

Question 1: A small protected forest is isolated by roads and farms. Which management action most directly reduces the problems caused by isolation for wide-ranging mammals?

- a) Increase tourist access into the forest
- b) Establish wildlife corridors linking nearby habitat patches
- c) Allow selective logging inside the protected area to create openings
- d) Introduce non-native prey species to increase food

Question 2: A coastal city records higher night-time temperatures and more heat-related hospital visits. Which local climate adaptation measure will most directly reduce urban heat at night?

- a) Replace roofs with darker materials to absorb heat during day
- b) Increase urban tree canopy and green roofs to enhance night-time cooling
- c) Remove water features to reduce humidity
- d) Increase parking lots to absorb heat

Question 3: An ecologist studies a lake and sees that native fish species show low genetic diversity. Which conservation action best helps long-term adaptability?

- a) Focus only on planting shoreline trees
- b) Introduce many different non-native fish for variety
- c) Create habitat corridors and consider managed gene flow with closely related populations
- d) Drain the lake for redevelopment

Question 4: Which pollutant is produced secondarily in the lower atmosphere (formed by reactions, not directly emitted)?

- a) Carbon monoxide (CO) directly emitted from incomplete combustion
- b) Suspended dust from construction sites
- c) Ground-level ozone (O₃) formed from NO_x and VOCs under sunlight
- d) Lead emitted from an old smelter stack

Question 5: A rural village is considering small wind turbines to power lighting. Which local condition most strongly affects turbine energy output?

- a) Local bird species list
- b) Average wind speed at hub height
- c) Number of sunny days only
- d) Local building code font size

Question 6: Which SDG directly targets reducing hunger and malnutrition?

- a) SDG 1 — No Poverty
- b) SDG 3 — Good Health and Well-being
- c) SDG 2 — Zero Hunger
- d) SDG 11 — Sustainable Cities and Communities

Question 7: A wetland restoration project plans to remove invasive reeds that outcompete native plants. What is a likely ecological benefit after invasive removal?

- a) Permanent increase in water temperature
- b) Recovery of native plant and invertebrate communities and improved habitat quality
- c) Guaranteed immediate increase in fish biomass without monitoring
- d) Soil instantly becoming sterile

Question 8: An energy audit shows a factory's CO₂ emissions are rising. Which short-term operational change most reduces CO₂ per unit produced?

- a) Run older inefficient machines longer to keep production steady
- b) Improve process efficiency and reduce energy waste (e.g., heat recovery, better insulation)
- c) Increase lighting levels in offices regardless of need
- d) Stop maintenance to save downtime

Question 9: A community water test finds lead above safe limits in drinking water. Which immediate action best protects public health while long-term fixes are planned?

- a) Boil the water before drinking (boiling does not remove lead)
- b) Provide certified point-of-use filters that remove lead or supply alternate safe water sources
- c) Add food colouring to disguise taste
- d) Advise residents to store water in plastic bottles in sunlight

Question 10: Which renewable energy source is harnessed by concentrating sunlight to produce high-temperature heat for power (not direct photovoltaic conversion)?

- a) Ground-mounted photovoltaic panels producing DC electricity
- b) Ocean tidal barrages
- c) Nuclear fission plants
- d) Concentrated solar power (CSP) using mirrors to focus sunlight

Question 11: A town's landfill emits methane and the municipality wants both climate and energy benefits. Which approach best meets both goals?

- a) Cover the landfill and leave gas to escape naturally
- b) Capture landfill gas and burn it in a generator to produce electricity (energy recovery)
- c) Bury new waste on top to reduce smell only
- d) Immediately incinerate all incoming waste without pollution controls

Question 12: Which international goal explicitly aims at ensuring access to affordable, reliable, sustainable, and modern energy for all?

- a) SDG 3
- b) SDG 6
- c) SDG 7
- d) SDG 15

Question 13: In a local stream, elevated nitrates cause algal blooms and oxygen depletion. What upstream land practice most likely caused this?

- a) Planting native trees along stream banks
- b) Intensive fertilizer application on nearby agricultural fields without buffer zones
- c) Building small ponds for wildlife
- d) Removing only concrete from the stream edges

Question 14: Which greenhouse gas has a much higher global warming potential per unit than CO₂ but typically lower atmospheric concentration and shorter lifetime?

- a) Carbon dioxide (CO₂)
- b) Water vapor (H₂O) in stable concentrations
- c) Nitrogen gas (N₂) which is inert
- d) Methane (CH₄)

Question 15: A factory emits visible soot and fine particulate matter. Which stack control device best removes fine particulates before release?

- a) Simple mesh screen at the stack opening
- b) Electrostatic precipitator or high-efficiency baghouse filter
- c) Adding more fuel to the combustion process
- d) Painting the stack to match surroundings

Question 16: Case: A rural micro grid uses solar PV but output varies. Which system component most improves reliability during low-sun periods?

- a) Increase inverter size only without storage
- b) Battery storage sized to cover expected low-sun periods and smart charge management
- c) Replace PV panels with identical new ones only
- d) Disconnect loads to avoid any electricity use

Question 17: Which waste system practice is the best embodiment of Extended Producer Responsibility (EPR)?

- a) Consumers paying a one-time high price and producers leaving disposal to municipal services
- b) Producers being legally required to take back and recycle packaging at end of life
- c) Municipalities burning all waste without recovery
- d) Households incinerating hazardous waste in backyard pits

Question 18: Which conservation metric defines the total number of species in a given area?

- a) Ecosystem resilience index
- b) Species richness (number of species)
- c) Genetic heterozygosity measure
- d) Trophic position index

Question 19: A small island loses coral cover due to warming seas. Which intervention helps coral resilience most?

- a) Blast fishing to remove competing species
- b) Protect water quality (reduce pollution and sedimentation) and protect herbivores to maintain reef health
- c) Dredge nearby seabed to increase turbidity
- d) Introduce non-native corals from distant oceans without testing

Question 20: Which global indicator is most direct to track for evidence of climate warming over decades?

- a) Number of tropical storms in one month only
- b) Annual tree planting campaigns only
- c) Global mean surface temperature trend over decades
- d) Daily stock market index

Question 21: Which household practice most reduces municipal waste generation at the source?

- a) Buying single-use packaged products for convenience
- b) Choosing durable goods and buying in bulk with minimal packaging (reduce)
- c) Using landfill liners more often
- d) Mixing all wastes together for disposal

Question 22: Which pollutant is most commonly associated with fossil-fuel combustion and contributes to both acid rain formation and respiratory problems?

- a) Ozone (O₃) formed secondarily in sunlit air
- b) Sulphur dioxide (SO₂) from combustion of sulphur-containing fuels
- c) Table salt (NaCl) in seawater
- d) Carbon monoxide (CO) from incomplete combustion

Question 23: A school wants to reduce plastic waste. Which school policy will most reliably reduce single-use plastic bottles?

- a) Ban students from bringing any bottles at all (no alternatives)
- b) Install water refill stations and promote reusable bottles along with education
- c) Provide more vending machines for bottled drinks for convenience
- d) Replace plastic bottles with single-use paper cups only

Question 24: Which SDG specifically focuses on conserving and sustainably using the oceans, seas, and marine resources?

- a) SDG 14
- b) SDG 9
- c) SDG 2
- d) SDG 8

Question 25: In ecosystem management, what is a “keystone species”?

- a) A species present in large numbers but with little ecological effect
- b) A species whose ecological role has disproportionate effects on community structure
- c) A rare species with no predators by definition
- d) Any species used for ornamental value

Question 26: A city considers replacing coal with natural gas for electricity. Which climate impact does this switch most reliably achieve?

- a) Increases CO₂ emissions per energy unit compared to coal
- b) Reduces CO₂ emissions per energy unit (natural gas emits less CO₂ than coal) but still produces greenhouse gases
- c) Eliminates methane leakage concerns entirely
- d) Immediately achieves carbon neutrality

Question 27: Which method is often used to remove dissolved heavy metals from wastewater at industrial facilities?

- a) Plain filtration with coarse sand only
- b) Chemical precipitation (e.g., hydroxide precipitation) and subsequent solids removal
- c) Adding colorants to mask contamination
- d) Evaporation on open geotextiles

Question 28: Which renewable energy technology uses temperature differences between ocean surface and deep water to produce energy?

- a) Photovoltaic panels
- b) Tidal stream turbines
- c) Ocean thermal energy conversion (OTEC)
- d) Combustion of seaweed on site

Question 29: A city is designing a recycling program and needs to reduce contamination. Which operational step improves recycling quality most?

- a) Require single-stream collection with no education or sorting at source
- b) Implement clear source segregation (separate bins), regular public education, and quality monitoring
- c) Mix recyclables with organic waste to reduce hauling costs
- d) Accept any item labelled “recyclable” without verification

Question 30: Which SDG aims to ensure inclusive and equitable quality education?

- a) SDG 7
- b) SDG 11
- c) SDG 4
- d) SDG 12

Question 31: A nature reserve monitors predator and prey numbers and finds prey skyrocketing after predator removal. This is an example of:

- a) Primary succession
- b) Trophic cascade where top-down control is lost
- c) Increased genetic diversity due to overpopulation
- d) Improved ecosystem stability automatically

Question 32: Researchers use ice cores from polar regions to study past climates. Which property measured in ice cores gives direct evidence of past atmospheric composition?

- a) External dust layers only
- b) Concentrations of greenhouse gases trapped as bubbles in the ice (e.g., CO₂, CH₄)
- c) Radio waves from the core
- d) The core’s texture colour for aesthetics

Question 33: Which municipal air pollutant standard monitoring focusses on particles smaller than 2.5 micrometers (PM2.5) because they penetrate deep into lungs?

- a) Noise level monitoring only
- b) Sulphate concentration reading only
- c) PM2.5 concentration monitoring
- d) pH of rainwater only

Question 34: Which renewable fuel is produced by anaerobic digestion of organic wastes?

- a) Ethanol from sugarcane only
- b) Hydrogen produced by burning biomass directly
- c) Biogas (mainly methane) collected from digestion of organics
- d) Diesel refined from food oil without processing

Question 35: A factory implements a zero-liquid-discharge (ZLD) policy. What is a likely implication?

- a) All liquid waste is released directly to nearby rivers untreated
- b) Wastewater is treated, concentrated, and solids recovered — increasing reuse but raising energy/cost needs
- c) The factory stops all water use completely overnight
- d) Workers carry liquid waste offsite in buckets for disposal

Question 36: Which SDG explicitly calls for urgent action to combat climate change and its impacts?

- a) SDG 10
- b) SDG 13
- c) SDG 1
- d) SDG 16

Question 37: A conservation program focuses on protecting pollinator habitat near farms. Why is this important for ecosystem services?

- a) Pollinators only benefit wildflowers, not crops
- b) Maintaining pollinator diversity supports crop yields and wild plant reproduction
- c) Pollinators increase erosion and should be reduced
- d) Pollinators are irrelevant to food production

Question 38: Melting permafrost in a high-latitude region releases stored greenhouse gases. Which process happens that further amplifies warming?

- a) Permafrost melting increases surface albedo and cools the area
- b) Release of CO₂ and CH₄ from thawed organic matter increases atmospheric greenhouse gases (positive feedback)
- c) Thawing soils immediately produce oxygen that reduces CO₂ globally
- d) Permafrost always turns into reflective ice that blocks sunlight

Question 39: Which landfill design feature most prevents leachate from contaminating groundwater?

- a) Lining the landfill with an impermeable liner and installing leachate collection systems
- b) Leaving garbage uncovered and exposed to rain only
- c) Locating landfills directly above shallow aquifers for convenience
- d) Allowing animals to burrow freely into waste

Question 40: Which solar technology uses semiconductors to convert sunlight directly into electricity (photons → electrons)?

- a) Solar thermal collectors for hot water only
- b) Concentrated solar used solely for heating
- c) Burning biomass in a solar panel
- d) Photovoltaic (PV) cells

Question 41: A city's monthly recycling reports show a drop in material quality because non-recyclables are placed in bins. Which public measure would most directly reduce contamination?

- a) Increase fines without public education or return options
- b) Run targeted education campaigns and provide clear labelling and example lists on bins
- c) Remove all recycling bins to avoid contamination statistics
- d) Switch to a less rigorous recycler to accept mixed waste

Question 42: Which SDG is principally about achieving gender equality and empowering all women and girls?

- a) SDG 14
- b) SDG 5
- c) SDG 8
- d) SDG 3

Question 43: In an ecological reserve, an introduced predator causes local extinctions of small mammals. Which management approach is most appropriate to restore balance?

- a) Introduce additional non-native predators to control the first predator
- b) Implement targeted removal or control of the invasive predator and restore native habitat
- c) Increase human hunting of native mammals to reduce their numbers further
- d) Build more roads through the reserve to facilitate tourism

Question 44: Which greenhouse gas has an extremely high global warming potential per unit and is commonly used in electrical switchgear, so leaks are carefully controlled?

- a) Carbon dioxide (CO₂)
- b) Methane (CH₄)
- c) Sulphur hexafluoride (SF₆)
- d) Nitrogen gas (N₂)

Question 45: Which remedial measure most reduces nitrogen oxide (NO_x) emissions from combustion sources?

- a) Increase combustion temperature without controls
- b) Use selective catalytic reduction (SCR) or low-NO_x burners to chemically reduce NO_x emissions
- c) Inject raw fuel into stack untreated
- d) Stop filtering particulate matter only

Question 46: Which energy source is not renewable on human timescales?

- a) Wind energy from atmospheric motion
- b) Natural gas from ancient fossil deposits
- c) Solar energy from sunlight
- d) Hydropower from flowing rivers

Question 47: A composting facility produces unpleasant odors raising community concerns. Which process change most likely reduces odor and improves compost quality?

- a) Reduce aeration and let the pile remain anaerobic
- b) Maintain aerobic conditions (turning, proper carbon: nitrogen ratio) and control moisture to reduce odors
- c) Add raw meat and dairy to speed decomposition without controls
- d) Dump leachate on open ground

Question 48: Which SDG emphasizes responsible consumption and production, promoting resource efficiency and waste reduction?

- a) SDG 6
- b) SDG 13
- c) SDG 3
- d) SDG 12

Question 49: Which ecological concept explains why preserving a diversity of species increases ecosystem stability and productivity?

- a) Monoculture focus is always best for resilience
- b) Functional diversity and redundancy allow systems to maintain functions when some species decline
- c) Higher diversity guarantees no disturbance ever affects the system
- d) Only large animals matter for ecosystem processes

Question 50: A national climate policy relies heavily on planting trees to offset emissions, but emissions continue rising. What is a realistic critique?

- a) Tree planting instantly cancels all fossil fuel emissions without limits
- b) Offsets must be combined with rapid emissions reductions because sequestration rates are limited and timing matters
- c) Planting trees always increases emissions
- d) Only offshore drilling can solve the problem

Question 51: Which atmospheric pollutant is primarily responsible for acid rain formation when oxidized to acidic species?

- a) Particulate lead only
- b) Volatile organic compounds exclusively
- c) Sulphur dioxide (SO₂) and nitrogen oxides (NO_x) which oxidize to form acids
- d) Oxygen (O₂) naturally present in air

Question 52: Which small-scale renewable option is typically most appropriate for a remote off-grid mountain research station needing steady heat in winter?

- a) Large centralized coal plant 500 km away
- b) Diesel generators only with no storage
- c) Biomass stove/boiler using sustainably sourced wood and solar thermal with storage as hybrid solution
- d) Photovoltaic lights only without heat provision

Question 53: Which plastics recycling code represents polyethylene terephthalate (PET), commonly used in beverage bottles and widely recycled?

- a) Code 1
- b) Code 7 only for all polymers
- c) Code 5 (PP)
- d) Code 2 (HDPE)

Question 54: Which SDG explicitly includes targets for reducing inequality within and among countries?

- a) SDG 10
- b) SDG 2
- c) SDG 7
- d) SDG 11

Question 55: A river's fish populations collapse after a factory begins discharging warm water. What ecological principle explains the impact?

- a) Thermal pollution alters dissolved oxygen levels and species' thermal tolerance, stressing aquatic life (temperature-sensitive metabolic and oxygen effects)
- b) Warm water always increases oxygen and improves fish health
- c) Fish are unaffected by temperature changes within any range
- d) Warmer water attracts instant new species that replace old ones without harm

Question 56: Which climate mitigation action is considered high impact and immediate in reducing CO₂ emissions?

- a) Planting saplings only without curbing fossil fuel use
- b) Rapidly deploying energy efficiency measures and decarbonizing electricity supply (renewables, grid decarbonisation)
- c) Painting roofs black to absorb heat
- d) Increasing single-use plastics to avoid metal production

Question 57: Which industrial wastewater treatment stage aims primarily to remove large solids and grit before biological treatment?

- a) Tertiary disinfection with UV only
- b) Primary physical treatment (screening and grit removal)
- c) Advanced oxidation only
- d) Final polishing with activated carbon only

Question 58: A small island community aims to meet local electricity needs with renewable energy while minimizing land use. Which mix is likely most space-efficient and reliable?

- a) Only ground-mounted utility PV covering most land with no storage
- b) Rooftop solar, small wind where feasible, and battery storage plus energy efficiency measures (distributed, low-land footprint)
- c) Large open coal stockpiles on the shoreline
- d) Burning imported wood with no sustainability plan

Question 59: Which international climate concept quantifies the expected future warming under a given greenhouse gas scenario used in scientific models?

- a) Random weather events in a given week
- b) Representative Concentration Pathways (RCPs) or Shared Socioeconomic Pathways (SSPs) used to drive climate projections
- c) Local folklore about past weather only
- d) Daily ocean tides

Question 60: A city wants to maximize landfill diversion. Which combined approach is most effective?

- a) Focus only on incineration while ignoring reuse and repair programs
- b) Implement reduce/reuse policies, source segregation, robust recycling and composting, and producer responsibility measures
- c) Encourage dumping in unmanaged sites to avoid municipal costs
- d) Ban all recycling to simplify operations