

Biomimicry and Nature-Inspired Entrepreneurship

Entrepreneurship · Practice Test · 15 Questions

1. Which company famously reverse-engineered the structure of kingfisher beaks to solve noise pollution and energy efficiency issues in high-speed rail design?

- A) Mitsubishi Heavy Industries
- B) West Japan Railway Company
- C) Siemens Mobility
- D) Alstom

2. The concept of the 'Circular Economy' in modern entrepreneurship draws its primary biological analogy from which ecosystem process?

- A) Nutrient cycling in forests
- B) Competitive exclusion in wetlands
- C) Apex predator population control
- D) Photosynthetic energy conversion

3. The company Sharklet Technologies developed a surface texture that inhibits bacterial growth based on the skin structure of which animal?

- A) Great White Shark
- B) Galapagos Shark
- C) Blue Shark
- D) Mako Shark

4. Janine Benyus's 'Biomimicry' framework for sustainable business suggests measuring success by the 'Life Principles' observed in nature. Which of the following is NOT one of these principles?

- A) Evolve to survive
- B) Adapt to changing conditions
- C) Linear resource extraction
- D) Be locally attuned and responsive

5. The adhesive properties of Geckskin, a high-strength commercial material, mimic the setae structures found on the toe pads of geckos. What physical principle does this leverage?

- A) Electromagnetic attraction
- B) Van der Waals forces
- C) Hydrophobic repulsion
- D) Capillary tension

6. The company 'Interface' pioneered the 'Mission Zero' initiative by looking at how a forest floor operates. What specific design methodology did they adopt?

- A) Entropic modularity
- B) Biomimetic pattern distribution
- C) Photosynthetic carbon sequestering
- D) Mycelial network replication

7. Which structural design in desert-dwelling Namib beetles inspired entrepreneurs to create self-filling water bottles that harvest moisture from fog?

- A) Hydrophilic bumps and hydrophobic troughs
- B) Dense chitinous fur
- C) Reflective iridescent scales
- D) Oscillating wing vibrations

8. In the field of sustainable packaging, research into the self-assembly of proteins found in which animal has led to breakthroughs in bioplastics?

- A) Deep-sea squid
- B) Orb-weaver spider
- C) Honey bee
- D) Antarctic krill

9. The 'Whalepower' corporation utilized the design of humpback whale tubercles to improve the efficiency of what specific hardware?

- A) Wind turbine blades
- B) Water desalination pumps
- C) Hydroponic nutrient delivery systems
- D) Aerodynamic cargo ship hulls

10. Which architectural phenomenon observed in termite mounds has been adapted for passive cooling in large-scale commercial buildings like the Eastgate Centre?

- A) Evaporative cooling via subterranean water tunnels
- B) Continuous airflow via chimney-like thermal flues
- C) Light-absorbing outer shell material
- D) High-density clay insulation

11. The 'Lotus Effect,' which entrepreneurs utilize to create self-cleaning surfaces, is caused by which specific physical property?

- A) Superhydrophobicity
- B) Electrostatic repulsion
- C) Bioluminescent enzymatic breakdown
- D) Rapid cellular regeneration

12. Research into the fluid dynamics of schools of fish has led to entrepreneurial innovations in which sector?

- A) Optimizing swarm robotics efficiency
- B) Improving municipal sewage flow
- C) Developing tidal wave energy
- D) Automating vertical farming

13. The company 'Pax Scientific' develops fan and rotor designs based on the 'spiral' flow patterns observed in which natural phenomenon?

- A) The movement of whirlpools and nautilus shells
- B) The structure of glacial ice crevasses
- C) The growth pattern of sunflower seeds
- D) The migration path of monarch butterflies

14. In sustainable construction entrepreneurship, the hardening process of abalone shells is studied to develop what?

- A) Self-healing concrete
- B) Transparent steel alloys
- C) Ultra-lightweight composite ceramics
- D) Fire-resistant wood treatments

15. The development of 'synthetic silk' by companies like Bolt Threads is modeled after the protein chains found in what biological material?

- A) Spider dragline silk
- B) Silkworm cocoon fiber
- C) Marine mussel byssus threads
- D) Sea urchin spines