

International Academic
Competitions

**Environmental Science Examination
European Championships 2024**

Name _____

School _____

Age _____

Instructions – Mark your answers on the scantron provided. Correct answers are worth 2 points. Incorrect answers are worth –1 point. Questions left blank are worth 0 points. Write the answer to your tiebreaker question in the box at the top of your scantron.

1. News media in the 1980s and 1990s worried that the overuse of aerosol sprays was damaging the ozone in what layer of the Earth's atmosphere?

- A. Mesosphere
- B. Thermosphere
- C. Troposphere
- D. Stratosphere

2. Which of these processes is NOT a part of the water cycle?

- A. Respiration
- B. Sublimation
- C. Transpiration
- D. Evaporation

3. What is carrying capacity?

- A. The maximum number of resources available to a population
- B. The maximum amount of energy that can flow between organisms in a food chain
- C. Biotic and abiotic factors that affect a population's resources
- D. The maximum population an area can support without environmental degradation

4. Which of the following animals typically thrive in freshwater environments?

- A. Blue whale
- B. Seahorse
- C. Orca
- D. Crayfish

5. Where in the world can you find the taiga?

- A. Brazil
- B. Indonesia
- C. Russia
- D. Southern Europe

6. Which of the following is a renewable form of energy?

- A. Fossil fuels
- B. Coal
- C. Geothermal
- D. Nuclear energy

7. Most fertilizer used in commercial agriculture contains what three elements?

- A. Nitrogen, phosphorus, and potassium
- B. Boron, zinc, and manganese
- C. Calcium, nitrogen, and sulfur
- D. Oxygen, lithium, and sodium

8. Which of the following materials is commonly used as a filter for water treatment?

- A. Asbestos
- B. Anthracite
- C. Crushed rock
- D. Litmus paper

9. What color is indicative of fresh sewage?

- A. Black
- B. Green
- C. Gray
- D. Red

10. The Environmental Protection Agency was created by what presidential administration?

- A. Richard Nixon
- B. Ronald Reagan
- C. Gerald Ford
- D. Lyndon B. Johnson

11. The waters of which ocean are impacted by El Niño?

- A. Arctic Ocean
- B. Atlantic Ocean
- C. Pacific Ocean
- D. Indian Ocean

12. A halophile thrives in an environment high in what resource?

- A. Water
- B. Oxygen
- C. Salt
- D. Nitrogen

13. What type of forest is dominated by trees which shed their leaves for winter?

- A. Deciduous forest
- B. Coniferous forest
- C. Boreal forest
- D. Cloud forest

14. What type of rock is formed by the solidification of magma?

- A. Lacustrine
- B. Igneous
- C. Metamorphic
- D. Sedimentary

15. What season does Australia experience during the month of October?
- Winter
 - Spring
 - Summer
 - Autumn
16. The Nazca and South American plates are responsible for creating the Andes Mountains via what process?
- Slab suction
 - Ridge push
 - Mantle convection
 - Subduction
17. What is the primary cause of eutrophication?
- Overabundance of nutrients in a body of water
 - Overactive hydrothermal vents
 - Drought
 - Scuba diving
18. Which type of speciation occurs when two populations inhabit the same geographic area?
- Allopatric
 - Peripatric
 - Sympatric
 - Parapatric
19. Activism by scientists such as Rachel Carson led to the ban of what substance?
- Dichlorodiphenyltrichloroethane (DDT)
 - Nitrous oxide
 - Chlorofluorocarbon (CFCs)
 - Mustard gas
20. Earth's inner core consists of an alloy of which two metals?
- Iron and silicon
 - Nickel and iron
 - Carbon and platinum
 - Calcium and nickel
21. Which of the following radioactive elements does NOT occur naturally?
- Radium
 - Plutonium
 - Fermium
 - Uranium
22. Animal-like protists are known by what term?
- Pseudopods
 - Protozoa
 - Algae
 - Amoeba
23. With the death of Martha at the Cincinnati Zoo in 1914, what once abundant animal species went extinct?
- Carolina parakeet
 - Passenger pigeon
 - Quagga
 - Bramble cay melomy
24. The construction of the Grand Coulee Dam was opposed based on its potential impacts on what fish species?
- Salmon
 - Trout
 - Carp
 - Angelfish
25. What type of relationship exists when one organism benefits from it while the other is not impacted?
- Commensalism
 - Mutualism
 - Parasitism
 - Amensalism
26. Which of the following is NOT true of the environmental impacts of the COVID-19 pandemic?
- It led to a temporary decrease in emissions in Wuhan.
 - It led to 2020 being the coldest year in the 3rd millennium.
 - It led to an increase of medical waste pollution.
 - Fatal vehicle collisions with animals decreased in the United States.
27. Roughly what percentage of carbon emissions are caused by the aviation industry?
- 0.5%
 - 2.5%
 - 10%
 - 5%
28. Which of these environments would see the greatest levels of runoff?
- Flat meadow
 - Rocky desert
 - Tundra
 - Rainforest
29. Which of the following types of soil has the greatest permeability?
- Clay
 - Sandy
 - Silty
 - Gravel
30. "Fuel cell" vehicles such as the Toyota Mirai run on what alternative fuel source?
- Hydrogen
 - Water
 - Biodiesel
 - Ethanol

31. The "Horse Latitudes" experience low winds around what degree of latitude?
- 60 degrees
 - 90 degrees
 - 30 degrees
 - 0 degrees
32. Corals adapt to their environment by forming skeletons made from what compound?
- Sodium phosphate
 - Cellulose
 - Calcium carbonate
 - Silicon dioxide
33. Stable genotype frequencies in a population are modeled by what equation?
- Gibbs law
 - Ferrel equations
 - Hardy-Weinberg equilibrium
 - Beer-Lambert law
34. What marine animal follows the r selection theory as opposed to K selection?
- Sea turtles
 - Electric eels
 - Seahorses
 - Blue whales
35. Which of the following regions "touches" the Ring of Fire?
- Western United States
 - Greenland
 - Eastern South America
 - South Africa
36. Which of the following is an example of an abiotic factor?
- Bacteria
 - Soil
 - Algae
 - Moss
37. President Ulysses S. Grant signed legislation in 1872 setting aside land for what first national park in the United States?
- Denali National Park
 - Mesa Verde National Park
 - Yosemite National Park
 - Yellowstone National Park
38. What country is the world's largest carbon emitter per capita?
- Qatar
 - Germany
 - China
 - United States
39. Which of these organisms can withstand the pressure and lack of light in the aphotic zone?
- Sea turtles
 - Tiger sharks
 - Anglerfish
 - Clownfish
40. Which one of these organisms would be a primary consumer?
- Sunflower
 - Jaguar
 - Horse
 - Mushroom
41. Which of the following is NOT true of algal blooms?
- They are often caused by phytoplankton populations.
 - They can result in the depletion of oxygen from lakes.
 - They can only occur in lakes, not in oceans.
 - A surge in algal blooms often occurs in spring.
42. Ancient insects are often preserved in what type of fossilized tree resin?
- Amniotic Fluid
 - Crystal
 - Jade
 - Amber
43. What is the average salt concentration in seawater?
- 10 parts per thousand
 - 35 parts per thousand
 - 50 parts per thousand
 - 350 parts per thousand
44. Norman Borlaug is considered the godfather of the Green Revolution for creating an advantageous form of what staple crop?
- Wheat
 - Rice
 - Barley
 - Corn
45. Which of the following is NOT true of continental drift?
- It was developed as a theory by Alfred Wegener.
 - Continental drift is caused primarily by wind.
 - It can be caused by seafloor spreading.
 - It takes place over millions of years.
46. Which of the following compounds is organic?
- Water
 - Methane
 - Silicon dioxide
 - Ammonia

47. Mosquitos are NOT responsible for spreading which of the following?
- Malaria
 - Bubonic plague
 - Yellow fever
 - Zika virus
48. Where are storms known as typhoons found?
- Africa's Atlantic coast
 - The western Pacific Ocean
 - The Great Plains
 - In the Indian Ocean near Australia
49. Which of these species would only appear in the final stage of ecological succession?
- Maple trees
 - Shrubs
 - Pine trees
 - Lichens
50. Which of the following is NOT a detritivore?
- Molds
 - Dung beetles
 - Rats
 - Earthworms
51. Barchan, star, and transverse are types of what landform?
- Beaches
 - Depressions
 - Abyssal plains
 - Dunes
52. Which of the following species is critically endangered?
- Plains zebra
 - Asiatic cheetah
 - Venus flytrap
 - Blue jay
53. Which of these biomes is semi-arid?
- Savannah
 - Desert
 - Rainforest
 - Taiga
54. Which one of these geologic eras is termed the "Age of Mammals"?
- Triassic
 - Paleozoic
 - Cenozoic
 - Pennsylvanian
55. The transition of the "Green Sahara" into a desert was caused by what astronomical phenomenon?
- Gamma-ray burst
 - Axial tilt
 - Solar wind
 - Asteroid impact
56. Which one of these currents is NOT a cold-water current?
- Gulf Stream
 - Humboldt Current
 - Benguela Current
 - Labrador Current
57. The majority of the world's freshwater is stored in what type of feature(s)?
- Inland lakes
 - Aquifers
 - Ice caps and glaciers
 - Rivers
58. Which of the following periods did NOT see a mass extinction?
- Permian
 - Ordovician
 - Devonian
 - Cambrian
59. What type of volcano is known for the low viscosity of its lava and its low profile?
- Lava domes
 - Cinder cones
 - Shield volcano
 - Stratovolcano
60. Which of these materials would be the least biodegradable?
- Paper
 - Polyester fabric
 - Bamboo
 - Cotton
61. Which continent has the least biodiversity?
- Antarctica
 - Asia
 - South America
 - Australia
62. What Scottish-American activist is known for his leadership of the "preservationist" movement and creating the Sierra Club?
- Ansel Adams
 - John Muir
 - Theodore Roosevelt
 - John D. Rockefeller
63. Which of the following elements is typically mined to create electric car batteries?
- Lithium
 - Barium
 - Mercury
 - Silicon

64. Which of the following zones of the ocean is the deepest?

- A. Pelagic
- B. Littoral
- C. Hadal
- D. Bathyal

65. Which of the following does NOT mitigate the ecological impact of infrastructure construction?

- A. Fish ladder
- B. Wildlife corridors
- C. Pipelines
- D. Canopy bridges

66. Which of the following order of mammals is divided into "New World" and "Old World" variants, and includes tarsiers?

- A. Even-toed ungulates
- B. Rodents
- C. Carnivora
- D. Primates

67. The human population reached a bottleneck after the eruption of which Indonesian volcano 74,000 years ago?

- A. Krakatoa
- B. Tambora
- C. Toba
- D. Mount Etna

68. What meteorological phenomenon is responsible for much of California's winter flooding?

- A. Mid-latitude cyclones
- B. North American monsoon
- C. Kona storms
- D. Atmospheric rivers

69. Which of the following species exemplifies the principle of island gigantism?

- A. Haast's eagle
- B. Dodo
- C. Steller's sea cow
- D. Ring-tailed lemur

70. Penguins are NOT present in which of the following locations?

- A. Iceland
- B. Galápagos Islands
- C. New Zealand
- D. Chile

71. What Ohio river is known for having caught fire multiple times due to its pollution?

- A. Cuyahoga River
- B. Mississippi River
- C. Hudson River
- D. Holston River

72. Which of the following best describes fracking?

- A. When a drill is planted into the seafloor on an offshore well
- B. When a pumpjack mechanically lifts oil from the ground
- C. A well stimulation technique which creates cracks to extract oil
- D. A drilling machine buries into the ground to expose oil trapped in rock

73. Which of the following formations is NOT associated with rivers?

- A. V-shaped valleys
- B. Trenches
- C. Meanders
- D. Oxbow Lakes

74. What name has been proposed for our current geological epoch due to the influence of human activities?

- A. Primatepocene
- B. Anglopocene
- C. Carbonpocene
- D. Anthropocene

75. What phenomenon has suddenly caused a rapid decrease in honeybee populations?

- A. Varroa mite infestations
- B. Colony collapse disorder
- C. Nosema ceranae infections
- D. Neonicotinoid insecticide use

Tiebreaker

This question will only be scored if there is a tie for placement on the exam. **This is a required question, but there is no penalty for a wrong answer to this question.**

Write your answer legibly in the space provided on your scantron.

According to the most recent data, how many trees are there in the Amazon rainforest?