is total photosynthesis produced by the fixing 1% light energy into chemical energy.	• It is also called as plant biomass available for next trophic level.

Q:35 Define trophic level and also discuss that what percentage of sun-energy reach to plants and other trophic levels?

Ans: Flow of energy in the ecosystem:

- **Trophic level:**

  The food link of an organism in a food chain or a food web is called trophic level.

  OR

  Each feeding level in a food chain is called trophic level.

  Producers→ Herebivores → Carnivores

  1st T.Level 2nd T.Level 3rd T.Level

- About 1% of the total energy from the sun is trapped by the producers in the ecosystem.
- As energy is transferred from one trophic level to another, 0% of the original energy is lost as heat.

Exercise MCQ's

❖ **Encircle the correct answer from the multiple choices**.

1) **The study of relationship of an organism to its environment is known as:**
   a) Biology b) ecology c) zoology d) mycology
2) **Similar group of individuals who can inter breed and produce organisms of their own kind forms of:**
   a) Population b) community c) species d) succession
3) **When living and non-living interact to produce a stable system in which exchange of material with flow of energy takes place it forms a / an:**
   a) Environment b) ecosystem c) stable community d) succession
4) **The living organisms which can prepare their own food are:**
   a) Predators b) parasites c) producers d) prey
5) **The living organisms, which cannot prepare their own food but obtain readymade food from others, are:**
   a) Primary and secondary consumers
   b) Secondary and tertiary consumers
   c) Only primary consumers
   d) Consumers

Answer key:

1	B	**2**	c	**3**	b	**4**	c	**5**	d

Most Important MCQ's

❖ **Encircle the correct answer from the multiple choices.**

Ecosystem and its component

1. **A treasure of all types of resources essential to maintain life on earth:**
   a) Environment b) Water c) Land d) Sun
2. **In ecosystem the word 'eco' is related to:**
   a) System b) Environment c) Land d) Sun
3. **The actual location or place where an organism lives is called:**
   a) Behavior b) Address c) Role d) Habitat
4. **In 1917 Joseph Grinnell an American Ornithologist first proposed the term:**
   a) Ecology b) Habitat c) Biome d) Niche
5. **In 1917, term niche was first proposed by American Ornithologist.**
   a) Charles Elton b) Charles Grinnell c) Ernst Haeckel d) Lamarck
6. **Who defined the niche as the species occupation?**
   a) Charles Elton b) Charles Lyell c) Cuvier d) Sutton
7. **Charles Elton defined the niche as the specie's:**
   a) Occupation b) Development c) Work d) Job
8. **Charles Elton defined the Niche as the specie's:**
   a) Behavior b) Address c) Role d) Habitat
9. **What is the niche of an organism in an ecosystem?**
   a) Role played by many organisms in an ecosystem
   b) Role played by dead organism in an ecosystem
   c) Role played by community of microorganism in their ecosystem
   d) Role played by an organism in its ecosystem
10. **Biome is a:**
    a) Simple Community b) Complex community c) Regional community d) Climax community
11. **Major regional ecological community of plants and animals forms**
    a) Biosphere b) Biomass c) Biomes d) Bioecosystem
12. **The biosphere covers about**
    a) 8-10 km b) 5-10 km c) 15-30 km d) 16-20 km
13. **A thin layer of earth in which all living organisms exists is called:**
    a) Ecosystem b) Habitat c) Biosphere d) Xerosere
14. **Lithosphere includes:**
    a) Earth soil b) Air c) Water d) Gases
15. **The whole of the world's land is called:**
    a) Ecosphere b) Hydrosphere c) Lithosphere d) Biosphere
16. **A group of inter-breeding individuals occurring together in a space and time is called:**
    a) Community b) Niche c) Population d) Species
17. **A localized group of species belonging to the same species is called as (Any group of interbreeding organisms of same species that exist together in both time and space is called):**
    a) Community b) Population c) Ecosystem d) Biosphere
18. **Study of single population's relationship to environment is called:**
    a) Autecology b) Synecology c) Ecology d) Gerontology
19. **Populations of different species (plants and animals) living in the same habitat form a:**
    a) Community b) Biosphere c) Ecosystem d) Microhabitat
20. **Study of relationship of different communities to environment is called:**
    a) Synecology b) Autecology c) Embryology d) Zoology
21. **While studying the community we come across following level of integration.**
    a) Single level b) Two level c) Three level d) Four level
22. **The basic functional unit of ecology is:**
    a) Community b) Population c) Ecosystem d) Niche
23. **The basic functional unit of ecosystem is:**
    a) Community b) Population c) Ecosystem d) Species
24. **The abiotic component of an ecosystem is:**
    a) Temperature b) Producers c) Consumer d) Decomposer
25. **Which of these is biotic factor of the ecosystem?**
    a) Photosynthetic plants b) Soil c) Water d) Air
26. **Pick the biotic component from the following:**
    a) Soil b) Atmosphere c) Water d) Animals
27. **The living organism producing their own food (All food chains and food webs begin with)**
    a) Heterotrophs b) Decomposers c) Green plants d) Consumers

28. Green plants that capture and bring light energy into ecosystem:
a) Producers b) Consumers c) Decomposers d) Scavengers

29. Bacteria and fungi are examples of:
a) Predators b) Consumers c) Decomposers d) Detritivores

30. Which statement is true?
a) Producers are heterotrophic organisms
b) Consumers are autotrophic organisms
c) Fungi and bacteria are decomposers
d) Consumers release chemical elements as ions

Interaction in Ecosystem and Energy flow

31. The distinct levels or link of food chain are called:
a) Food chain b) Food web c) Trophic level d) Energy pyramid

32. Which of the following is not true for food web?
a) Formed from food chain
b) Complex than food chain
c) Stable than food chain
d) Starts with primary consumers

33. All the food chain and food webs begin with:
a) Primary consumers b) Secondary consumers c) Decomposers d) Producers

34. In ecosystem, 2nd trophic level is consisted of:
a) Primary consumers b) Secondary consumersc) c) Decomposers d) Producers

35. The animal that is caught and being eaten is called:
a) Predator b) Prey c) Host d) Parasite

36. One of the following is an example of predator-prey relationship:
a) Fungus and algae
b) Flower and insect
c) Fox and rabbit
d) Root nodule and bacteria

37. If population of predator increases than population of prey:
a) Increase b) Decrease c) Has no effect d) May increase or decrease

38. Diseases in living organisms which are caused by parasites are called:
a) Infection b) Infestation c) Parasitism d) Succession

39. An association between two organisms by which both are benefited is called:
a) Parasitism b) Commensalism c) Predation d) Mutualism

40. Relationship between two or more organisms of different species in which all parents get benefit is called:
a) Symbiosis b) Commensalism c) Parasitism d) Predation

41. An association between organisms which brings benefit to both organisms is known as:
a) Predation b) Grazing c) Commensalism d) Symbiosis

42. Symbiotic association of an alga living within fungus mycelium is:
a) Mycorrhizae b) Lichen c) Root nodules d) Parasitism

43. Sharks may have small fish attached to them called
a) Rumors b) Romas c) Romosis d) Remoras

44. Lichen is a…….. Relationship:
a) Parasitism b) Commensalism c) Predation d) Mutualism

45. Legume plants are the hosts to
a) Rhizobium b) Mycorrhiza c) Lichen d) Algae

46. The bacteria in the root nodules fix nitrogen and convert it into:
a) Nitrates b) Nitrite c) Amino acid d) Ammonia

47. The relationship between insects and flowering ants is the example of:
a) Parasitism b) Commensalism c) Mutualism d) Predation

48. The relationship of shark with small fish remoras is an example of:
a) Grazing b) Commensalism c) Parasitism d) Predation

49. About this much of the total energy from sun is trapped by producers in an ecosystem:
a) 1% b) 2% c) 3% d) 4%

Grazing and Succession

50. Over grazing leads to
a) Good pastured lands b) Rocky areas c) Totally barren lands d) Salinity

51. Moderate grazing is very helpful to maintain ecosystem:
b) Tundra b) Grassland c) Pond d) Desert

52. Change in community structure of an ecosystem over a period of time:
a) Niche b) Unstable ecosystem c) Succession d) Pioneer

53. In each case,, succession is initiated by a few hardy invaders called:
a) Starters b) Pioneers c) Decomposers d) Climax community

54. Primary succession, which starts in a pond ecosystem, is termed as:

a) Ecosphere b) Derosere c) Hydrosere d) Xerosere

55. The succession in pond is called:

a) Derosere b) Xerosere c) Hydrosere d) Mesoxere

56. Secondary succession starts from

a) A bar rock sand
b) Clear glacial pool
c) From remains of previous ecosystem
d) Fire

57. The stage in which the lichens are just the crumpled leaves attached at one point:

a) Foliage lichen stage b) Crustose lichen stage c) Moss stage d) Shrub stage

58. Mosses are

a) Dermatocarpon b) Permellia c) Tortula d) Both b and c

59. In xerosere, polytrichum and Tortula represent:

a) Herbaceous stage b) Moss stage c) Foliage lichen stage d) Crustose lichen stage

60. Herbaceous stage in xerosere is the:

a) First stage b) Third stage c) Fourth stage d) Last stage

61. When a succession is completed, a great diversity of plants and a stable community is seen, which is called:

a) Hydrosphere b) Climax community c) Pioneers d) Secondary succession

62. Wood forests form the

a) Pioneers community b) Climax community c) Top community d) Transient community

Biogeochemical cycle

63. The macronutrient, in biogeochemical cycle is:

a) Iron b) Calcium c) Zinc d) Iodine

64. Nitrogen constitutes about _____ % of atmosphere

a) 58% b) 25% c) 10% d) 78%

65. Once a nitrate enters the plant cell it is reduced as:

a) Nitrite b) Ammonia c) Carbohydrates d) Protein

66. When bacteria in soil oxidize ammonia or ammonium ions, this is called:

a) Oxidation b) Denitrification c) Ammonification d) Nitrification

67. The process in which microorganisms use the proteins and amino acids and release ammonia or ammonium ions is known as:

a) Nitrification b) Ammonification c) Denitrification d) Assimilation

68. Soil erosion, fire and percolation down through the soil cause loss of:

a) Sulphates b) Carbonates c) Nitrates d) Phosphate

69. Which of the following step of nitrogen cycle is not useful for plants

a) Ammonification b) Nitrification c) Denitrification d) Both a and c

70. Gross primary production is

a) Amount of energy fixed by small plants
b) Amount of energy fixed by large plants
c) Total amount of energy fixed by all plants
d) Primary production minus respiratory loss

71. Plant biomass is

a) Gross primary production
b) Net primary production
c) Gross primary production minus respiratory loss
d) Both b and c

Answer key:

1	a	**2**	b	**3**	d	**4**	d	**5**	b	**6**	a	**7**	a	**8**	c	**9**	d	**10**	c
11	c	**12**	d	**13**	c	**14**	a	**15**	c	**16**	c	**17**	b	**18**	a	**19**	a	**20**	a
21	c	**22**	c	**23**	d	**24**	a	**25**	a	**26**	d	**27**	c	**28**	a	**29**	c	**30**	c
31	c	**32**	d	**33**	d	**34**	a	**35**	b	**36**	c	**37**	b	**38**	b	**39**	d	**40**	a
41	d	**42**	b	**43**	d	**44**	d	**45**	a	**46**	c	**47**	c	**48**	b	**49**	a	**50**	c
51	b	**52**	c	**53**	b	**54**	c	**55**	c	**56**	c	**57**	a	**58**	c	**59**	b	**60**	c
61	b	**62**	b	**63**	b	**64**	d	**65**	d	**66**	d	**67**	b	**68**	c	**69**	c	**70**	c
71	d																		

Past MDCAT MCQ's

2008

1. **Pick the biotic component from the following.**
   a) Soil b) Atmosphere c) Water d) Animals

2009

2. **Diseases in living organisms which are caused by parasites are called:**
   a) Disinfestations b) Infections c) Antisepsis d) Infestations
3. **The nutrient cycles are also called:**
   a) Biogeochemical cycles b) Bio element cycles c) Biochemical cycles d) Geochemical cycles
4. **The productivity of aquatic ecosystem is determined by:**
   a) Water b) Light c) Light and nutrients d) Nutrients

2010

5. **Group of interbreeding individuals of particular species, sharing common geographical area is called:**
   a) Population b) Community c) Community ecology d) Autecology
6. **A parasite living inside body of the host is called:**
   a) Ectoparasite b) Facultative parasite c) Obligate parasite d) Endoparasite
7. **An association between two organisms benefiting both is called:**
   a) Commensalism b) Predation c) Parasitism d) Symbiosis
8. **Which of the following is the lowest level of biological organization with respect to others?**
   a) Multicellular organisms b) Species c) Biosphere d) Population

2011

9. **The typical environment of a particular organism population community is called:**
   a) Niche b) Habitat c) Ecosystem d) Biosphere
10. **In an ecosystem, mycorrhizae is an example of:**
    a) Symbiosis b) Commensalism c) Predation d) Parasitism
11. **Successive stages of eating and being eaten by which recycling of materials and flow of energy takes place is called:**
    a) Food Chain b) Trophic Level c) Food Web d) Food Link

2012

12. **What is the niche of an organism in an ecosystem?**
    a) Role played by many organisms in an ecosystem
    b) Role played by community of microorganisms in their ecosystem
    c) Role played by a dead organism in an ecosystem
    d) Role played by an organism in its ecosystem.
13. **The distinct levels or links of food chain are called:**
    a) Trophic level b) Energy pyramid c) Food web d) Food chain
14. **A relationship between two or more organisms of different species in which all partners get benefit is called:**
    a) Symbiosis b) Commensalism c) Parasitism d) Predation
15. **Bacteria and fungi are examples of:**
    a) Producers b) Consumers c) Decomposers d) Denvers

2013

16. **In an ecosystem mycorrhizae are an example of:**
    a) Predation b) Mutualism c) Symbiosis d) Parasitism
17. **Living part of ecosystem is:**
    a) Lithosphere b) Community c) Hydrosphere d) Biosphere
18. **A living association between two living organisms of different species which is beneficial to both the partners is called:**
    a) Commensalism b) Mutualism c) Parasitism d) Predation

2014

19. **Individual successions are known as:**
    a) Primary successions b) Seres c) Secondary successions d) Xeroses

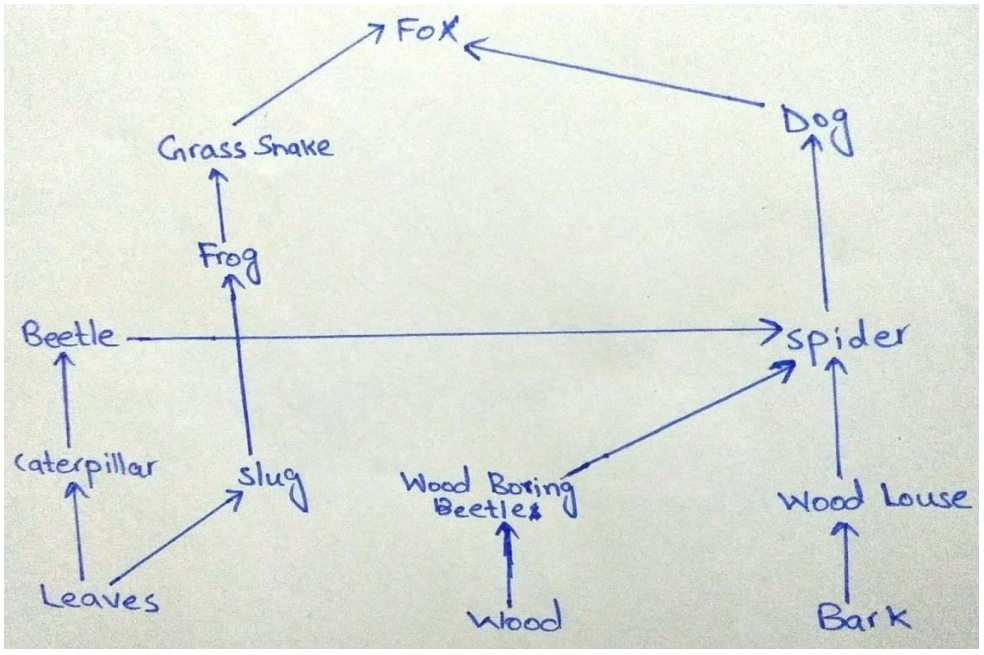
20. Which one of the following is the ultimate distributional unit within which a species is restrained by the limitations of its physical structure and physiology?

a) Niche b) Biome c) Ecosystem d) Habitat

21. All herbivores belong to which trophic level in the food chain?

a) T1 b) T3 c) T2 d) T4

22. How many food chains are present in following food web?



a) 5 b) 3 c) 6 d) 4

23. The relationship in which one organism gets benefit and the other is not affected is called:

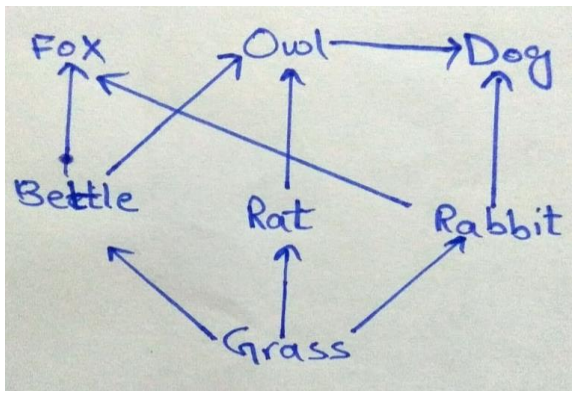
a) Mutualism b) Predation c) Commensalism d) Parasitism

2015

24. During successions, the first organisms that develop on bare rock are:

a) Lichens b) Moss c) Shrubs d) Herbs

25. Trophic level of a herbivore in given food-web is:



a) 1 b) 4 c) 3 d) 2

2016

26. The organisms of third trophic level are:

a) Primary consumer b) Tertiary consumer c) Primary producer d) Secondary consumer

27. The ultimate source of energy in an ecosystem is:

a) Photosynthesis b) Plants c) Sun d) Water

28. All the food chains and food webs begin with:

a) Detritus b) Green plants c) Herbivores d) Omnivores

29. The change from bare rock or open area is rapid, especially in the initial stages and follows a series of recognizable and hence predictable stages. This process is called:

a) Pioneers b) Succession c) Xerosere d) Secondary succession

2017

30. How denitrification does occur in soils:

a) Bacterial reduction of NO3 ions to N2 gas
b) Active uptake of Nitrate ions by plant roots
c) Drainage of manure from fields
d) Leaching of nitrate ions

Answer key:

1	d	**2**	d	**3**	a	**4**	c	**5**	a
6	d	**7**	d	**8**	a	**9**	b	**10**	a
11	a	**12**	d	**13**	a	**14**	a	**15**	c
16	c	**17**	d	**18**	b	**19**	b	**20**	a
21	c	**22**	d	**23**	c	**24**	a	**25**	d
26	d	**27**	c	**28**	b	**29**	b	**30**	a