

2024 International Environmental Science Olympiad Knockout - Preliminary Round

1. Bleaching is a phenomenon that affects what marine environments, the largest example of which is the Great Barrier off Australia? – **REEF** (or CORAL **REEF**)
2. Events such as sleet, snow, and rain are described by what thirteen-letter term that encompasses any result of condensation that falls from clouds? – **PRECIPITATION**
3. The Negev, Kalahari, and Namib are prominent examples of what environment defined as receiving fewer than ten inches of rain per year? – **DESERT**
4. In the United States, what animals of the family Cervidae contribute to about one and a half million motor vehicle collisions each year, usually when a buck or doe attempts to cross the road? – **DEER**
5. What freshwater-dwelling species is second only to the capybara as the world's largest rodent? This “keystone species” is said to have shaped its environment almost as much as humans, affecting local climate and biodiversity via the construction of dams. – **BEAVERS**
6. Nickel, cadmium, and lithium are among the elements used to make the rechargeable type of what devices that are produced by Eneloop, Duracell, and Energizer? – **BATTERY** (or **BATTERIES**)
7. Animals that conduct electricity include eels, rays, and what egg-laying mammal, a relative of the echidna? – DUCK-BILLED **PLATYPUS**
8. Which natural phenomenon, partly resulting from refraction, can exist in any form of airborne water depending on the angle of the sun? Within itself, this phenomenon contains a spectrum of color. – **RAINBOW**
9. Tuskegee Institute scientist George Washington Carver was known for his work with what legume, for which he developed over 300 uses? – **PEANUT**
10. What U.S. state consists of islands such as Maui and Oahu, which were formed by volcanic activity? – **HAWAII**
11. The largest desert in the world by total land area makes up what polar continent? – **ANTARCTICA**
12. What animal has fatty deposits on its back, numbering two for the Bactrian type and one for dromedaries? This animal’s notably long eyelashes help protect its eyes from surrounding desert sands. – **CAMELS**
13. In what process do plants synthesize sunlight to create energy in the form of carbohydrates? – **PHOTOSYNTHESIS**
14. What word precedes Cancer and Capricorn in the name of two imaginary boundaries dividing climate areas? – **TROPICS** (accept **TROPIC** OF CANCER; accept **TROPIC** OF CAPRICORN)

15. Phyto- and Zoo- are two of the main types of what tiny organisms that drift through marine environments and form the lowest trophic level of their ecosystem? – **PLANKTON** (accept PHYTO**PLANKTON**; accept ZOO**PLANKTON**)
16. At the so-called Meeting of the Waters, what light-colored river runs parallel to the Rio Negro without fully mixing? – **AMAZON** RIVER
17. Which logarithmic scale that measures aqueous solutions is relevant to the analysis of carbon dioxide emissions from human activity on seawater and its acidifying effect on the oceanic carbon cycle? This scale's highest numbers are given to alkaline substances. – **PH** (accept **POWER OF HYDROGEN**; accept **POTENTIAL OF HYDROGEN**)
18. What phenomenon that comes in neap and spring forms is influenced by the gravitational forces of the moon and the sun? – **TIDES** (accept NEAP **TIDE**; accept SPRING **TIDE**)
19. What word describes the amount of salt in a given body of water? – **SALINITY**
20. Often confused with sleet, what weather phenomenon occurs mostly in mid-latitude continental interiors and can form up to six-inch-round "stones"? – **HAIL**
21. For opossums, what period lasts a brief twelve days? In elephants, this period in which a child is carried to term lasts nearly two years. – **GESTATION** PERIOD
22. What longest continental mountain range boasts the world's highest volcanoes, as well as the peak located farthest from Earth's center? This mountain range includes Chimborazo and the Altiplano Plateau. – **ANDES** MOUNTAINS
23. Climate activist Greta Thunberg is from what country, which also hosts a majority of the Nobel Prize ceremonies? – **SWEDEN** (or KINGDOM OF **SWEDEN**; or KONUNGARIKET **SVERIGE**)
24. The Santa Ana, katabatic, chinook, and sirocco are different types of what weather phenomenon? – **WINDS**
25. The documentary Blackfish was critical of what marine theme park company that ended its killer whale shows in 2019? – **SEAWORLD**
26. What Italian city is built on 118 islands and known for its high *acqua alta* tides? This city's lowest elevation point is just 25 inches above sea level. – **VENICE** (or **VENEZIA**)
27. Which plant species' population is down 93 percent since 1979 due to habitat loss from human population increase in North Carolina, where it's most abundant? This plant species is also affected by harvesting, as it is the most commonly purchased carnivorous plant in the world. – **VENUS FLYTRAP**
28. What sky phenomenon may occur more often around equinoxes due to seasonal variations in geomagnetic storms? This phenomenon also occurs more often in high latitudes, thus the addition of the words australis and borealis to its subtypes. – **AURORA** (accept **AURORA AUSTRALIS**; accept **AURORA BOREALIS**)
29. What Central American big cat can be differentiated from the similar leopard by observing its spots? This big cat sports patterns called rosettes with a small spot in the middle, while the rosettes of leopards tend to have bolder, solid outlines. – **JAGUAR**

30. What desert of South America is the world's driest non-polar desert? – **ATACAMA** DESERT
31. One way households can go green is to select lightbulbs with a lower value for what quantity that is equal to current times voltage? – **WATTAGE**
32. The three largest national parks in the United States by area are located in what state? Those parks include Gates of the Arctic, Wrangell-St. Elias, and Denali. – **ALASKA**
33. Which natural objects are the main uncertainty in climate sensitivity due to variables in their thickness, form, and altitude, which affects whether heat gets deflected away from, or trapped within, Earth's surface air? These objects are also the source of the planet's precipitation. – **CLOUDS**
34. In order to discourage their one-time use, retail stores in various U.S. states charge a small fee for what disposable object offered at checkout? – SHOPPING **BAGS**
35. The price and availability of which plant product, derived from orchids, is negatively affected by drought, cyclones, and crimes against its farmers in Madagascar? This plant product is extremely popular as a scent and a flavoring agent. - **VANILLA**
36. What atmospheric quality is measured by a barometer? – **PRESSURE**
37. What animal behavior can involve magnetoreception or internal hormone cues to locate available food or shelter? Examples of this behavior include the journeys of monarch butterflies and the mass voyage across the Serengeti of wildebeests, zebras, and gazelles. – **MIGRATION**
38. What commercial crop can be designated either table or suitable as the basis of the main product of viticulture, with its quality determined by soil acidity, weather, and its harvest year, or “vintage”? – **GRAPES**
39. In what process do insects such as bees take grains from the anther of a flower's male stamen to the stigma, which is part of a flower's female reproductive system? This process enables fertilization and produces new seeds. - **POLLINATION**
40. What animal, which is raised as livestock in an agricultural industry, has been specifically cited as an agent for climate change due to its production of large quantities of methane? – **COW** (accept equivalents)
41. Conservation efforts have managed to revive the nearly extinct California species of what type of bird, whose Andean species is said to be the world's largest bird of prey? – **CONDOR** (accept CALIFORNIA **CONDOR**; accept ANDEAN **CONDOR**)
42. What international city names a climate change agreement that has been ratified or acceded by nearly every UN-recognized country, excluding Iran, Libya, and Yemen? – **PARIS** (accept **PARIS AGREEMENT**)
43. What two-word term describes the total greenhouse gases produced by individuals or corporations? Lowering this value is the primary concern of eco-friendly strategies. – **CARBON FOOTPRINT**
44. What endangered mammal is bred at a namesake research center in Chengdu in the Chinese province of Sichuan? – GIANT **PANDA**

45. What type of relationship between organisms can improve biodiversity by making competing species less dominant? In this relationship, one organism plays host to another, which is able to gain food or resources at the expense of the host. – **PARASITISM** (or **PARASITE**)
46. What type of animals make their habitats in trees? Squirrels, koalas, and sloths are examples of these animals. – **ARBOREAL**
47. K'gari, Moreton, and Rottneest, the latter of which is home to the quokka, are three of what country's sand islands? – **AUSTRALIA** (or COMMONWEALTH OF **AUSTRALIA**)
48. Chimpanzees have been observed using, and possibly manufacturing, rudimentary tools in order to "fish" for what mound-dwelling insect known as a blight on wood? – **TERMITE**
49. CO2 emissions and the overburdening of local electrical grids are some of the factors that make it environmentally destructive to mine what type of commodity, examples of which include Ethereum and Bitcoin? – **CRYPTOCURRENCY**
50. The Garúa fog is a natural phenomenon that helps to cool the capital of what country, which shares Lake Titicaca with Bolivia? – **PERU** (or REPUBLIC OF **PERU**)
51. What location in the Pacific Ocean is home to Challenger Deep, the deepest point on Earth? This location is named for a group of islands administered by the United States. – **MARIANA TRENCH**
52. The pursuit of palm oil for products such as Nutella threatens the habitat of what tree-dwelling primate native to Borneo and Indonesia? – **ORANGUTAN**
53. What African country is home to Serengeti National Park, as well as Gombe Stream National Park, where Jane Goodall observed chimpanzees? – **TANZANIA** (or UNITED REPUBLIC OF **TANZANIA**)
54. What is the term for the destructive phenomenon in which logging and timber industries clear away large quantities of trees for land development? – **DEFORESTATION**
55. Along with liverworts and hornworts, the plant group known as bryophytes also incorporates what flowerless plants that form in moist environments and are often seen as a thick green clump on the bark of trees? – **MOSS**
56. Constructed by the ancient Romans, the cloaca maxima is a still-functioning example of what type of waste-disposal system? – **SEWER**
57. The Keeling Curve measures the atmospheric quantity of what molecule, a byproduct of human respiration? – **CARBON DIOXIDE** (or **CO2**)
58. Six of the world's nine existing species of baobab trees are endemic to what African island? – **MADAGASCAR** (or REPUBLIC OF **MADAGASCAR**; or REPOBLIKAN'I **MADAGASIKARA**)
59. What name is given to the perpetually frozen ground in cold environments, such as the tops of mountains and polar regions? – **PERMAFROST**
60. In what phenomenon are harmful gases in the atmosphere trapped between the Earth and space, thus preventing the Earth from releasing heat and raising the surface temperature? – **GREENHOUSE EFFECT**

61. Habitat selection in marine animals can be influenced by what facilities that artificially warm their surrounding waters as a byproduct of producing electricity through nuclear, geothermal, or hydrodynamic means? – **POWER PLANTS** (accept equivalents)
62. Also known as torpor, what natural state is notably influenced by environmental factors, especially climate and temperature, prompting many organisms to lower their metabolic rate and activity to conserve energy according to season? This state is a form of natural dormancy, as well as a type of "overwintering." – **HIBERNATION**
63. Following lawsuits in several countries over the environmental harm of its products, the agricultural and chemical company Monsanto was acquired by what German pharmaceutical giant? – **BAYER**
64. What type of landscape feature was crucial to the history of the Silk Road, functioning as a refueling station and supporting travelers due to its water content in an otherwise barren desert? – **OASIS**
65. What spined mammal, which is smaller than a porcupine, is considered an invasive species in some regions, but is also welcomed into domestic gardens to control pest populations? – **HEDGEHOG**
66. What rhyming two-word term describes bathroom and kitchen fixtures that reduce a household's economic impact by limiting the amount of water used? – **LOW FLOW**
67. What type of biome is best exemplified by the Sundarbans, a wetland that fosters a large tiger population and grows this biome's namesake trees? – **MANGROVE** (or **MANGROVE FOREST**)
68. In order to prevent knocking, what commercial product was once supplemented with lead, which created heavy air pollution and had a major impact on public health? – **GASOLINE** (accept equivalents; prompt on generic terms such as "FUEL")
69. Which phenomenon's photochemical subtype is most common in warm, dry cities such as Los Angeles, with many motor vehicles whose emissions react with sunlight to create a dense type of visible air pollution? – **SMOG**
70. A speleothem is a type of formation that occurs within what feature, which can be explored in an activity called spelunking? – **CAVES**
71. What Spanish term describes a southern oscillation that includes the warming of the Pacific Ocean around the tropics? – **EL NIÑO**
72. Chalk deposits in Western Europe, such as those found in Dover, inspired the name of what geological period that followed the Jurassic? – **CRETACEOUS PERIOD**
73. The Black Current, also known as the Kuroshio Current, is a warm water current off the east coast of what country in the North Pacific? – **JAPAN** (or **NIPPON-KOKU**; or **NIHON-KOKU**)
74. The tamandua is an example of what type of mammal, whose long snout enables it to feed on namesake insects? – **ANTEATER**
75. What chemical element is converted to ammonia in a namesake fixation process used by bacteria in plants and soil? – **NITROGEN** (accept **NITROGEN FIXATION**)

76. Responsible for millions of deaths per year, what nicotine-containing plant is considered the world's deadliest? – **TOBACCO**
77. As of December 2024, IQAir ranks what capital of Bangladesh as the city with the world's worst air quality? – **DHAKA**
78. Which conifer subfamily boasts a genus that's one of Earth's oldest organisms? This subfamily is also known for containing the largest living single-stem tree, General Sherman. – **REDWOODS** (or **SEQUOIA**)
79. What adaptive behavior's subtypes include "motion dazzle" and the "industrial melanism" of the peppered moth, whose darkening coloration over several decades correlated with the urban tree bark in their environment, providing a key argument in the study of natural selection? – **CAMOUFLAGE** (accept **MIMICRY**)
80. Dark-sky preserves are designed to counteract what type of pollution, which is often produced by cities in the form of excess electricity and skyglow? – **LIGHT POLLUTION**
81. Vacation destinations such as Italy, Japan, and Greece have been forced to grapple with what phenomenon in which an excessive number of visitors and non-residents flock to a travel destination, placing a burden on local services and resources and increasing environmental impact? – **OVERTOURISM** (prompt on "TOURISM")
82. What fertile plains of South America create a grassland region of Argentina, Uruguay, and Brazil below the Gran Chaco and above Patagonia? – **PAMPAS**
83. What type of natural feature has helped to heat greenhouses and grow crops in otherwise unviable Iceland? Adjacent geothermal power plants threaten these natural features, the most prominent example of which is probably Old Faithful in Yellowstone National Park. – **GEYSER**
84. An erg is an area of flat desert that contains a field of what feature, which comes in star and dome types and is formed by aeolian processes? – SAND **DUNES** (accept STAR **DUNES**; accept DOME **DUNES**)
85. What type of device, defined as a revolving wheel that takes in the flow of air or water and outputs power, is used in wind farms to produce sustainable energy? – **TURBINE**
86. The *baiji* river dolphin may have been driven to extinction by the construction of what enormous infrastructure project on the Yangtze River? – **THREE GORGES DAM**
87. What layer of the Earth is located below the crust and above the core? – **MANTLE**
88. The reptile family *Elpidae* contains some of the deadliest snakes, including mambas, coral snakes, and what other type of snake known for their hoods? – **COBRA**
89. Tularemia and myxomatosis are diseases that notably afflict what animals, members of the order Lagomorpha? – **RABBITS** (accept equivalents)
90. Plants derive their green color from what natural compound and pigment? – **CHLOROPHYLL**
91. What type of marine animal is known for its nesting behavior, crawling onto beaches to dig a hole and lay their eggs before returning to the ocean? As a result, the hatchlings of this animal must make

a desperate scramble to the ocean and avoid waiting predators shortly after birth. – SEA **TURTLES**
(accept specific types of SEA **TURTLES**)

92. In the United States, the Dust Bowl was caused by what type of event in which an area is affected by a sustained dry period? – **DROUGHT** (prompt on “DRY SPELL” or similar answers)

93. What term for a room for a newborn baby also describes a facility where plants are grown for purposes such as retail sale or transplanting? – **NURSERY**

94. The ionosphere is partly composed of the low-temperature form of what state of matter, which is often considered the fourth state of matter along with solids, liquids, and gases? – **PLASMA**

95. Coir is a fibrous material that surrounds the shell and husk of what tropical fruit, a tree product that produces the world’s largest seeds? – **COCONUT**

96. Five different breezes and four different gales are identified on what scale of wind intensity devised by an Irish scientist? – **BEAUFORT SCALE**

97. When arranged in namesake farms or arrays, what conservation devices can increase local temperatures? This device utilizes the angle of incidence to absorb maximum light in photovoltaic cells. – **SOLAR PANELS**

98. What type of natural feature is a ring-shaped collection of coral that surrounds a central lagoon? – **ATOLL**

99. In what practice do humans domesticate birds of prey to hunt wild animals? While this practice is named for a specific type of bird, it can also be practiced with hawks and eagles. – **FALCONRY**

100. Known for its constant lightning strikes, the Catatumbo River is located in what country, where it discharges into Lake Maracaibo? – **VENEZUELA** (or BOLIVARIAN REPUBLIC OF **VENEZUELA**)

101. The southern coastline of what continent is impacted by the cold-water Benguela Current and the warm-water Agulhas Current? – **AFRICA**

102. Which phenomenon influences the formation of cyclones, with less of an effect at the Equator, as well as jet streams? As a result of this effect, the Northern Hemisphere undergoes a rightward deflection and the Southern Hemisphere undergoes a leftward deflection. – **CORIOLIS EFFECT** (or **CORIOLIS FORCE**)

103. The Disney Nature film The Crimson Wing follows a species of what tropical birds as they congregate around the soda lake Natron? – **FLAMINGO**

104. What European country, a model for sustainable transport, has the highest number of bicycles per person? – **NETHERLANDS** (or KINGDOM OF THE **NETHERLANDS**; or KONINKRIJK DER **NEDERLANDEN**)

105. What Toyota model, a type of four-door sedan, was introduced in 1997 as the world's first mass-produced hybrid vehicle? – **PRIUS**

106. Russia's Zhemchug is the deepest underwater example of what type of natural feature? The deepest above-water example of this feature on Earth is called Tsangpo and exists in Tibet. – **CANYON**
(accept ZHEMCHUG **CANYON**; accept TSANGPO **CANYON**)

107. Because of its very low body temperature, what animal is highly susceptible to leprosy and can transmit it to humans? This animal, which has keratin scutes covering dermal bone plates, has a name meaning "little armored one." – **ARMADILLO**

108. What warm current of the Atlantic Ocean originates in a namesake body of water bordered by Florida, Cuba, and a country with states such as Veracruz? – **GULF STREAM**

109. Despite official statements on the need for "responsible stewardship of the environment," what oil cartel's member countries are frequently guilty of heavy pollution in their homeland? – **OPEC** (or **ORGANIZATION OF THE PETROLEUM EXPORTING COUNTRIES**)

110. The end of the Permian geological period featured a mass event of what type, which included the Great Dying? Five major events of this type occurred between 445 and 66 million years ago. – **EXTINCTION**

111. The American Midwest is associated with what flat grassland biome that takes its name from the French for "meadow"? – **PRAIRIE**

112. To further underscore the effects of climate change, experts have suggested giving names to what weather phenomena defined as a period of sustained, high temperatures? – **HEATWAVE**

113. Humans can reduce wasteful energy expenditures by upgrading their HVAC systems. In the abbreviation HVAC, which encompasses heating and air conditioning, what word is indicated by the letter V? – **VENTILATION**

114. What oil extraction technique involves the use of a high-pressure liquid to create fractures in solid rock beneath the Earth? Though it expands access to oil, this technique has been criticized for stimulating seismic activity and increasing water and air pollution. – **FRACKING** (or **HYDRAULIC FRACTURING**)

115. What word is used to describe species that are transplanted to an environment, often by human travel? These species, whose examples include kudzu, can create major problems within ecosystems and are often characterized by speedy reproduction and resilience. – **INVASIVE**

116. The "drip" is one method of what agricultural practice, which helped to kickstart the settlement of civilizations? This practice can result in widespread hunger and insect-borne disease when too much or too little water is used on crops. – **IRRIGATION**

117. Nitrogen oxide and sulfur dioxide are two compounds that are closely associated with what phenomenon in which harmful gases enter the atmosphere, causing a form of precipitation with an unusually low pH? – **ACID RAIN**

118. Which birds of the family Columbidae were key to the Normandy Invasion when radios were too vulnerable to enemy interception? Urban groups of these city-dwelling birds survive on human food scraps and are often seen foraging. – **PIGEONS** (accept specific **PIGEONS**; accept **ROCK DOVE**; prompt on "DOVE")

119. What animal conservation organization that uses a panda bear for its logo sued a wrestling and entertainment company for use of its trademarked initials? – **WORLD WILDLIFE FUND** (or **WWF**)

120. What sort of feature is formed when the surface layer of the Earth collapses? This type of feature usually takes generations to develop, but human water usage and drilling can exacerbate the process. – **SINKHOLE**

121. What type of diagram illustrates the interconnected nature of organisms of different trophic relationships? This type of diagram is different from a similar "Chain" that shows trophic levels in a straightforward, linear way. – **FOOD WEB**

122. RuBisCO is the most abundant example of what type of protein? RuBisCO acts on the dark cycle in photosynthesis. – **ENZYMES**

123. The trails that follow commercial aircraft and linger in the sky are formed by what natural process in which gaseous matter becomes liquid? – **CONDENSATION**

124. Which plant family contains the genus *Raffia*, which has the biggest leaves on earth? This plant family is cited as the world leader among plant families in economic value produced, yielding items such as rattan and dates. – **PALM** (accept **PALM TREE**)

125. What twelve-letter term refers to the various species of flora, fauna, and other types of life in a habitat or region? Areas where this characteristic is particularly high include the islands of Borneo and Madagascar. – **BIODIVERSITY**

126. What region of the Pacific is named for encompassing a great majority of the world's volcanic and seismic activity? – **RING OF FIRE**

127. What body of water between Uzbekistan and Kazakhstan suffered a 90 percent reduction in its surface area due to its diversion for government projects? – **ARAL SEA**

128. What surname sometimes accompanies Köppen in the name of a widely used climate classification system? Rudolf, a scientist with this surname, revised the classification system and was the brother of a physicist who names a tool employed to detect radiation. – **GEIGER** (accept RUDOLF **GEIGER**; accept KÖPPEN-**GEIGER** CLIMATE CLASSIFICATION; accept **GEIGER** COUNTER)

129. The term "carrying capacity" refers to the maximum sustainable amount of what value for a given environment? – **POPULATION**

130. What commodity derived from the latex in trees was once the subject of a brutal plantation-based system overseen by Belgian colonizers in the Congo? – **RUBBER**

131. What type of organism is positioned at the very top of the food chain? Examples of these organisms include great white sharks, polar bears, lions, and humans. – **APEX PREDATOR** (prompt on "PREDATOR")

132. What two verbs appear in a destructive agricultural practice that involves clear-cutting and setting fire to a forest to create fertile soil from the ashes? – **SLASH AND BURN**

133. Heavy rains are associated with what season of changing temperature and precipitation in tropical locations such as the Indian subcontinent? – **MONSOON**

134. What type of butterfly is named for the forked, divided wings at the back of its body? Prominent species among this type of butterfly include the spicebush and the zebra. – **SWALLOWTAIL**

135. What green marine plant is often grouped in namesake underwater "forests" frequented by animals such as sea otters? – **KELP**

136. After feldspar, what is the second-most abundant mineral on Earth? This mineral is primarily composed of silica, which is also the chief component of sand and glass. – **QUARTZ**

137. What country in the Windward Islands is home to Boiling Lake in a national park outside Roseau? – **DOMINICA** (or COMMONWEALTH OF **DOMINICA**)