

# 2024 International Environmental Science Olympiad Knockout - Final Round

1. The Maunder Minimum refers to a period of time during the Little Ice Age marked by the stark infrequency of what dark marks that appear on the largest star in the Solar System? – **SUNSPOTS**
2. What type of plant is considered a pest and is targeted by toxic products such as RoundUp? While typically thought of as unwanted, this broad group of plants can provide benefits, such as creating a “mulch” effect that nourishes soil. – **WEED**
3. What word describes societies that are led by women, such as those of lemurs, hyenas, and elephants? – **MATRIARCHAL** (or **MATRILINEAL**)
4. In what natural process are materials such as sand or rock swept away by wind or water and transported elsewhere? – **EROSION**
5. What type of body of water serves as a transitional boundary between a river and the sea, making it a crucial outlet for inland water sources, as well as a pathway for marine pollution? – **ESTUARY**
6. What natural material can form after a sudden agitating force liquefies an area of fine granular material? Humans can escape a pit of this material by making very slow leg movements and getting into a face-up horizontal floating position. – **QUICKSAND** (or **SINKING SAND**)
7. White nose syndrome, a devastating fungal disease, affects what mammals during hibernation? – **BATS**
8. In what Central American country did President Nayib Bukele announce the concept of a smart city powered by geothermal energy from the volcano Conchagua? – **EL SALVADOR** (or **REPUBLIC OF EL SALVADOR**)
9. Underground oil reserves can produce what substance that forms when petroleum is put under pressure? Pits of this dark, viscous substance can yield fossils and other organic matter. – **TAR**
10. What agricultural practice prevents the over-flourishing of resistant plants and insects, as well as soil erosion, by planting produce in cycles? – **CROP ROTATION**
11. Thermal imaging devices detect what type of radiation, which is also sensed by vipers and other snakes with pit organs? – **INFRARED** (or **IR**)
12. What type of strong, concentrated current is considered dangerous for beachgoers who can be caught by this current between breaking waves? – **RIP CURRENT** (do NOT accept or prompt on “RIPTIDE”)
13. What relatively new term describes the problematic disposal of technological gadgets, including computers and cell phones? – **E-WASTE**
14. Plants such as palms and ferns exhibit what type of large, divided leaf? – **FROND**

15. Dark pine trees along the Dinaric Alps gave their name to what country, which is known in its native language as Crna Gora, meaning "Black Mountain"? – **MONTENEGRO**
16. A short-term type of biological clock, what cycles repeat in humans every 24 hours? These cycles are often simplified as sleep-wake cycles, but also feature several other types of behavioral oscillations. – **CIRCADIAN RHYTHMS**
17. Nuclear power plants are instantly recognizable by what structures that exhibit a hyperboloid shape and function as a heat removal device? – **COOLING TOWER**
18. As part of an ecological relationship, ants rely on what sap-sucking insect to produce a sticky, sugary liquid called honeydew? – **APHIDS** (accept **GREENFLY**)
19. What is the name for a route that allows travelers to navigate their way through a mountain range? – **PASS**
20. In what practice does a municipality intentionally set fire to a section of forest to prevent the potential spread of wildfires or clear dry vegetation? – **CONTROLLED BURN** (accept **PRESCRIBED BURN**; accept **RX BURN**)
21. What is the most commonly-consumed tree nut in the world? This nut, a popular culinary ingredient, is necessary for making marzipan and biscotti. – **ALMOND**
22. Considered extremely destructive to the environment, what non-biodegradable material is often used in coffee cups and packaging? – **POLYSTYRENE** (or **STYROFOAM**)
23. What landscape feature, formed by a volcano's collapse, has a name meaning "cooking pot"? The largest example of this feature in the world is Lake Toba, and another example of this feature hosts the deepest lake in the U.S., Crater Lake. – **CALDERA**
24. A tepui is a South American variant of what type of flat-topped formation, also known as a table mountain? – **MESA**
25. What type of organism that can produce its own food is exemplified by plants, algae, and lichens? – **AUTOTROPH**
26. What animal-derived term describes a lake that is formed when a wide, u-shaped bend or meander is cut off from its source? – **OXBOW**
27. What is the name for the point at which the atmosphere becomes saturated with water vapor, leading to condensation? – **DEW POINT**
28. What tiny marine crustaceans feed on phytoplankton and serve as a food source for many animals, including whales and seals? – **KRILL**
29. Luciferin is a compound that enables what phenomenon in which an organism produces light to defend against predators or act as bait for prey? – **BIOLUMINESCENCE**
30. What three-word feature of Africa and the Levant is formed from a series of depressions such as the Afar depression, as well as faults including the Dead Sea Transform? – **GREAT RIFT VALLEY**

31. Vermicomposting is a natural method of soil conversion that relies on microroganisms and what invertebrates that belong to the phyla Annelida and Platyhelminthes? – **WORMS** (accept specific types)
32. Of flora, fauna, or fungi, what type of organism prevails in a line of succession that includes a pioneer species, an intermediate species, and a climax community? – **FLORA**
33. What type of water is a mixture of both fresh and salt water? – **BRACKISH**
34. Which geographic and geological boundary intersects with two others of its kind at a peak in Montana, making it the world's only triple ocean divergence point? This mostly mountainous boundary runs from the Bering Strait to the Strait of Magellan. – **CONTINENTAL DIVIDE**
35. What term describes animals that are predominantly active during the day, as opposed to nocturnal animals that are active mainly at night? - **DIURNAL**
36. For cold weather conditions, what measure describes the temperature experienced by air on exposed skin? – **WIND CHILL**
37. Plants, algae, and peat are among the possible sources of what type of fuel created from renewable, organic sources? – **BIOFUEL**
38. What type of natural feature can be subject to a limnic eruption, the sudden and deadly release of large quantities of carbon dioxide? – **LAKES**
39. What type of mixture is defined as a suspension of solid particles in a gas? This mixture is closely associated with canned products such as hairspray that dispense their contents in a fine mist. – **AEROSOLS**
40. What layer of the atmosphere is located between the troposphere and mesosphere? – **STRATOSPHERE**
41. What color is used to identify a beach hazard flag indicating the presence of dangerous marine life? This color also appears in the alternate name of the light-sensitive protein rhodopsin. – **PURPLE** (or **VIOLET**; accept VISUAL **PURPLE**)
42. What six-letter verb follows the word "Urban" in the name of a phenomenon that describes how cities expand and impact surrounding land? - **SPRAWL**
43. Subterranean aqueducts called qanats are used to transport what type of water found beneath the Earth's crust? - **GROUNDWATER**
44. What level of a tropical rainforest is located above the forest floor, but below the canopy? – **UNDERSTORY** (or **UNDERBRUSH**; or **UNDERGROWTH**)
45. What scale measures the intensity of tornadoes from a value of F Zero to F Five? – **FUJITA SCALE**
46. Studies of what type of organisms aid research into theories on the origins of life on Earth and the limits of what is considered habitable or survivable? Certain bacteria and spores are examples of these organisms, which can survive environments with intense heat, cold, or pressure. – **EXTREMOPHILES**

47. In plants, what type of vascular tissue directs products of photosynthesis downward from the leaves in a process called translocation? – **PHLOEM**
48. What is the term for the different strata, or layers, of soil? – **HORIZONS**
49. A pair of seas can be connected by what narrow type of body of water that is also known as a firth or channel? – **STRAIT**
50. What is the alliterative name for the environmentally destructive industry that quickly manufactures designer garments to capitalize on fleeting trends, only to repeat the process when the newest looks go out of style? – **FAST FASHION**
51. What term, which is also the same as a recreational human activity, refers to an organism's ability to reproduce successfully? – **FITNESS**
52. Wasaburo Oishi was the first scientist to detect what fast air currents at the upper limit of the troposphere? – **JET STREAM**
53. Black smokers and white smokers are submarine features that form along what cracks in the seafloor that emit heated water from below the Earth? – **HYDROTHERMAL VENTS**
54. Foster's rule is an evolutionary principle that describes how the size of organisms varies with available resources. The rule is often named for what type of geographic feature on which the rule is commonly observed? – **ISLAND**
55. *Armillaria ostoyae* is a species of what type of organism? One member of this species forms a nearly three and a half square-mile specimen that may be the largest organism on Earth. – **FUNGUS** (or **FUNGI**)
56. Kruger National Park in South Africa is one of the world's largest examples of what type of facility where a population of animals are kept in an enclosed environment for the sport of hunting? – **GAME RESERVE**
57. What science is concerned with the transportation, circulation, and properties of the world's water supply? This science studies water in all its forms, across different types of bodies of water, unlike sciences such as oceanography. – **HYDROLOGY**
58. Poaceae is the scientific name for what broad family of plants that includes rice, corn, and bamboo? – **GRASSES**
59. A namesake type of moss is one of the main components of what organic matter found in the soil of marshes and wetlands? – **PEAT**
60. A major concern of climate change is the melting of what frozen high-latitude regions found at either ends of the Earth? – **POLAR ICE CAPS** (prompt on partial answers)
61. Humans are incapable of digesting what organic polymer that is found in plants and paper? – **CELLULOSE**
62. What layers of permeable rock are capable of producing useable water? – **AQUIFER**
63. What type of nutrient-rich soil is made primarily of a mixture of sand and clay and contains concentrated amounts of humus? – **LOAM**

64. What calculation shows that the amount of plastic on Earth exceeds the presence of all marine and land animals combined? This quantity, which is similar to population but factors in both the prevalence and weight of an ecosystem, shows that ants predominate over humans by approximately ten megatons. – **BIOMASS**
65. Spanning over 600,000 square miles, what collection of seaborne trash is named for, and located in, one of the world's major oceans? – GREAT **PACIFIC GARBAGE PATCH**; or **PACIFIC TRASH VORTEX**; or NORTH **PACIFIC GARBAGE PATCH**)
66. What two-word term describes a mixture of methane and other compounds released via bubbles in wetland biomes? – **SWAMP GAS** (or **MARSH GAS**; or **BOG GAS**)
67. An Old Norse word names what phenomenon of hard, fast wind that is more sustained than a gust and often accompanies storms? – **SQUALL**
68. In what alliterative two-word phenomenon does volcanic activity cause the formation of oceanic crust? – **SEAFLOOR SPREADING**
69. In what agricultural practice are plants grown in a water-based solution, as opposed to soil? – **HYDROPONICS**
70. According to data, what gas is the second-leading cause of cancer in the United States? This gas is produced by a namesake element and noble gas that can accumulate in basements and other below-ground places. – **RADON** GAS
71. What German-derived term describes a pale-colored sediment formed from the buildup of wind-blown particles, such as dust and sand? – **LOESS**
72. What large lake in northwestern Cambodia is known for its seasonal flow reversal and serves as a flood reservoir for the Mekong River? – **TONLÉ SAP**
73. What theorized weather phenomenon is said to follow global atomic warfare? In this phenomenon, large quantities of smoke would rise into the atmosphere, preventing sunlight from reaching the Earth and creating a mass cooling effect. – **NUCLEAR WINTER**
74. Beginning close to 12,000 years ago, what current geological epoch is defined by human activity? – **HOLOCENE** (accept **ANTHROPOCENE** even though it is not officially recognized)
75. In 1980, Love Canal in New York became the first of what type of site that is designated for long-term removal of pollution and hazardous materials? – **SUPERFUND**
76. What smallest island nation in the world was once a hub of phosphate extraction and still bears scars from rampant strip mining? – **NAURU** (or REPUBLIC OF **NAURU**)
77. What colorful term describes an algal bloom that can contaminate local fish populations and transmit a sometimes-fatal sickness to humans? – **RED TIDE**