Electrical Engineering in Nature

Electrical Engineering · Practice Test · 20 Questions

1. Which animal uses specialized organs called electrocytes to generate electric shocks for hunting and defense?

A) Electric eel
B) Platypus
C) Fruit bat
D) Red fox

2. How do sharks detect the weak bio-electric fields produced by the muscle contractions of their prey?

A) Using sonar
B) Through ampullae of Lorenzini
C) By sensing air pressure
D) Via thermal pits

3. Which phenomenon involves the movement of electrical charge between the atmosphere and the Earth's surface during a thunderstorm?

A) Aurora Borealis
B) Lightning
C) Solar wind
D) Tidal friction

4. What is the primary function of the electric organ discharge (EOD) in weakly electric fish?

A) Generating heat
B) Electrolocation and communication
C) Digesting food
D) Filtering water

5. In electrical engineering terms, what acts as a natural capacitor during the process of thunderstorm formation?

A) The Earth's core
B) A cloud
C) The wind
D) A tree

6. Which mammal uses electroreception to locate prey in muddy water while its eyes and ears are closed?

A) Beaver
B) Platypus
C) Otter
D) Hippopotamus

7. What is the unit of measure for electrical potential that is also used to describe the voltage generated by a nerve cell?

A) Watt
B) Volt
C) Ampere
D) Ohm

8. Which plant-based process converts light energy into chemical energy, creating a small electrical potential across thylakoid membranes?

A) Transpiration
B) Photosynthesis
C) Respiration
D) Pollination

9. What type of material, found in the shells of some marine organisms, is studied for its piezoelectric properties?

A) Silica
B) Calcite
C) Chitin
D) Cellulose

10. In the context of soil science, what property measures how well a soil conducts electrical current?

A) Soil resistivity
B) Soil elasticity
C) Soil porosity
D) Soil opacity

11. Which structure in the human body acts as a biological conductor for electrical impulses from the brain to the muscles?

A) Capillary
B) Nerve fiber
C) Artery
D) Ligament

12. What is the natural atmospheric electrical phenomenon where light glows on the tips of pointed objects like trees or ship masts?

A) St. Elmo's Fire
B) Sun dog
C) Halo
D) Corona discharge

13. Which gas, when ionized in the atmosphere during a lightning strike, produces the distinct scent of ozone?

A) Nitrogen
B) Oxygen
C) Carbon dioxide
D) Helium

14. What do engineers call the bio-electrical signal recording process used to measure heart activity?

A) Electromyography
B) Electrocardiography
C) Electroencephalography
D) Electrodermal activity

15. Which of the following is a natural source of electromagnetic interference (EMI) that can affect radio communications?

A) Solar flares
B) Tree leaves
C) Still water
D) Rocky soil

16. In a biological circuit, what serves as the electrolyte solution allowing ions to flow between cells?

A) Bone marrow
B) Extracellular fluid
C) Dermis
D) Adipose tissue

17. What do scientists call the tiny electrical currents measured on the skin that indicate autonomic nervous system activity?

A) Galvanic skin response
B) Thermal conductivity
C) Static discharge
D) Piezoelectric effect

18. Which element is commonly used in biological ion channels to facilitate the flow of current in nerve cells?

A) Potassium
B) Iron
C) Gold
D) Aluminum

19. How do some plants, such as the Venus flytrap, trigger their trap closure through electrical signaling?

A) By detecting vibrations
B) By measuring ion concentration changes
C) By sensing heat
D) By light intensity

20. What is the name for the natural electrical discharge from the Earth to the ionosphere in the upper atmosphere?

A) Sprites
B) Aurora
C) Rainbow
D) Fog