

Question 1: A wetland near a town is being drained to make space for housing. Which short-term ecological effect is most likely?

- a) Immediate increase in groundwater levels
- b) Loss of habitat for water birds and amphibians
- c) Sudden increase in local biodiversity
- d) Permanent decrease in surface runoff

Question 2: A local community wants to reduce energy demand at peak hours. Which action will most directly lower peak electricity use?

- a) Planting trees around houses
- b) Introducing time-of-use pricing and promoting off-peak dishwasher use
- c) Building more coal plants
- d) Encouraging people to keep lights on all evening

Question 3: A factory discharges warm water into a river. Over weeks fish counts downstream drop and algae blooms increase. Which chain of effects best explains this?

- a) Thermal pollution → reduced oxygen solubility → fish stress → algal blooms decrease
- b) Thermal pollution → increased oxygen → fish thrive → algae removed
- c) Thermal pollution → lower dissolved oxygen → fish mortality → nutrient release → algal bloom
- d) Thermal pollution → colder water → reduced metabolism → fewer algae

Question 4: Which energy source is non-renewable and releases large CO₂ per unit energy?

- a) Wind
- b) Coal
- c) Solar PV
- d) Biomass from sustainably managed forests

Question 5: Which of the following best describes phytoremediation?

- a) Using chemical dispersants to dilute pollutants
- b) Using plants to extract, stabilize, or break down pollutants in soil and water
- c) Incinerating contaminated soil at high temperature
- d) Pumping groundwater to surface and burning it

Question 6: An animal is classified as "Endangered" by IUCN. This means:

- a) It is only found in zoos now
- b) It faces a very high risk of extinction in the wild in the near future
- c) It has no predators in the wild
- d) It is increasing rapidly in population

Question 7: Which practice improves soil conservation on a slope farm and reduces erosion?

- a) Clear the slope completely for planting
- b) Planting contour rows and using terracing
- c) Ploughing straight downhill every season
- d) Removing all vegetation and leaving bare soil

Question 8: A photovoltaic (solar) panel rated 250 W in full sun produces ~250 W. If on an average day it produces 1.25 kWh, what is its approximate average full-sun equivalent hours?

- a) 2 hours
- b) 3 hours
- c) 5 hours
- d) 10 hours

Question 9: Which pollutant is most directly responsible for acid rain formation?

- a) Sulphur dioxide (SO₂) and nitrogen oxides (NO_x)
- b) Ozone (O₃)
- c) Oxygen (O₂)
- d) Argon (Ar)

Question 10: A protected area preserves an apex predator. Which trophic effect might you expect inside the reserve?

- a) Lower prey populations and possible trophic cascade affecting vegetation
- b) Immediate decrease in vegetation with no change in prey
- c) Apex predator disappears due to overabundance of prey
- d) No ecological changes at any level

Question 11: A village uses open fires indoors for cooking. Which combination of problems is most likely for health and environment?

- a) Increased indoor air pollution
- b) Decreased smoke exposure
- c) No health impacts; immediate increase in air quality
- d) Only economic benefits, no health consequences

Question 12: Which is the best indicator of a healthy aquatic ecosystem?

- a) High turbidity and frequent algal mats
- b) Diverse assemblage of macro invertebrates (mayflies, stoneflies) and fish
- c) Presence of only one fish species in large numbers
- d) Low dissolved oxygen and high ammonia

Question 13: Which fuel has the highest energy density by mass?

- a) Gasoline
- b) Wood
- c) Hydrogen stored at atmospheric pressure
- d) Dry biomass pellets

Question 14: Which method would be most effective to monitor deforestation over a large country each year?

- a) Walk through every forest by foot
- b) Use satellite remote sensing and compare annual land-cover maps
- c) Ask random people if they saw trees cut nearby
- d) Only inspect a single village's forests

Question 15: What does biodiversity include?

- a) Only the number of large mammals in an area
- b) Variety of species, genetic variation within species, and variety of ecosystems
- c) Quantity of a single crop planted on farmland
- d) Only plants and trees, not animals or microbes

Question 16: Which action helps reduce both waste and greenhouse gas emissions?

- a) Increasing single-use plastics production
- b) Composting food waste and using it as fertilizer
- c) Burning more municipal waste openly
- d) Landfilling all organic wastes without gas capture

Question 17: A coal plant emits 1,000,000 tonnes CO₂/year. A local campaign reduces coal usage by 10% and replaces that energy with wind power. How much CO₂ reduction is approximately achieved (assuming direct proportionality)?

- a) 100,000 tonnes CO₂/year
- b) 10,000 tonnes CO₂/year
- c) 1,000 tonnes CO₂/year
- d) 0 tonnes CO₂/year

Question 18: Which concept explains why species near the equator (tropics) often have higher species richness than near the poles?

- a) Lower sunlight at equator
- b) Greater habitat heterogeneity, stable climate, and higher primary productivity in tropics
- c) Cold winters causing more species
- d) Equator is farther from the moon

Question 19: A lake has a high nutrient input from fertilizers and sewage. Which management action would be quickest to reduce eutrophication symptoms?

- a) Remove the lake entirely
- b) Reduce nutrient inputs (improve sewage treatment) and implement buffer strips along inflow streams
- c) Add more fertilizers to counterbalance nutrients
- d) Introduce large numbers of predatory fish immediately

Question 20: Which greenhouse gas molecule is more potent (higher global warming potential per molecule) than CO₂ over a 100-year timescale?

- a) Methane (CH₄)
- b) Nitrogen (N₂)
- c) Oxygen (O₂)
- d) Neon (Ne)

Question 21: What is carbon sequestration?

- a) Releasing CO₂ into the air quickly
- b) Long-term storage of carbon in forests, soils, or geological formations
- c) Burning more fossil fuels
- d) Turning carbon into diamonds overnight

Question 22: Which renewable energy is best suited for basins with high and constant wind speeds offshore?

- a) Offshore wind turbines
- b) Solar PV panels on rooftops
- c) Hydroelectric dams in dry deserts
- d) Geothermal heat pumps

Question 23: Which remediation technique uses microbes to break down oil or organic pollutants in soil?

- a) Phytoremediation
- b) Bioremediation
- c) Incineration
- d) Mechanical dredging only

Question 24: A species has very low population, fragmented habitat patches, and low genetic diversity. Which conservation approach is most appropriate?

- a) Captive breeding and managed reintroduction with habitat restoration and corridors
- b) Do nothing and hope for the best
- c) Widen roads through their habitat to increase access
- d) Allow unregulated hunting

Question 25: Which energy metric best represents how much energy a power plant produces on average compared to its maximum possible production?

- a) Capacity factor
- b) Power density
- c) Emission factor
- d) Battery life

Question 26: Which human activity is a major driver of species extinction worldwide?

- a) Habitat destruction and fragmentation
- b) Listening to music loudly
- c) Planting native trees
- d) Recycling paper

Question 27: A small town's monthly electricity from rooftop solar: Jan 40, Feb 70, Mar 110, Apr 160 (kWh). Which month shows largest relative increase compared with previous month?

- a) Feb (from Jan to Feb)
- b) Mar (from Feb to Mar)
- c) Apr (from Mar to Apr)
- d) Jan (no previous month)

Question 28: Which pollutant is mainly associated with vehicle exhaust and contributes to ground-level ozone formation and respiratory problems?

- a) Nitrogen oxides (NO_x) and volatile organic compounds (VOCs)
- b) Helium
- c) Calcium carbonate
- d) Sodium chloride

Question 29: Which describes sustainable development best?

- a) Using resources now without regard for future generations
- b) Meeting present needs while ensuring resources and environment remain available for the future
- c) Only economic growth, irrespective of environment
- d) Avoiding technology and staying primitive

Question 30: What is ecological footprint used to measure?

- a) The area of productive land and water required to support an individual's or population's consumption and absorb wastes
- b) Shoe size of a population
- c) Total number of trees in a city only
- d) Net migration rate

Question 31: Which of the following reduces energy losses in electricity transmission?

- a) Transmitting electricity at higher voltages to reduce current and resistive loss
- b) Using only incandescent bulbs
- c) Building more small local generators with high internal resistance
- d) Lowering voltage to very low levels for long lines

Question 32: What is bioaccumulation?

- a) A method of planting trees
- b) The build-up of pollutants (e.g., heavy metals, pesticides) in an individual organism over time
- c) The spreading of seeds by animals
- d) The sudden disappearance of species

Question 33: Which is a main consequence of melting permafrost in Arctic regions?

- a) Sea ice thickening worldwide
- b) Release of stored methane and CO₂ accelerating warming
- c) Permanent cooling of the Arctic
- d) Immediate increase in global forest area

Question 34: Which action helps conserve freshwater resources in agriculture?

- a) Flooding fields daily regardless of crop need
- b) Using more water-intensive crops in arid regions
- c) Leaving irrigation systems leaking at night
- d) Drip irrigation and scheduling irrigation by crop needs

Question 35: Which statement about renewable energy intermittency is true?

- a) Renewables always produce constant power 24/7 without storage
- b) Intermittency means energy disappears permanently
- c) Fossil fuels are intermittent while wind is constant
- d) Solar and wind output fluctuate; energy storage and grid management help balance supply

Question 36: Which pollutant most directly contributes to eutrophication when entering freshwater systems?

- a) Sand and gravel
- b) Non-reactive noble gases
- c) Phosphorus and nitrogen compounds (nutrients)
- d) Sulphuric acid exclusively

Question 37: A coastal city wants to adapt to sea-level rise. Which combination is an adaptation strategy?

- a) Encouraging construction in the lowest elevation areas
- b) Selling beachfront land to increase tourism
- c) Building seawalls, restoring mangrove forests, and revising land-use zoning
- d) Draining wetlands to create more housing

Question 38: Which process describes the conversion of nitrogen gas (N₂) into forms usable by plants (like ammonia)?

- a) Denitrification only
- b) Photosynthesis
- c) Nitrogen fixation (by bacteria or industrial processes)
- d) Eutrophication

Question 39: Which is an example of an energy efficiency improvement?

- a) Using single-pane windows everywhere
- b) Replacing inefficient incandescent bulbs with LED lighting
- c) Using older, less efficient refrigerators
- d) Running all appliances at maximum power always

Question 40: In conservation planning, what is the value of creating wildlife corridors between habitat patches?

- a) They are purely decorative
- b) They facilitate gene flow and movement, reducing extinction risk due to isolation
- c) They only benefit humans, not wildlife
- d) They isolate populations more strongly

Question 41: Which gas has ~300 times CO₂'s warming potential (per molecule)?

- a) Nitrous Oxide (N₂O)
- b) Methane (CH₄)
- c) Oxygen (O₂)
- d) Argon (Ar)

Question 42: A factory plans to switch to biomass boilers from coal. Which life-cycle consideration should planners evaluate to ensure sustainability?

- a) That biomass smells pleasant during burning
- b) None — biomass is always sustainable
- c) Source of biomass and whether it leads to deforestation or sustainable residue use
- d) Only the colour of the smoke

Question 43: Which renewable source produces electricity by harnessing heat from earth's interior?

- a) Tidal energy
- b) Wind energy
- c) Geothermal energy
- d) Solar photovoltaic

Question 44: Which of the following best reduces plastic pollution in oceans?

- a) Increasing plastic production to spread it widely
- b) Creating more open landfills near coasts
- c) Incinerating all plastics with no emissions control
- d) Reducing single-use plastics, improving waste collection, and material recycling initiatives

Question 45: Which energy source generally emits the least CO₂ per unit of electricity produced over its lifecycle?

- a) Diesel generators
- b) Wind and solar
- c) Uncontrolled biomass burning
- d) Coal

Question 46: Which is the most cost-effective way for cities to reduce transport emissions?

- a) Promote everyone buying larger cars
- b) Build more single-occupancy highways only
- c) Invest in efficient public transit and safe active transport (walking/cycling) infrastructure
- d) Ban all cycling and walking

Question 47: Which pollutant is commonly associated with industrial discharge and can bioaccumulate in fish, posing human health risks?

- a) Oxygen gas
- b) Table sugar
- c) Nitrogen gas
- d) Mercury (heavy metal)

Question 48: What is the purpose of an Environmental Impact Assessment (EIA) before a large construction project?

- a) To reduce project costs only
- b) To predict, evaluate, and propose mitigation for potential environmental impacts
- c) To encourage pollution afterwards
- d) To speed construction without any review

Question 49: Which action helps preserve biodiversity in agricultural landscapes?

- a) Removing all non-crop vegetation
- b) Converting all field margins into concrete paths
- c) Maintaining hedgerows, agroforestry, and field margins that provide habitat
- d) Using pesticides indiscriminately on entire landscapes

Question 50: Which of the following is a non-renewable energy resource?

- a) Wind
- b) Solar radiation
- c) Uranium (for nuclear fuel)
- d) Hydropower from flowing rivers

Question 51: What role do mangrove forests play in climate adaptation?

- a) They release large amounts of toxic fluoride
- b) They protect coasts from storm surge, trap sediments, and sequester carbon
- c) They act as urban parking spaces
- d) They increase coastal erosion always

Question 52: Which farming practice is most likely to increase soil organic carbon over time?

- a) Using heavy chemical fertilizers only
- b) Removing all organic matter and over-tilling
- c) Conservation tillage, cover crops, and organic amendments
- d) Burning crop residues every season

Question 53: Which term describes energy recovered from organic waste decomposition to produce methane used for cooking or electricity?

- a) Nuclear fission
- b) Coal gasification
- c) Gasoline refining
- d) Biogas production (anaerobic digestion)

Question 54: Which action most directly reduces a city's urban heat island effect?

- a) Increasing industrial heat sources downtown
- b) Removing street trees
- c) Increasing urban green spaces, rooftop gardens, and reflective surfaces
- d) Paving more dark asphalt roads

Question 55: A small reservoir experiences seasonal water loss due to evaporation and seepage. Which combination of measures will best improve its water security?

- a) Diverting untreated sewage into the reservoir
- b) Lining seepage areas, planting catchment vegetation, and reducing upstream pollution
- c) Encouraging upstream deforestation to increase runoff
- d) Draining the reservoir entirely every year

Question 56: Which statement about nuclear energy is accurate in environmental terms?

- a) It produces very low CO₂ during operation but raises issues about long-lived radioactive waste
- b) It always leads to immediate massive oil spills
- c) It emits large amounts of CO₂ directly during operation
- d) It is completely waste-free and requires no safety measures

Question 57: Which is a sign of overfishing in a coastal fishery?

- a) Declining average size of catch and decreasing total catch per unit effort
- b) Increasing numbers of large adult fish in catches
- c) No change in fishery indicators over decades
- d) Sudden spontaneous growth of new species

Question 58: Which international goal specifically addresses urgent action to combat climate change?

- a) SDG 1
- b) SDG 4
- c) SDG13
- d) SDG 14

Question 59: Which lifecycle choice reduces embodied carbon in buildings?

- a) Importing heavy concrete from overseas without efficiency measures
- b) Maximizing single-use construction
- c) Using locally sourced, low-carbon materials and designing for longevity and reuse
- d) Building with shortest possible lifespan materials only

Question 60: A community wants to become more sustainable. Which package of actions is most comprehensive?

- a) Only painting houses green
- b) Only building more roads for cars
- c) Increasing single-use consumer goods availability
- d) Energy efficiency, renewable energy deployment, waste reduction and recycling, water conservation, and ecosystem protection

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