

Question 1: Wetlands provide many ecosystem services. Which service is most directly provided by wetlands?

- a) Generating fossil fuels
- b) Filtering pollutants and improving water quality
- c) Producing large amounts of concrete
- d) Increasing tidal range

Question 2: A coastal village experiences more frequent flooding. Local leaders can choose between building a concrete seawall and restoring mangroves. Which combination of outcomes is most likely for mangrove restoration compared with hard seawall?

- a) Mangroves provide habitat, sequester carbon, and attenuate waves (but need space); seawall gives immediate hard protection but can worsen erosion down-drift.
- b) Mangroves increase flooding while seawalls reduce biodiversity.
- c) Mangroves require daily maintenance like cleaning, seawalls never need repair.
- d) Both options have identical ecological trade-offs.

Question 3: Which greenhouse gas has the highest global warming potential per molecule over a 100-year timeframe among common pollutants?

- a) Carbon dioxide (CO₂)
- b) Methane (CH₄)
- c) Nitrogen (N₂)
- d) Oxygen (O₂)

Question 4: Which renewable energy source is location-dependent and often best installed offshore when resources are abundant?

- a) Geothermal on rooftops
- b) Offshore wind turbines
- c) Rooftop solar in shaded valleys
- d) Coal gasification

Question 5: Which of the following is a biodegradable waste suitable for composting?

- a) Disposable plastic spoon
- b) Vegetable peels and garden trimmings
- c) Styrofoam cup
- d) Used motor oil

Question 6: A river downstream of a town shows elevated nitrate and phosphate concentrations, algal blooms, and fish kills. Which three actions together would best address the problem?

- a) Improve wastewater treatment to remove nutrients, implement agricultural buffer strips, and reduce fertilizer runoff through best management practices
- b) Increase nutrient inputs to dilute concentrations, build more dams, and add detergents to the river
- c) Move fish farms upstream only and ignore sewage
- d) Dredge the river daily without changing sources

Question 7: Which UN Sustainable Development Goal (SDG) directly targets affordable and clean energy?

- a) SDG 6
- b) SDG 7
- c) SDG 13
- d) SDG 3

Question 8: In biodiversity terms, what does the phrase “genetic bottleneck” describe?

- a) Increase in gene flow among populations
- b) Sharp reduction in population size causing loss of genetic diversity
- c) Expansion of habitat area
- d) A type of river dam

Question 9: Which emission reduction strategy is most effective at city scale to cut transport CO₂ emissions?

- a) Expand efficient public transport and active mobility networks (walking, cycling) while discouraging single-occupancy car use
- b) Build more inner-city parking to attract drivers
- c) Ban bicycles from city centre
- d) Replace buses with more diesel cars

Question 10: Which pollutant class is most responsible for causing acid rain?

- a) Sulphur dioxide (SO₂) and nitrogen oxides (NO_x)
- b) Carbon monoxide (CO) only
- c) Noble gases
- d) Sodium chloride (salt)

Question 11: A school wants to cut landfill waste. They can (1) introduce on-site composting for food waste, (2) run a single mixed recycling bin, or (3) arrange community e-waste collection events. Which prioritized sequence most effectively reduces landfill and environmental harm?

- a) Composting (1), targeted recycling with sorting education (2 improved), e-waste events (3) — because composting reduces large organic fraction, correct recycling avoids contamination, and e-waste prevents toxic disposal.
- b) Only mixed recycling is enough; no other actions needed.
- c) E-waste events first, then composting, then nothing else.
- d) Burn all waste to eliminate bins.

Question 12: Which energy storage technology is commonly used for daily short-term balancing of solar PV on the grid?

- a) Pumped hydro with mountains
- b) Battery energy storage systems
- c) Storing coal in silos
- d) Chemical explosives

Question 13: Which practice best reduces micro plastic pollution entering rivers?

- a) Washing synthetic textiles less often and using filters on washing machines or wastewater plants to capture microfibers
- b) Increasing detergent strength to dissolve plastics
- c) Banning all plastic production overnight with no alternatives
- d) Putting plastic in compost piles

Question 14: Which of the following is a keystone species example (a species whose presence has disproportionate ecosystem effects)?

- a) A common weed with little effect on others
- b) Sea otters that control sea urchin populations and maintain kelp forests
- c) A single grass species with no interactions
- d) A microscopic bacterium that is only present in lab cultures

Question 15: A small island nation is drafting a climate action plan focused on adaptation.

Which components are most appropriate for the plan?

- a) Coastal protection measures (mangrove restoration, set-back zoning), freshwater security (rainwater harvesting), and resilient infrastructure planning
- b) Promote only tourism with no infrastructure changes
- c) Encourage deforestation to create beaches
- d) Increase dependence on fuel imports only

Question 16: Which renewable energy has the highest capacity factor typically (i.e., produces close to nameplate over time)?

- a) Solar PV in temperate cloudy areas
- b) Onshore wind in low-wind sites
- c) Geothermal power at suitable sites (often high capacity factor)
- d) Hand cranks

Question 17: What is bioaccumulation?

- a) The build-up of nutrients to fertilize crops
- b) The process by which pollutants concentrate in an organism over time, often up the food chain (biomagnification)
- c) Plant growth due to compost
- d) The dissolution of plastics

Question 18: Which policy instrument puts a price on carbon emissions and incentivizes reductions?

- a) Carbon tax or emissions trading (cap-and-trade)
- b) Single-day driving bans only
- c) Printing more money for fuel subsidies
- d) Removing environmental regulations

Question 19: Which material is easiest to recycle into the same product repeatedly with minimal quality loss?

- a) PET plastic bottles
- b) Glass
- c) Polystyrene foam
- d) Contaminated food waste

Question 20: A former industrial site has contaminated soil with heavy metals (lead, cadmium). Which remediation option is most suitable for long-term remediation with limited funds?

- a) Phytostabilization or phytoremediation with appropriate plants to stabilize and gradually extract metals, combined with containment and land-use controls
- b) Ignore contamination and build a school without testing
- c) Excavate and ship soil overseas without treatment
- d) Bury more waste on top to dilute

Question 21: Which SDG specifically targets life on land, protecting biodiversity and preventing land degradation?

- a) SDG 14
- b) SDG 15
- c) SDG 2
- d) SDG 11

Question 22: Which change in atmospheric composition is the primary driver of recent global warming?

- a) Increase in CO₂ and other greenhouse gases from fossil fuel burning and land-use change
- b) Increase in helium levels
- c) Decrease in atmospheric nitrogen causing warming
- d) Increased ozone in stratosphere only

Question 23: Which of the following best reduces household food waste at source?

- a) Better meal planning, correct portioning, and using leftovers or freezing excess food
- b) Buying more packaged single-serve snacks
- c) Overbuying perishables weekly without a plan
- d) Throwing food in general trash immediately

Question 24: Which renewable energy source can provide both electricity and useful heat in a combined heat and power (CHP) system at local scale?

- a) Geothermal or biomass CHP systems can provide heat and power efficiently
- b) Intermittent small solar lamps only
- c) Coal plants only for residential CHP always
- d) Wind turbines for direct space heating

Question 25: Which air pollutant is a direct product of incomplete combustion and is harmful to human health?

- a) Carbon monoxide (CO)
- b) Nitrogen gas (N₂)
- c) Pure oxygen (O₂)
- d) Sodium chloride

Question 26: A company markets a “biodegradable” plastic product. Which claim would be most credible to verify?

- a) Certified industrial compostability under specified conditions (temperature, time) with third-party testing and clear end-of-life guidance
- b) “Biodegradable” label with no conditions or testing — take at face value
- c) Claim that it vanishes instantly in oceans
- d) Stating “green” without data

Question 27: Which farming practice increases on-farm biodiversity and reduces need for synthetic pesticides?

- a) Monocropping only year after year
- b) Agroforestry and intercropping, habitat strips and integrated pest management
- c) Removing all hedgerows and field margins
- d) Tilling deeply each week

Question 28: Which of the following waste fractions is most hazardous and should be handled separately and treated/secured?

- a) Paper and cardboard
- b) Electronic waste (e-waste) containing heavy metals and persistent pollutants
- c) Garden trimmings only
- d) Clean glass bottles

Question 29: Which climate feedback amplifies warming when Arctic sea ice melts?

- a) Albedo feedback: less reflective ice → more solar absorption → warming → more melt
- b) Increase in cloud reflectivity always cooling
- c) Melting sea ice increases planetary albedo
- d) None — Arctic changes do not affect global climate

Question 30: Which technology is most promising for converting agricultural residues into usable bioenergy with relatively low land-use competition?

- a) Advanced biofuel conversion (cellulosic biofuels) that use residues rather than food crops
- b) Clear-cutting forests to grow biofuel monocultures only
- c) Burning residues in open fields without energy capture
- d) Using food crops exclusively for fuel

Question 31: Which metric measures CO₂ equivalent emissions of a greenhouse gas considering its global warming potential?

- a) PPM for ozone only
- b) CO₂-equivalent (CO₂e) — multiplies mass by GWP factor
- c) Lux for light measurements
- d) Hertz for frequency

Question 32: A town wants to be more sustainable and adopt circular economy principles. Which set of actions is most aligned with circularity?

- a) Design products for repair and reuse, establish take-back programs, repair cafés, and local remanufacturing hubs
- b) Encourage single-use purchases and landfill expansion
- c) Import disposable goods without recycling plans
- d) Export all waste to other countries unregulated

Question 33: Which method best reduces methane emissions from a landfill site?

- a) Capturing landfill gas (methane) and using it for energy, and diverting organic waste to composting/AD (anaerobic digestion)
- b) Leaving landfill open to release methane freely
- c) Burning only plastics on site uncontrolled
- d) Adding extra organic waste to speed methane production

Question 34: Which of these is a benefit of urban tree planting?

- a) Increasing ambient air temperature
- b) Shade, reduced urban heat island, improved air quality, biodiversity corridors, and storm water interception
- c) Reducing soil quality only
- d) Increasing noise levels

Question 35: Which practice primarily improves the recyclability of plastic packaging?

- a) Designing monomaterial packaging (single resin), avoiding mixed polymers, labelling resins, and minimizing contamination by inks/adhesives
- b) Using multi-layer composites with many polymers that cannot be separated
- c) Adding metal flakes to plastics for aesthetics
- d) Coating plastics with food grease

Question 36: Which international agreement is focused on limiting global temperature rise and reducing greenhouse gas emissions?

- a) Montreal Protocol (ozone) unrelated to GHGs primarily
- b) Paris Agreement
- c) Kyoto Protocol only and no others
- d) Basel Convention (hazardous waste)

Question 37: A municipality wants to increase household recycling rates. Which transit strategy would most effectively change behaviour?

- a) Provide convenient curbside separated recycling bins, clear labelling, and periodic educational campaigns with feedback on participation rates
- b) Leave recycling centres 20 km away and give no instructions
- c) Charge a fee for recycling drop-offs only
- d) Ban recycling and mandate incineration only

Question 38: Which energy pathway yields the lowest lifecycle greenhouse gas emissions per MWh in typical assessments?

- a) Onshore wind and utility-scale solar PV
- b) Coal without CCS
- c) Diesel generators
- d) Uncontrolled biomass burning

Question 39: Which water treatment step is most effective at removing microplastics from waste water before discharge?

- a) Primary screening and advanced filtration / tertiary treatment (e.g., membrane filters)
- b) Only chlorination
- c) Adding sugar to the water
- d) Releasing untreated wastewater

Question 40: Which target is the part of SDG 12?

- a) Achieve universal primary education only
- b) Halve per-capita global food waste at retail and consumer levels and reduce food losses along production chains by 2030
- c) Build more highways for consumption
- d) Stop all industrial activity

Question 41: Which gas trapping in permafrost poses a risk of accelerating warming if released?

- a) Helium
- b) Methane (and CO₂)
- c) Hydrogen only
- d) Neon

Question 42: Which innovation helps farmers optimize fertilizer application and reduce runoff?

- a) Precision agriculture: soil sensors, variable-rate application, and satellite mapping to apply nutrients
- b) Broadcasting fertilizer uniformly
- c) Removing soil testing entirely
- d) Applying fertilizer only after heavy rains

Question 43: Which type of recycling recovers material and converts it into the same kind of product with minimal loss?

- a) Mechanical recycling of glass or metals (closed-loop)
- b) Open burning of waste
- c) Landfilling plastics
- d) Downcycling mixed polymers without separation

Question 44: You are asked to design a biodiversity monitoring program for a protected forest. Which combination of methods gives robust, long-term data?

- a) Regular standardized transect surveys for birds/insects, camera traps for mammals, vegetation permanent plots, and community scientist (citizen science) involvement for broad coverage
- b) One visit every ten years only with no standard methods
- c) Asking tourists for impressions only
- d) Estimating biodiversity by counting trees from a single photo

Question 45: Which renewable energy is constrained by availability of suitable geology?

- a) Geothermal energy
- b) Solar PV anywhere without limits
- c) Wind turbines everywhere in deserts only
- d) Hydropower without water

Question 46: Which strategy is best to reduce plastic contamination in recycling streams?

- a) Single-stream recycling with no sorting and limited education
- b) Improve source segregation, use clear labelling, deposit return schemes for bottles, and invest in sorting technology
- c) Burn recyclables to reduce volume immediately
- d) Add food waste to plastic bins

Question 47: Which soil management method mitigates erosion and improves soil carbon?

- a) No-till practices, cover cropping, and adding organic amendments
- b) Deep ploughing every season and removing crop residues
- c) Removing vegetation permanently
- d) Paving fields

Question 48: Which pollutant category includes PCBs, dioxins, and many persistent organic pollutants that bioaccumulate?

- a) Persistent Organic Pollutants (POPs)
- b) Inert gases
- c) Nutrients only
- d) Common salts

Question 49: A small grid with high solar PV needs better evening supply. Which short-term mixed solution is most practical?

- a) Add community battery storage sized to shift daytime solar to evening, incentivize demand response (time-of-use pricing), and consider peaker plants (low-emissions) for rare events
- b) Build many coal plants immediately
- c) Ban electricity use after sunset
- d) Remove solar panels

Question 50: Which of the following supports circular economy for electronics?

- a) Modular design for easy disassembly, repairability, standardized components, and take-back/reuse programs
- b) Gluing parts permanently and soldering everything beyond repair
- c) Increasing planned obsolescence only
- d) Adding more proprietary screws

Question 51: Which renewable power source is best for base load generation in regions with geological heat?

- a) Coal fired plant
- b) Geothermal power
- c) Solar PV at night
- d) Rooftop wind

Question 52: Which method is effective for reducing landfill methane emissions while recovering energy?

- a) Capture landfill gas and burn it in gas engines or upgrade to renewable natural gas for use
- b) Vent methane directly to atmosphere
- c) Ignoring methane as harmless
- d) Adding more food waste to landfill to increase methane

Question 53: Which SDG aims to ensure availability and sustainable management of water and sanitation for all?

- a) SDG 6
- b) SDG 9
- c) SDG 11
- d) SDG 2

Question 54: Which pollutant is most associated with diesel exhaust and has strong health impacts (particulate matter)?

- a) PM2.5
- b) Table salt
- c) Sand grains only
- d) Oxygen molecules

Question 55: A national policy sets an ambitious target to reach net zero emissions by 2050. Which policy mix is likely needed to achieve this?

- a) Decarbonize electricity (renewables + storage), electrify transport and heating, improve energy efficiency, scale up carbon removal where needed, and support just transition policies for affected workers
- b) Announce target only with no implementation plan
- c) Increase subsidies for coal only
- d) Ban all technology development

Question 56: Which household waste treatment recovers energy and reduces landfill volume but requires emission controls?

- a) Controlled waste-to-energy incineration with energy recovery and pollution controls
- b) Open burning in backyard
- c) Direct landfill without gas capture
- d) Composting metals

Question 57: Which concept best describes protecting species by maintaining corridors that connect fragmented habitats?

- a) Habitat connectivity to allow gene flow and movement, reducing extinction risk from isolation
- b) Isolating populations to keep them pure
- c) Building walls around every reserve
- d) Removing migration routes

Question 58: Which data metric is useful to compare emission intensity of electricity from different sources?

- a) Grams CO₂ equivalent per kWh (gCO₂e/kWh)
- b) Liters per minute only
- c) Inches of rainfall only
- d) Number of birds nearby

Question 59: Which action helps achieve SDG 11?

- a) Promote compact, mixed-use urban development, invest in public transit, green spaces, and disaster-resilient infrastructure
- b) Expand only low-density sprawl and car dependence
- c) Remove parks to build parking lots only
- d) Ban public transport

Question 60: Which approach best reduces leakage of hazardous chemicals from industrial sites into groundwater?

- a) Proper storage in sealed containers, secondary containment, routine inspections, monitoring wells, and emergency response plans
- b) Storing chemicals outdoors uncovered
- c) Mixing chemicals on bare earth to dilute them
- d) Using groundwater as disposal