

**International Green Warrior Olympiad (IGWO)****Sample Paper****Pattern and Marking Scheme**

Grade	Topic/Section	No. of Questions	Marks per Question	Total Marks
Grade 8	Green Champ	40	3	120
	Green Challenger	10	6	60
Grand Total		50		180

The total duration of the exam is 60 minutes. There's a negative marking of $1/3^{\text{rd}}$ marks for every wrong answer.

Syllabus

Clean Water and Sanitation, Affordable and Clean Energy, Sustainable Cities and Communities, Responsible Consumption and Production, Climate Action, Life Below Water, Life on Land, Zero Hunger

For more details, visit <https://www.crestolympiads.com/green-olympiad-gwo>.

Green Champ (Each Question is 3 Marks)

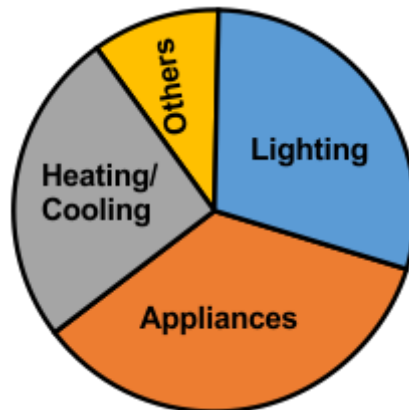
1. Nick installed a solar panel system on his rooftop to harness solar energy for his home. He wants to understand the practical process behind solar energy generation. Help him understand what happens when photons from sunlight strike the photovoltaic cells in a solar panel system.



- a. They generate heat energy for space heating.
b. They release electrons, creating an electric current to power appliances.
c. They produce hydrogen gas for fuel cells.
d. They heat up a storage tank of water for domestic use.
2. A country is considering expanding its nuclear energy capacity. Which of the following key environmental considerations they should address before making a decision?
1. Proper disposal of radioactive waste and ensuring plant safety
 2. Promoting wildlife conservation in the vicinity of nuclear plants
 3. Increasing water usage for cooling reactors
- a. Only 1
b. Only 1 and 2
c. Only 2 and 3
d. 1, 2, and 3
3. The government of a city wants to switch to renewable energy sources to help the environment. Which of the following strategies could the city use to promote renewable energy adoption and reduce environmental impact?
- a. Implementing tax incentives for solar energy installations
 - b. Developing new coal mining projects to boost energy production
 - c. Encouraging the use of gasoline-powered vehicles
 - d. Cutting down more trees to make space for wind farms
4. Sarah is a teacher at an elementary school. She collects scrap paper from her students and uses the blank sides for drawing, thereby extending the life of the paper before recycling it.
- What is Sarah doing in this scenario to contribute to waste reduction and sustainability?
- a. Throwing scrap paper away
 - b. Promoting the use of new paper
 - c. Reusing paper before recycling it
 - d. Increasing paper waste
5. A group of students in a science class is conducting an experiment to demonstrate the heat-trapping properties of greenhouse gases for a school project. They want to create a compelling demonstration. Which experimental approach should they choose?
- a. Burning fossil fuels in an open space
 - b. Comparing the absorption of infrared radiation by different gases
 - c. Measuring surface air temperatures
 - d. Monitoring ocean currents

6. Consider the given pie chart representing energy consumption for a household.

If the household wants to reduce its energy consumption significantly, which of the following measures should be prioritised based on the data provided?



- a. Upgrading to incandescent light bulbs
b. Unplugging appliances when not in use
c. Improving insulation and using smart thermostats for heating/cooling
d. Using appliances with one-star rating
7. In a coastal ecosystem, the population of shellfish declines drastically due to contamination by harmful algae producing toxins. What type of pollution is this?
- a. Thermal pollution
b. Nutrient pollution
c. Chemical pollution
d. Biological pollution
8. In a region rich with diverse wildlife, researchers are assessing the impact of habitat fragmentation on biodiversity. They explore different scenarios to understand how fragmentation influences the ecosystems. In which scenario would habitat fragmentation have the least impact on biodiversity?
- a. Small habitat areas fragmented into smaller patches far from each other.
b. Moderate-sized habitat areas fragmented into patches with varied distances between them.
c. Large habitat areas fragmented into smaller patches close to each other.
d. Large habitat areas fragmented into larger patches far from each other.
9. The Johnson family wants to reduce food waste at home. They usually end up throwing away a considerable amount of food each week. They decide to implement changes to address this issue. Which action would be the most effective for the Johnson family to reduce food waste at home?
- a. Buying groceries in large quantities to minimise shopping trips
b. Planning meals in advance based on a weekly menu and creating a shopping list
c. Storing all food items in the refrigerator to prolong their shelf life
d. Discarding leftovers promptly after meals to prevent spoilage
10. A family went on a camping trip and drank water from an untreated stream. Several days later, they all became ill with vomiting and diarrhoea. Which of the following is the most likely cause of their illness?

1. Contaminated water from the stream
2. Ingestion of a parasite present in the stream water
3. A contagious respiratory illness

- a. Only 1
c. Only 2 and 3
- b. Only 1 and 2
d. 1, 2, and 3

11. A family decides to install solar panels on their roof to generate electricity. How does this contribute to responsible energy consumption?

- a. Increases carbon emissions and environmental impact
- b. Reduces reliance on non-renewable energy sources such as fossil fuels
- c. Promotes excessive energy consumption and wastage
- d. Encourages dependence on unsustainable energy practices

12. In a study assessing greenhouse gas emissions in the food production sector, researchers analysed various contributing factors. Which factor most likely contributes most significantly to greenhouse gas emissions?

- a. Land clearing for agricultural purposes
c. Livestock production
- b. Fertiliser use
d. Irrigation practices

13. Imagine you are an urban farmer in a city with limited space. Which farming method would be most suitable for your situation?

- a. Large-scale traditional farming
c. Expansive greenhouse farming
- b. Vertical farming
d. Aquaculture in open ponds

14. The local government introduced a campaign encouraging citizens to repair broken household items rather than replacing them. How does this campaign support responsible consumption and production?

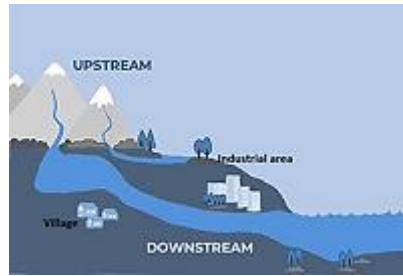
1. Extending the lifespan of products through repair and reuse
2. Promoting continuous purchasing of new products
3. Encouraging constant disposal of items

- a. Only 1
c. Only 2 and 3
- b. Only 1 and 2
d. 1, 2, and 3

15. During an Earth Science field trip, students are exploring the impact of rising temperatures on the local ecosystem. The students notice a decline in the population of a particular plant species in the area compared to previous years. Which factor related to climate change is most likely influencing this decline?

- a. Reduced levels of precipitation and increased drought conditions.
- b. Increased availability of nutrients in the soil.
- c. Decreased levels of carbon dioxide in the atmosphere.
- d. Rising sea levels affecting the soil composition.

16. A conservationist is concerned about the declining population of a particular endangered species in a forest reserve. What would be the most appropriate action to conserve this species?
- Introducing a different species to the reserve to enhance biodiversity.
 - Removing some competing species to give the endangered species more resources.
 - Conducting habitat restoration and protection efforts specific to the species' needs.
 - Keeping the endangered species safe in captivity.
17. A study in a river basin area shown in the picture reveals that the concentration of heavy metals in the water significantly exceeds permissible limits downstream of an industrial area. What can be inferred from this data?



- Heavy metals have no impact on water quality
 - The river basin acts as a natural filter, reducing pollution
 - Industrial activities are likely the source of heavy metal pollution
 - The upstream area is more polluted due to urban development
18. A company is developing a new product line that includes a range of household cleaning products. The company is committed to using sustainable ingredients and packaging. Which of the following options would be the most environmentally friendly?
- Using plant-based ingredients and recycled packaging
 - Using natural ingredients and biodegradable packaging
 - Using synthetic ingredients and reusable packaging
 - Using recycled ingredients and single-use packaging
19. In your research on marine ecosystems, you've found evidence suggesting shifts in the distribution of certain fish species. Fish that were once abundant in cooler waters are now migrating to different regions. What is the primary factor influencing this phenomenon?
- Changes in ocean salinity
 - Reduced predation in the new habitats
 - Increasing acidity in the oceans
 - Rising ocean temperatures
20. In a coastal region, oil spills are a common occurrence due to shipping activities. Which ecological consequence can be observed in the affected marine ecosystem?
- Increased biodiversity and thriving fish populations
 - Coral reefs growing rapidly to filter out oil contaminants
 - Mass mortality of marine life and damage to habitats
 - Faster recovery of oil-impacted areas than non-impacted ones

21. You're advising a friend on reducing their ecological footprint through dietary changes. Which practical suggestion aligns best with this goal?
- Consuming more frozen foods for convenience.
 - Opting for seasonal, locally grown produce.
 - Buying individually packaged snacks for portion control.
 - Choosing imported exotic fruits over locally available ones.

22. Among the listed pollutants, which specific element poses the most significant risk to global water quality, often contributing to detrimental algal blooms?
- Nitrogen and phosphorous compounds
 - Substances with substantial density
 - Disease-causing microorganisms
 - Hydrocarbon-based substances

23. In the following question, you will find an assertion and a reason. Select the appropriate option that applies.

Assertion: While deserts like the Sahara are notoriously arid, some coastal regions also experience water scarcity.

Reason: Rising sea levels due to climate change can contaminate freshwater sources with saltwater intrusion.

- Both assertion and reason are true, and the reason is the correct explanation of the assertion.
 - Both assertion and reason are true, but the reason is not the correct explanation of the assertion.
 - The assertion is true, but the reason is false.
 - The assertion is false, but the reason is true.
24. Robert, an environmentally conscious individual, has recently initiated a practice of composting her food scraps and yard trimmings. He intends to utilise the resultant compost as soil enrichment for her garden beds, aiming to reduce dependency on commercial fertilisers and promote sustainable gardening practices. Considering Robert's endeavour to compost his organic waste and repurpose it for his garden, which sustainable practice does his action primarily demonstrate?
- Reduce
 - Recycle
 - Source reduction
 - Reuse

25. A community introduced a new technology that reduced water usage for irrigation by 20%. Initially, 1,000 hectares of land were irrigated using 200,000 cubic meters of water. What volume of water would be saved annually if this technology is applied to all 1,000 hectares?
- 40,000 cubic meters
 - 20,000 cubic meters
 - 160,000 cubic meters
 - 250,000 cubic meters

26. At a science camp, Mia learns about solar energy. She analyses data and finds that a solar panel generates an average of 1.5 kilowatt-hours (kWh) of electricity per day. If a household uses 6 kWh of electricity daily, how many solar panels would they need to cover their entire daily energy consumption?
- 2 solar panels
 - 3 solar panels
 - 4 solar panels
 - 5 solar panels

- 27.** Which of the following statements describes the role of zoos in endangered species conservation?
1. Zoos primarily exist for entertainment purposes and have no impact on conservation efforts.
 2. Zoos serve as a means to display animals but have little involvement in conservation initiatives.
 3. Zoos play a significant role in conservation by housing and breeding endangered species.
 4. Zoos contribute to the endangerment of species by removing them from their natural habitats.
- a. Only 1
b. Only 2
c. Only 3
d. Both 1 and 3
- 28.** A school implemented water-saving methods, reducing daily usage by 15%. If the school previously consumed 500 litres of water per day, what is the new daily consumption after applying these strategies?
- a. 425 litres
b. 575 litres
c. 75 litres
d. 4250 litres
- 29.** In the quest for cost-effective, safe, and carbon-neutral energy sources, various technological options have been under scrutiny for their potential to provide a seamless transition. Among the listed energy technologies, which option is often regarded as a solution capable of enabling a smooth transition to affordable, safe, and carbon-free energy sources?
1. Natural gas
 2. Biomass energy
 3. Solar energy
- a. Only 2 and 3
b. Only 2
c. Only 3
d. 1, 2 and 3
- 30.** Max was studying the Earth's atmosphere in class. He learned about a special layer that shields us from harmful solar radiation. While explaining it to his friend, Sarah, she asked, "What's the name of this protective layer?"
- a. Ionosphere
b. Exosphere
c. Troposphere
d. Stratosphere
- 31.** During a marine conservation seminar, a panel discusses the diverse range of threats posed by ocean plastics to marine life. They emphasise the severe consequences and challenges faced by various species due to plastic pollution in oceans.
- Which scenario best illustrates the impact of discarded plastic on marine life?
- a. Volunteers find intact plastic bottles floating near a reef, causing minor obstructions to fish.
 - b. Discarded fishing nets entangle sea turtles, causing injuries and hindering their swimming.
 - c. Seabirds consume small plastic debris, with unclear effects on their health.
 - d. Marine biologists locate scattered plastic bags on the ocean floor with minimal impact on organisms.

- 32.** Javier studied the adaptations of desert organisms. He discovered that certain desert plants have shallow roots but spread extensively.
What advantage do these shallow, widespread roots offer to desert plants?
- Improved access to underground water sources.
 - Protection from extreme heat and sunlight.
 - Enhanced stability in sandy soil.
 - Reduced reliance on photosynthesis for survival.
- 33.** Among the options provided, which statement most accurately describes the primary impact of deforestation on biodiversity in the tropical rainforest?
- The reduced availability of tree cover in the rainforest primarily benefits species' adaptability.
 - Deforestation has no significant influence on species populations or vulnerability to extinction.
 - Removal of trees disrupts habitats, resulting in decreased species populations and increased extinction risks.
 - Extensive deforestation mainly leads to an increased number of habitats for various species.
- 34.** In an area facing increased soil erosion due to extreme weather events linked to climate change, farmers seek strategies to protect soil health.
What practice aligns best with sustainable soil management in such conditions?
- Clearing land for larger-scale monoculture to simplify farming practices.
 - Implementing agroforestry systems to prevent soil erosion and maintain fertility.
 - Relinquishing organic matter addition to soil for fear of further erosion.
 - Applying chemical pesticides extensively to eradicate soil-dwelling pests.
- 35.** Emma's family discussed ways to reduce their carbon footprint.
Which action contributes most to mitigating climate change on a personal level?
- Carpooling or using public transportation
 - Buying products with excessive packaging
 - Leaving electronic devices on standby mode
 - Using single-use plastics regularly
- 36.** In a future scenario where climate change drastically alters global weather patterns, which land biome would likely experience the MOST drastic and irreversible changes?
- A temperate deciduous forest with distinct seasonal variations.
 - A vast and diverse tropical rainforest with abundant rainfall.
 - A fragile arctic tundra bordering on polar ice sheets.
 - A sprawling grassland with resilient and adaptable plant communities.
- 37.** In a local community initiative, Sarah's school decided to promote recycling. They collected plastic bottles, newspapers, and aluminium cans. What's the primary advantage of recycling these materials?
- Reducing landfill space and environmental pollution
 - Increasing the cost of production for new materials
 - Promoting the use of non-renewable resources
 - Decreasing the need for waste segregation

38. In a coastal city, students investigated the impact of nutrient runoff on marine ecosystems. They discovered that agricultural practices contributed to excess nutrients reaching the ocean. How do nutrient runoff and eutrophication affect marine life?
- Nutrient runoff causes algal blooms, leading to oxygen depletion and harming marine life.
 - Nutrient runoff benefits marine plants, enhancing their growth and diversity.
 - Eutrophication leads to increased oxygen levels, supporting marine species.
 - Introducing more fishing activities can balance the effects of nutrient runoff.
39. Maya and Ethan observe vibrant coral reefs, but they notice patches of white, bleached skeletons amidst the colourful corals. Choose the MOST likely factor triggering coral bleaching.
- Increased nutrient runoff from coastal farms, promoting algal growth that smothers corals.
 - Overfishing by large trawlers, disrupting the food chain and reducing herbivores that control algae.
 - Rising ocean temperatures exceeding corals' stress tolerance, causing them to expel vital symbiotic algae.
 - Increased water pollution from industrial waste, introducing toxic chemicals that directly harm coral tissues.
40. At Greenway Middle School, the cafeteria decided to track food waste over a week. The given table represents the daily amount of food wasted. If the school wants to reduce food waste by 20%, how much food, in kilograms, should they aim to save each day?

Day	Food Waste (Kg)
Monday	2.8
Tuesday	3.5
Wednesday	4.2
Thursday	5.1
Friday	3.9
Saturday	3.2
Sunday	2.6

- 3.2 kg
- 0.72 kg
- 5.06 kg
- 25.3 kg

Green Challenger (Each Question is 6 Marks)

41. In a study comparing two diverse regions, a Coastal City and a Desert Region, several factors influencing annual rainfall were analysed and recorded in the table below.

Based on this information, which of the following statements is most accurate?

Location	Average Annual Rainfall (inches)	Proximity to Ocean	Presence of Vegetation
Coastal City	Exceeds 80 inches	Proximate	Yes
Desert Region	Less than 5 inches	Distant	Sparse

- a. The coastal city experiences high evaporation rates due to its proximity to the ocean, leading to increased rainfall.
- b. The desert region receives less rainfall because the water cycle doesn't operate there.
- c. The coastal city receives more rainfall because it has more vegetation to trap moisture.
- d. The desert region gets less rainfall because the water cycle is more active over the ocean.

42. A farmer observed that the soil in his fields was becoming increasingly dry, even after heavy rainfall. The farmer suspected that the dry soil was due to increased runoff, preventing water from infiltrating the ground. Which of the following practices could help the farmer improve soil moisture?

- 1. Tilling the soil to increase its water-holding capacity
- 2. Planting cover crops to protect the soil from erosion
- 3. Creating channels and other structures to slow down runoff

- a. Only 1
- b. Only 1 and 2
- c. Only 2 and 3
- d. 1, 2 and 3

43. A group of researchers is discussing the causes and effects of climate change during a conference. They aim to pinpoint the accurate relationship between a specific human activity and its consequent impact on the environment.

Which scenario correctly identifies a human activity and its corresponding impact on the environment?

- a. Increased usage of solar energy leading to ozone layer depletion.
- b. Deforestation resulting in the loss of biodiversity and disruption of ecosystems.
- c. Reduced use of fossil fuels causing an increase in air pollution and smog formation.
- d. Expansion of agricultural practices leading to a rise in sea levels and coastal erosion.

44. A group of scientists is studying the effects of climate change on a mountain grassland ecosystem. They observe that the average temperature in the region has increased over the past few decades, and that the timing of plant flowering has shifted earlier in the spring. How might these changes impact the interactions between plants and pollinators in this ecosystem?

- a. Pollinators may have difficulty finding food sources due to the mismatch between their life cycle and the timing of plant flowering, also resulting in reduced pollination success.
- b. Pollinators may benefit from the increased temperature, as it could lead to an increase in plant growth and nectar production.
- c. Earlier plant flowering may have no significant impact on pollinators as they can adapt their behaviour and life cycles accordingly.
- d. The rise in temperature could decrease the number of plant species, thereby reducing the variety of resources available for pollinators, causing a decline in their populations.

45. In a disaster-stricken area where access to clean water is limited, a relief organisation assists a local community facing water contamination. The primary water source, a nearby river, has been contaminated by industrial waste, rendering it unsafe for consumption. Boiling water is one known method for purifying it, but the situation requires alternative solutions due to the sheer volume of contaminated water.

What additional effective method can be utilised on a larger scale to purify the contaminated water, making it suitable for drinking purposes in such an emergency?

- a. Adding calcium tablets
- b. Activated carbon filtration
- c. Pouring it through a coffee filter
- d. Employing a reverse osmosis filtration system

46. In a remote village, access to electricity is limited. The government aims to introduce affordable and clean energy sources to improve living conditions. Considering the village's geographical isolation, unreliable grid connections, and the need for sustainable solutions, which approach would be the most effective and practical for providing immediate access to clean energy?
- Establishing a small-scale wind turbine farm to harness local wind resources.
 - Implementing solar microgrids tailored to the village's energy needs.
 - Introducing biogas digesters to convert organic waste into usable energy.
 - Installing small-scale hydroelectric systems using nearby streams or rivers.
47. Daniel's school initiated a project to implement bioenergy sources to reduce its carbon footprint. As part of their research, they explored various options for renewable bioenergy. They considered using different materials such as agricultural waste, wood chips, and animal manure.
Which of the following materials can be considered a renewable source of bioenergy?
- Coal briquettes
 - Plastic waste from the school cafeteria
 - Wood chips from sustainably managed forests
 - Food waste from the school cafeteria burned in an incinerator
48. During a school project on recycling, Emma was tasked with investigating the environmental benefits of recycling aluminium cans versus manufacturing new ones.
Which of the following statements is true regarding this comparison?
- Recycling aluminium cans saves energy but does not reduce pollution.
 - Manufacturing new aluminium cans consumes less energy than recycling them.
 - Recycling aluminium cans reduces energy consumption and environmental pollution.
 - Manufacturing new aluminium cans have no impact on energy consumption or pollution.
- Only 1
 - Only 2
 - Only 3
 - Both 1 and 4
49. Sophie and her marine biology class were on a research vessel exploring marine life near the coast. Suddenly, they noticed a distressed pod of dolphins swimming amidst an oil slick that stretched for miles. Investigating further, they realised it was the result of a tanker accident, causing severe repercussions for the marine environment.
Sophie and her classmates witnessed an oil spill from a tanker that affected the surrounding ocean. How does this type of marine pollution primarily impact marine ecosystems?
- It increases oxygen levels in the water, benefiting fish and other aquatic organisms.
 - It leads to increased biodiversity as some species adapt to the oil-rich environment.
 - It accelerates coral reef growth due to the nutrients present in the oil.
 - It disrupts the food chain by poisoning primary producers like algae and plankton.
50. Your city throws away tons of food, leading to environmental issues and wasted resources. Two groups proposed solutions:
- Group A:**
"**Community Kitchens**": Establish kitchens that collect discarded food, prepare nutritious meals, and serve them to those facing hunger.
"**Urban Composting Network**": Create a network of community composting bins and educational programs to turn food scraps into nutrient-rich soil for urban gardens.

Group B:

"Smart Fridges": Implement high-tech fridges that monitor food freshness and notify owners to prevent expired waste.

"Automated Recycling Plants": Build specialised plants that efficiently process organic waste into fertilisers and renewable energy.

Which group's approach do you think will more effectively reduce food waste and address related challenges? Why?

- Group A, because their solutions directly tackle hunger and soil depletion while utilising waste.
- Group B, because their solutions focus on prevention and technological efficiency.
- Both groups offer complementary solutions, combining social impact with waste reduction and resource utilisation.
- Neither group, as existing policies are sufficient to address food waste issues.

Answer Key

1.	b	2.	d	3.	a	4.	c	5.	b	6.	c	7.	d
8.	c	9.	b	10.	b	11.	b	12.	c	13.	b	14.	a
15.	a	16.	c	17.	c	18.	b	19.	d	20.	c	21.	b
22.	a	23.	a	24.	d	25.	a	26.	c	27.	c	28.	a
29.	c	30.	d	31.	b	32.	a	33.	c	34.	b	35.	a
36.	c	37.	a	38.	a	39.	c	40.	b	41.	a	42.	d
43.	b	44.	a	45.	d	46.	b	47.	c	48.	c	49.	d
50.	c												