

Unit 9.1. MCQs Set 1

Results



#1. Q1. Biodiversity refers to the variety and variability of living organisms. Which of the following levels of biodiversity is not typically recognized?

- (A). Genetic diversity
- (B). Species diversity
- (C). Ecosystem diversity
- (D). Solar diversity

Biodiversity is generally recognized at three levels—genetic, species, and ecosystem diversity; “solar diversity” is irrelevant.

#2. Q2. Identify the incorrect statement regarding biodiversity of medicinal plants:

- (A). Medicinal species can be threatened by overharvesting
- (B). They only occur in tropical forests and never in temperate zones
- (C). Many have unique secondary metabolites with therapeutic value
- (D). Conservation ensures sustainable availability for future generations

Medicinal species grow in a variety of climatic conditions, not exclusively in the tropics.

#3. Q3. Fill in the blank: The approach that promotes people’s well-being by maintaining and improving environmental conditions is known as _____.

- (A). Occupational Health
- (B). Social Health
- (C). Environmental Health



- (D). None

Environmental health addresses how air, water, and soil quality impact human well-being.

#4. Q4. Which of these is a primary metabolite in plants?

- (A). Terpenoids

(B). Phenolics

(C). Carbohydrates

(D). Alkaloids

Primary metabolites like carbohydrates are essential for basic cellular growth and function; the others are secondary metabolites.

#5. Q5. Secondary metabolites like alkaloids and flavonoids in medicinal plants are mainly produced for:

- (A). Photosynthetic activity

(B). Essential cell division processes

(C). Defense, protection, or attracting pollinators

(D). None

Secondary metabolites are mainly produced for defense, protection, or reproductive interactions (e.g., attracting pollinators).

#6. Q6. Match the items in Column I (types of secondary metabolites) with Column II (examples): Column I: Alkaloids, Terpenoids, Phenolics Column II: (A). Curcumin, (B). Vincristine, (C). Menthol; Options: (A) 1-b, 2-c, 3-a; (B) 1-c, 2-a, 3-b; (C) 1-a, 2-b, 3-c; (D) 1-b, 2-a, 3-c

- (A). 1-b, 2-c, 3-a

(B). 1-c, 2-a, 3-b

(C). 1-a, 2-b, 3-c

(D). 1-b, 2-a, 3-c

Vincristine (an alkaloid), Menthol (a terpenoid), and Curcumin (a phenolic) are correctly paired in option A.

#7. Q7. In an ecosystem, energy generally flows:

- (A). From higher trophic levels to producers

(B). From producers to consumers to decomposers

(C). From carnivores directly to omnivores only

(D). Equally in all directions



Energy flows from autotrophs (producers) through various trophic levels, with decomposers recycling nutrients.

#8. Q8. A food web differs from a food chain mainly by:

- (A). Showing just a single linear pathway
- (B). Interlinking multiple feeding pathways among various organisms
- (C). Being specific to aquatic ecosystems only
- (D). None

A food web is a more complex network of feeding relationships compared to a single linear food chain.

#9. Q9. Fill in the blank: _____ is the gradual process of change in species composition of a community over time, leading from pioneer to climax stages.

- (A). Ecological succession
- (B). DNA replication
- (C). RNA synthesis
- (D). Mitosis

Ecological succession describes the gradual change in species composition in an ecosystem over time.

#10. Q10. Reasoning Type - Assertion: India is termed a mega-biodiversity nation. Reason: It has extremely low endemism and few habitats.

- (A) Both A and R true, R explains A
- (B) Both A and R true, but R does not explain A
- (C) A true, R false
- (D) A false, R true

India is mega-diverse due to high endemism and varied habitats; the reason given (low endemism) is false.

#11. Q11. Which of these is a biodiversity hotspot in India?

- (A). Indo-Gangetic plains exclusively
- (B). Western Ghats
- (C). Deccan plateau alone
- (D). Arctic tundra

The Western Ghats are a recognized global biodiversity hotspot in India.

#12. Q12. Non-renewable biological resources are generally:

- (A). Replenished quickly



-
- (B). Exhaustible, e.g., certain fossil-based resources
-
- (C). Minimal synergy
-
- (D). Not renewable over short time scales

Non-renewable resources do not replenish quickly and include resources like fossil fuels.

#13. Q13. Fill in the blank: Excessive deforestation and habitat destruction leads to _____, where local biodiversity is lost, harming indigenous knowledge and livelihoods.

-
- (A). Regeneration of biodiversity
-
- (B). Degradation of biodiversity
-
- (C). Environmental Health
-
- (D). None

Habitat destruction leads to degradation of biodiversity, disrupting ecosystem services and cultural practices.

#14. Q14. A key factor in “environmental health” is:

-
- (A). None
-
- (B). Controlling pollution, sanitation, and ensuring safe water and living conditions
-
- (C). Inadequate waste management practices
-
- (D). Infect illnesses

Proper environmental health involves managing pollution, sanitation, and safe water supplies.

#15. Q15. If an area experiences the overharvesting of a medicinal plant, which immediate risk is likely?

-
- (A). None
-
- (B). Species population collapse, leading to loss of local remedies and genetic erosion
-
- (C). Temporary market shortage due to supply-demand imbalance
-
- (D). Increased export opportunities

Overharvesting can result in population collapse, reducing the species' availability and genetic diversity.

#16. Q16. Which statement about “pharmacological properties” of secondary metabolites is incorrect?

-
- (A). Some can have antimicrobial, anti-inflammatory, or antioxidant effects
-
- (B). They cannot be used for any therapeutic purpose
-
- (C). They often form the basis of active principles in herbal medicines
-
- (D). None



It is incorrect to state that secondary metabolites cannot be used therapeutically; many are central to herbal medicine.

#17. Q17. Name one important secondary metabolite from an Ayurvedic medicinal plant and its known therapeutic property.

- (A). Andrographolide from Andrographis paniculata
- (B). Mercury in Rasa medicine
- (C). Swaras extracted fresh leaves
- (D). Decoction of dried herbs

Andrographolide from Andrographis paniculata, which has hepatoprotective and anti-inflammatory effects.

#18. Q18. In an ecosystem, decomposers are crucial because:

- (A). None
- (B). They break down dead organisms, recycling nutrients back into the soil
- (C). They reduce soil fertility
- (D). They cause rapid decay of biomass

Decomposers recycle nutrients by breaking down organic matter, sustaining soil fertility.

#19. Q19. Fill in the blank: The practice of preserving biodiversity by maintaining habitats in their natural state is termed _____ conservation.

- (A). In situ
- (B). In vivo
- (C). In vitro
- (D). None

In situ conservation retains species within their natural habitats such as parks and sanctuaries.

#20. Q20. "Ex situ" conservation typically means:

- (A). None
- (B). Protecting biodiversity outside its natural habitat (e.g., seed banks, botanical gardens)
- (C). Storing species in artificial environments that do not support long-term survival
- (D). Traditional farming practices

Ex situ conservation involves protecting species through methods like seed banks and botanical gardens, away from their natural habitats.



#21. Q21. Which is a recognized cause of biodiversity loss?

- (A). Enhanced pollinator populations
- (B). Habitat fragmentation, climate change, and invasive species
- (C). Low genetic diversity
- (D). Uniform weather conditions

Habitat fragmentation, climate change, and invasive species are well-documented causes of biodiversity loss.

#22. Q22. "Shifting cultivation," if unmanaged, might lead to:

- (A). None
- (B). Deforestation, soil erosion, and loss of local flora and fauna
- (C). Increased crop yields
- (D). Improved soil fertility

Unmanaged shifting cultivation can result in deforestation and soil erosion, leading to biodiversity loss.

#23. Q23. Among levels of biodiversity, "genetic diversity" is important because:

- (A). None
- (B). It enables species to adapt to changing environments and resist diseases
- (C). Lack of variation makes species stronger
- (D). It has no practical importance

Genetic diversity is crucial for species adaptation and resilience against environmental changes and diseases.

#24. Q24. Reasoning Type - Assertion: India is termed a mega-biodiversity nation. Reason: Distinct climate zones and ancient cultural traditions promoted varied herbal usage.

- (A) Both A and R true, R explains A
- (B) Both A and R true, but R does not explain A
- (C) A true, R false
- (D) A false, R true

The Indian subcontinent's diverse climates and long history of botanical knowledge drive high medicinal plant diversity.

#25. Q25. The Western Ghats region is considered a biodiversity hotspot because:

- (A). None
- (B). It hosts high endemism, threatened habitat, and numerous medicinal species
- (C). It is dominated by extensive agricultural land



- (D). It has uniform topography

The Western Ghats have a high number of endemic species and face significant environmental pressure.

#26. Q26. “Keystone species” in an ecosystem refers to:

- (A). None

(B). A species with a disproportionate effect on its environment relative to its abundance

(C). A species with the highest biomass

(D). A species that is genetically identical to others

Keystone species have a critical and disproportionate impact on ecosystem structure and function.

#27. Q27. Fill in the blank: _____ is the practice of using minimal or no chemicals in farming, promoting soil biodiversity and environmental health.

- (A). Organic Farming

(B). Use of fertilizers

(C). Grafting

(D). None

Organic farming relies on natural processes and inputs to promote soil health and biodiversity.

#28. Q28. A direct consequence of losing medicinal fauna (e.g., leeches, bees) includes:

- (A). None

(B). Loss of ecosystem services (such as pollination and biological control) and traditional therapies

(C). Increased invasive species pressure

(D). Economic benefits from synthetic replacements

Medicinal fauna often contribute to ecosystem services and traditional healing practices.

#29. Q29. “Sacred groves” in some parts of India function to:

- (A). None

(B). Conserve biodiversity through cultural or religious practices that restrict exploitation

(C). Serve as urban green spaces for recreation

(D). Be developed for commercial agriculture

Sacred groves are preserved due to cultural traditions and serve as reservoirs of biodiversity.



#30. Q30. Over-harvesting of rare medicinal plants like Picrorhiza kurroa (Kutki) leads to:

- (A). None
- (B). Population decline, potential extinction, and diminished resource for future drug discovery
- (C). Temporary shortages with quick recovery
- (D). Enhanced natural regeneration

Unsustainable harvesting practices can lead to long-term declines and even local extinction of species.

#31. Q31. Name one negative effect of biodiversity degradation on indigenous knowledge systems.

- (A). Loss of essential plant species can erode local healthcare practices and cultural identity.
- (B). It will help ecosystem to maintain the biodiversity
- (C). The Darwin's principle will not match with the statement
- (D). There will be no negative impact

Communities reliant on unique remedies can lose them if habitats are destroyed.

#32. Q32. The concept of an "ecosystem service" includes:

- (A). None
- (B). Benefits such as pollination, water purification, nutrient cycling, and climate regulation provided by ecosystems
- (C). Increased industrial productivity
- (D). Higher urban development

Ecosystem services refer to the various benefits that ecosystems provide to humans and the environment.

#33. Q33. "Megadiversity" countries are recognized by:

- (A). None
- (B). Having exceptionally high species counts, endemism, and varied ecosystems
- (C). Constant climate throughout the year
- (D). Low levels of genetic diversity

Megadiversity countries have a high number of species and unique ecosystems; India is one of them.

#34. Q34. Primary production in an ecosystem is performed by:

- (A). None
- (B). Autotrophs (plants, algae) converting solar energy into chemical energy
- (C). Heterotrophs exclusively



- (D). Decomposers

Autotrophs, such as green plants, are responsible for primary production via photosynthesis.

#35. Q35. Fill in the blank: _____ species are non-native organisms introduced into new areas, potentially outcompeting local species and reducing biodiversity.

- (A). Endemic

(B). Invasive alien

(C). Keystone

(D). Indicator

Invasive alien species are those non-native organisms that can dominate new habitats and harm native biodiversity.

#36. Q36. If an environment changes from grassland to a forest over decades, it's an example of:

- (A). None

(B). Succession

(C). Rapid species extinction

(D). Abrupt ecological collapse

Ecological succession is the gradual process through which a habitat develops over time.

#37. Q37. "Renewable resources" like bamboo or certain medicinal plants require:

- (A). None

(B). Sustainable management to regrow, so as not to exceed their natural regeneration rate

(C). Immediate replanting without rest period

(D). Chemical fertilizers for growth

Renewable resources must be managed sustainably to ensure that their rate of use does not exceed their natural regeneration.

#38. Q38. "Non-renewable resources" example is:

- (A). None

(B). Petroleum or mineral deposits that cannot be quickly replenished

(C). Rapidly regrowing forest products

(D). Common agricultural crops

Non-renewable resources, such as fossil fuels and minerals, are not replenished on a human time scale.



#39. Q39. A direct effect of climate change on medicinal plant biodiversity might be:

- (A). None
- (B). Shifts in growth zones, possibly mismatches with pollinators, leading to population decline
- (C). Increase in biomass production
- (D). Uniform global plant distribution

Climate change can alter the geographic distribution of species, leading to potential declines in medicinal plant populations.

#40. Q40. Reasoning Type - Assertion: Loss of biodiversity can reduce the discovery of new Ayurvedic remedies. Reason: Many medicinal leads come from a pool of diverse species with unique metabolites.

- (A) Both A and R true, R explains A
- (B) Both A and R true, but R doesn't explain A
- (C) A true, R false
- (D) A false, R true

High biodiversity increases the pool of potential therapeutic compounds; if species are lost, so are those potential leads.

#41. Q41. "Conservation of biodiversity" includes methods such as:

- (A). None
- (B). Protected areas (parks, sanctuaries), ex situ gene banks, and sustainable resource use laws
- (C). Commercial exploitation of natural resources
- (D). Unregulated tourism

Conservation of biodiversity employs protected areas, gene banks, and regulatory frameworks to maintain species and genetic diversity.

#42. Q42. Fill in the blank: India's _____ is a major institution that collects and conserves plant genetic resources, fostering crop biodiversity.

- (A). Indian Council of Agricultural Research (ICAR)
- (B). National Biodiversity Authority (NBA)
- (C). National Bureau of Plant Genetic Resources (NBPGR)
- (D). Botanical Survey of India (BSI)

NBPGR is a key institution in India responsible for the preservation and management of plant genetic resources.

#43. Q43. A "food chain" always starts with:

-



- (A). None
- (B). Producers (green plants/algae)
- (C). Consumers
- (D). Decomposers

A food chain always begins with producers, which capture energy from the sun.

#44. Q44. "Endemic species" are those that:

-
- (A). None
- (B). Occur naturally in one geographic region and nowhere else
- (C). Are widely distributed around the globe
- (D). Have been introduced from other regions

Endemic species are unique to a specific geographic area and are often vulnerable to habitat loss.

#45. Q45. Overexploitation of Terminalia chebula or Phyllanthus emblica (commonly used in Ayurveda) could:

-
- (A). None
- (B). Result in scarcity, higher prices, and potential adulteration with inferior substitutes
- (C). Increase availability in the market
- (D). Enhance genetic diversity

Overharvesting can lead to scarcity and force the use of adulterants, compromising quality.

#46. Q46. "Concept of ecosystem" includes both structure and function. Function refers to:

-
- (A). None
- (B). Processes such as nutrient cycling, energy flow, trophic interactions, and matter recycling
- (C). Only the physical layout of species
- (D). Static habitat structure

Ecosystem function encompasses the processes that recycle nutrients and sustain energy flow within a habitat.

#47. Q47. Degradation of biodiversity can cause:

-
- (A). None
- (B). Erosion of indigenous knowledge, as plants and animals used in local medicine vanish
- (C). Increased urbanization
- (D). Enhanced global trade



Loss of biodiversity directly impacts traditional knowledge systems by erasing the natural resources on which they depend.

#48. Q48. The term “biopiracy” arises if:

- (A). None
- (B). Traditional knowledge or resources are commercially exploited or patented without appropriate consent or compensation
- (C). There is overly strict patent enforcement
- (D). Public libraries are overburdened

Biopiracy refers to the unethical or illegal appropriation of indigenous knowledge or genetic resources without fair compensation.

#49. Q49. “India as a mega-biodiversity nation” implies:

- (A). None
- (B). India hosts roughly 8% of the world’s biodiversity with varied ecosystems and high endemism
- (C). India has low species diversity
- (D). India has no unique species

India is recognized as a megadiverse country due to its rich and varied biological resources.

#50. Q50. One recommended approach to sustain medicinal plant biodiversity is:

- (A). None
- (B). Cultivation of high-demand species, establishing community-based gene banks, reforestation, and regulated trade
- (C). Unregulated wild harvesting
- (D). Exclusive reliance on synthetic substitutes

Sustainable practices, including cultivation and community-based conservation, help maintain medicinal plant biodiversity without exhausting wild resources.

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