
Reading

Questions 1 – 36

DIRECTIONS: Read each passage below and answer the questions following it. Base your answers **only on information contained in the passage**. You may reread a passage if you need to. Mark the **best** answer for each question.

Dust from one of the world's most desolate places is providing essential fertilizer for one of the most lush. Significant amounts of plant nutrients have been found in
5 atmospheric mineral dust blowing from a vast central African basin to the Amazon, where it compensates for poor rainforest soils.

10 The basin, known as the Bodélé depression, is the site of a once-massive lake in Chad. Bodélé is thought to be the dustiest place on Earth. The dust is unusual in the sandy Sahara, as it is essentially lakebed sediment originating from the shells of freshwater
15 diatoms, and so richer in nutrients, including phosphorus and iron. The dust is more nutrient-rich than simple sand and, crucially, there is a lot of it. It comes from part of the bed of the dried-up lake Megachad, which
20 once measured about 400,000 square kilometres at its largest. Megachad was bigger than all the Great Lakes of North America put together, close to the area of California. So the area left bare, which now
25 contributes the dust, is vast. Today only a small remnant exists in the 1,350-square-kilometre modern-day Lake Chad.

On the basis of the height of wind-eroded ridges called yardangs, it is calculated that
30 up to 4 metres of dust have been removed from across the lakebed in the past 1,000 years- a massive amount, even if satellite estimates indicate that only 20% gets all the way to the Amazon.

35 The Amazon is essentially a leached or leaching system. Nutrients in the soil are washed away by heavy rains. Although it is very productive, it is actually quite nutrient-poor. So nutrient input is vital to the
40 rainforest. Phosphorus, a major element of commercial fertilizer, is essential for plant growth, respiration and energy transfer and storage. Iron is a micronutrient that plants use to make an enzyme critical for
45 photosynthesis.

The dust takes two seasonal routes across the ocean, in the summer passing over the Caribbean and in the winter swinging further south to the Amazon. At current rates of
50 dispersal, the dust in the basin will last for perhaps another 1,000 years or more, assuring Amazon fecundity if weather patterns do not change.

1. Which of the following best tells what the passage is about?

- A. Weather patterns influencing Amazon soil
- B. Nutrient profile of the Bodélé depression dust
- C. Amazon fertilization by Bodélé depression dust
- D. Route taken by Bodélé depression dust to the Amazon

2. According to the passage, the Bodélé depression was once

- A. A depression in the Sahara.
- B. The Megachad.
- C. Chad.
- D. A leaching system.

3. According to the passage, why is the Amazon soil poor in nutrients?

- A. The Amazon plants consume all the available nutrients.
- B. The Mega gusts blow off the nutrient rich Amazon topsoil.
- C. Climate change has slowed the natural revitalization of the Amazon soil.
- D. Nutrients in the Amazon soil are washed away by heavy rains.

4. According to the passage, plants need phosphorus for each of the following except

- A. Plant growth.
- B. Respiration.
- C. Energy storage.
- D. Oxygen transfer.

5. How does the Bodélé depression dust differ from Sahara desert sand?

- A. The dust is heavier than sand.
- B. The dust retains moisture better than sand.
- C. The dust is more nutrient rich than sand.
- D. The dust is more abundant than sand.

6. According to the passage, in the summer the dust passes over the

- A. Caribbean.
- B. Sahara desert.
- C. Atlantic Ocean.
- D. country Chad.

There are few places to hide in the open ocean. Even in the “twilight zone”—the depths where sunlight gradually fades away—a mere silhouette can mean the

5 difference between being a meal and finding one. But *Cystisoma*, a little-studied crustacean cousin of the sand flea, has a dazzling way to elude predators: It’s as clear as glass. Now researchers at Duke
10 University and the Smithsonian have discovered how the solid creature manages to be so transparent—a finding that could lead to our very own invisibility cloak.

Cystisoma belong to a suborder of marine
15 crustaceans called hyperiid amphipods, which live in every ocean, from just below the surface to right near the floor. The insect-like animals are masters of disguise and evolved dramatically different
20 camouflage depending on the depth. Below 3,000 feet, where sunlight ends, the species are red or black. Transparent species such as *Cystisoma* tend to live between 30 and 1,000 feet, where the light is increasingly dim.

25 To get to the bottom of *Cystisoma*’s disappearing act, scientists went hunting off the coasts of Mexico, California, Florida and Rhode Island. Trawling with nets and searching with deep-sea-diving robots, they
30 captured specimens of the roach-like critters, which are about the size of a human hand. In the lab, the scientists studied small bits of the animal’s shell under an electron microscope. The analysis revealed minute
35 spheres all over the shell, as well as “tiny, hair-like, nippy-looking things” growing out of it. When the scientists used a computer to study how such microscopic structures affect light, they found the coating
40 canceled out 99.9 percent of the light reflections, much as the egg-crate foam walls in a soundproof recording studio absorb sound. Moths’ eyes have a similar

anti-glare coating, but this is the first time
45 scientists have seen it used for camouflage.

The scientists claim the curious spheres look like bacteria living on the shell surface, but they’re smaller than any bacteria we know of; the team is using DNA analysis to be
50 sure. The finding could be useful either way. Engineers might be able to design similar structures to increase the transparency of glass and the absorption of solar panels, or even aid a kind of invisibility cloak that
55 similarly distorts light.

7. Which of the following best tells what this passage is about?

- A. Types of *cystisoma* at different levels of the ocean
- B. Life cycle of the *cystisoma*
- C. The bacteria that make the *cystisoma* invisible
- D. The means by which *cystisoma* are invisible

8. The depth of the ocean which contains the *cystisoma* is referred to as a “twilight zone” because

- A. It contains unique animals.
- B. It transitions from light to darkness.
- C. It also contains the blood sucking lamprey eels.
- D. It is the maximum depth explored by humans.

9. According to the passage, where do the hyperiid amphipods live?

- A. Every depth of the ocean
- B. The deep sea
- C. The surface of the ocean
- D. The floor of the ocean

10. According to the passage, the hyperiid amphipods found below 3,000 feet are

- A. camouflaged.
- B. Black or red.
- C. Transparent.
- D. colorful.

11. How is the coating of the cystisoma shell similar to recording studio walls?

- A. Cystisoma and recording studio walls are made of the same material.
- B. Cystisoma and recording studio walls both reflect light.
- C. Recording studio walls absorb sound the way cystisoma absorb lights.
- D. Egg shaped foam on recording studio wall resemble the sphere's on cystisoma shells.

12. What do scientists think comprise the spheres on cystisoma shells?

- A. Glass like material
- B. Anti glare coating
- C. Microscopic DNA
- D. Small bacteria

The International Union for the Conservation of Nature, the body that makes the world's official endangered species list, moved the giraffe from a species of least concern to vulnerable status in its 'Red List of Threatened Species' report. That means the animal faces extinction in the wild in the future if nothing is done to minimize the threats to its life or habitat. The next steps are endangered, critically endangered, extinct in the wild and extinct.

Poaching of elephants and rhinoceros and the illegal trade in pangolins has overshadowed the problems with giraffes in the last decade. But giraffe numbers have dropped precipitously in the last 31 years, from 157,000 individuals in 1985 to 97,500 at last count. While giraffes are commonly seen on safari, in the media and in zoos, people—including conservationists—are unaware that these majestic animals are undergoing a silent extinction. With a decline of almost 40 percent in the last three decades alone, the world's tallest animal is under severe pressure in some of its core ranges across East, Central and West Africa.

The giraffe faces two main threats, encroachment from cities and towns into their habitat and poaching. Poaching has become increasingly problematic. Some food insecure villagers kill the animals for their meat, but many giraffes are slaughtered just for their tails, which are considered a status symbol and have been used as a dowry when asking a bride's father for his daughter's hand in marriage in some cultures.

The red list divides the giraffe into nine subspecies. Five of those subspecies are decreasing in numbers while two populations are increasing and one is stable.

West African giraffes, the smallest subspecies, have grown from 50 individuals in the 1990s to about 400 in 2017. But that success took a massive amount of effort from the government of Niger and conservation groups.

It will take similar efforts throughout the giraffe's wide range to arrest its plummeting numbers. Both poaching and habitat encroachment need to be stopped to save the giraffe. While increasing funding for anti-poaching efforts can do some good, stopping habitat encroachment is a much more difficult prospect, since it would mean interfering with land development, mining and other economic activities and livelihoods.

13. Which of the following best tells what this passage is about?

- A. The differences in the subspecies of giraffes
- B. How poaching causes hazards to giraffes
- C. The efforts to preserve the giraffe population
- D. The shift of giraffes into vulnerable status

14. When was the population of giraffes the highest?

- A. 1985
- B. At last count
- C. 1990s
- D. 2017

15. As discussed in this passage, one of the threats against giraffes is

- A. False projection by safaris that there are many giraffes
- B. Poaching of the giraffes for food
- C. Illegal trade of giraffes in the black market
- D. Inhumane conditions of giraffes in zoos

16. The passage implies that the falling giraffe population was overlooked because

- A. It wasn't falling at a high enough rate to be alarming.
- B. Some giraffe subspecies populations were increasing.
- C. It was eclipsed by the abuse of other imperiled species.
- D. The poaching of giraffes wasn't discovered until recently.

17. Why is the decline in giraffe population considered a 'silent extinction'?

- A. There is lack of awareness about the threat to giraffes.
- B. There are two separate threats to giraffes.
- C. Giraffes aren't critically endangered yet.
- D. Some species of giraffe are increasing in number.

18. The passage implies that it would be difficult to halt the decline in giraffe populations because

- A. Conservation efforts are geared toward more critically endangered species.
- B. Villagers have no alternative source of food.
- C. Stopping habitat invasion requires a multifaceted approach.
- D. Conservationists are not aware of the gravity of the problem.

People want to believe that laughter is good for what ails the body, but the science backing that up is thin. Most studies have been small and have relied on self-reported assessments. Still, it is known that a rollicking good guffaw can't hurt. Or can it? There are rare instances of laughter prompting an asthma attack and even rarer instances of it triggering a stroke. And though this hasn't been part of a formal study, researchers speculate that if you're surrounded by people laughing inappropriately—finding, say, a cockfight hilarious—it increases stress.

However, a few studies relying on laboratory testing do show some benefits. A good belly laugh leads to the release of endorphins from the brain. That release sets off a cascade of heart-healthy biological events. Endorphins, pleasure-inducing neurotransmitters, activate receptors on the surface of the endothelium, the layer of flat cells lining blood vessels. That leads to the release of nitric oxide, which widens blood vessels—increasing blood flow, lessening inflammation, inhibiting platelet clumping, and reducing the formation of cholesterol plaque. Laboratory findings also show that laughter could improve anti-inflammatory factors in the blood of people who have rheumatoid arthritis.

A study measured the blood flow of 20 volunteers before and after watching a funny movie and a sad movie. After the sad movie, blood flow was more restricted in 14 of the 20 viewers. But after the movie that made them laugh, average blood flow increased by 22 percent.

Funding for laughter and humor research is low—so low that when a researcher wanted to look into the effect of laughter on the

immune system, she found herself scrounging, asking other researchers for vials and other equipment from their labs. But her study of 33 healthy women showed that those who laughed at a humorous movie had higher levels of natural killer cell activity, which increased their ability to fight off disease. However, the effect was seen only in the subjects who laughed out loud, not in those who quietly watched the comedy.

Some studies are contradictory. Humor and laughter may improve muscle tone, though only when someone is laughing, and some studies do show that a good laugh can help reduce stress hormones. But other studies show that laughter doesn't affect stress hormones.

19. Which of the following best tells what the passage is about?

- A. Debating whether or not laughter has an effect on people's health
- B. Studies proving that laughter has no physical benefit
- C. Proving that laughter has a positive effect on health
- D. Advantages and disadvantages of laughter on the body

20. Why is it stressful to be surrounded by people laughing at a cockfight?

- A. The laughter can distract from the cockfight.
- B. It is inappropriate to find humor in cockfights.
- C. People gamble on cockfights and the laughter can affect the fight results.
- D. It can be confusing to the people who do not find humor in the cockfight.

21. Which of the following is not an effect of laughter as supported by laboratory findings?

- A. Endorphin release
- B. Increasing blood flow
- C. Accelerated weight loss
- D. Improvement of anti-inflammatory factors

22. Why did the natural killer cell activity levels not increase in some candidates who watched a humorous movie?

- A. They have a missing gene which doesn't allow laughter to change the levels.
- B. Natural killer cell activity levels are already at the maximum in them.
- C. It is normal for a certain part of the population to not have natural killer cells.
- D. They did not laugh out loud despite watching a humorous movie.

23. Different studies about the effects of laughter on stress hormone are considered contradictory because

- A. One claims a decrease in stress hormone and another claims no change in it.
- B. One claims an increase in stress hormone and another claims no change in it.
- C. One study claims an increase and another claims a decreases in stress hormone.
- D. The studies measured levels of 2 different kinds of stress hormones.

24. Why does the passage backtrack and question “Or can it?” after claiming laughter can’t hurt?

- A. Science has not yet proved that laughter can hurt.
- B. Laughter can rarely trigger asthma attacks and strokes.
- C. Excessive laughter is linked to several mental illnesses.
- D. The author is debating the different points of view about the harmful effects of laughter.

It was Jan. 23, 1960, when Piccard, along with ocean explorer Don Walsh, climbed aboard the Navy bathyscaphe Trieste and plunged to the floor of the Pacific Ocean's

5 Mariana Trench, the world's deepest location, some 200 miles southwest of the island of Guam. Their destination was the trench's lowest point, Challenger Deep, some 35,800 feet below the ocean surface.
10 The only other individual to dive to this depth since then is filmmaker/explorer James Cameron, who reached the Challenger Deep on March 26, 2012.

Piccard chronicled the dive: "Like a free
15 balloon on a windless day, indifferent to the almost 200,000 tons of water pressing on the cabin from all sides, balanced to within an ounce or so on its wire guide rope, slowly, surely, in the name of science and humanity,
20 the Trieste took possession of the abyss, the last extreme on our Earth that remained to be conquered."

Piccard and Walsh had to sit on small stools for the nine-hour trip down and back; they
25 spent the hours keeping records of temperatures of water and the gasoline (used for buoyancy), amount of ballast released, and water pressure. They kept in contact with the surface for most of the journey via
30 a sonic telephone. When, after four-and-a-half hours, the bathyscaphe finally landed on the ocean bottom, Walsh and Piccard spied a fish, thereby answering a question about the presence of sea life in the deep that
35 thousands of oceanographers had been asking for decades. By proving the existence of life where nobody expected it, the dive pushed governments to ban the dumping of toxic waste into the deepest trenches.

40 After that historic dive, Piccard went on to build four mid-depth submarines—called

mesoscaphes—including the first tourist submersible, which took 33,000 passengers into the depths of Lake Geneva in 1964. He
45 then built another mesoscaphes for Grumman and NASA to explore the Gulf Stream during a one-month drift mission in 1969.

Piccard, born in Brussels in 1922, studied in Switzerland and worked as a university
50 economics teacher. He left teaching to help his father, Auguste (a physicist and the first man to take a balloon into the stratosphere), design the bathyscaphe, a submersible able to take humans to great depths below the
55 ocean's surface. It was in the bathyscaphe Trieste that Piccard and Walsh reached the bottom of the Mariana Trench.

25. Which of the following best tells what the passage is about?

- A. Human descent to the depths of the ocean
- B. Ecosystems of the Mariana Trench
- C. The evolution of the bathyscaphe
- D. The highlights of Jacques Piccard's life

26. Which of the following people did not dive to the Challenger Deep?

- A. Don Walsh
- B. Jacques Piccard
- C. James Cameron
- D. Auguste Piccard

27. Why does Piccard describe the Trieste as taking “possession of the abyss” during its descent to the Challenger Deep?

- A. Piccard claimed that portion of the ocean floor for his native country.
- B. The Trieste was able to traverse a formidable part of the ocean.
- C. The Challenger Deep is a cave into which sunlight cannot reach.
- D. Piccard and Walsh were first humans to land in the Challenger Deep.

28. What question asked by oceanographers was answered when Piccard and Walsh reached the ocean floor?

- A. Is there toxic waste in the ocean’s deepest trenches?
- B. Is there life in the ocean’s deepest trenches?
- C. Is it possible for a human to survive a journey to the deep ocean?
- D. What species of fish are found in the ocean’s deepest trenches?

29. According to the passage, the first tourist submersible dove in

- A. The Mariana Trench
- B. The Challenger Deep
- C. Lake Geneva
- D. The Gulf Stream

30. According to the passage, Auguste Piccard was a pioneer in

- A. Hot air ballooning
- B. Oceanography
- C. Economics
- D. Education

Today's so-called uncontacted people all have a history of contact, whether from past exploitation or simply seeing a plane flying overhead. The vast majority of an estimated 5 100 or more isolated tribes live in Brazil, but others can be found in Colombia, Ecuador, Peru and northern Paraguay. Outside of the Americas, isolated groups live in Papua New Guinea and on North Sentinel Island of India's Andaman Islands, the latter of which 10 is home to what experts think is the most isolated tribe in the world, the Sentinelese. Nothing is known about their language, and Indian authorities have only rough estimates 15 of how many of them exist today. But even the Sentinelese have had occasional brushes with other societies; members of their tribe have been kidnapped, helicopters sometimes fly over their island and they have killed 20 fishermen who have ventured too close.

It is almost always fear that motivates such hostilities and keeps isolated groups from making contact. In past centuries and even 25 decades, isolated tribes were often murdered and enslaved by outsiders. From the time white Europeans first arrived in the Americas, indigenous peoples learned to fear them, and passed that message down 30 generations through oral histories. People have a romanticized view that isolated tribes have chosen to keep away from the modern, evil world. However, when anthropologists interview people who recently came out of isolation, the same story emerges time and 35 time again: they were interested in making contact with the outside world, but they were too afraid to do so.

Some have personal memories of traumatic encounters with outsiders. In the 1960s and 40 70s, Brazil largely viewed the Amazon as an empty place in need of development. Indigenous people who stood in the way of that progress were given little or no warning

50 before their homes were bulldozed over – or they were simply killed. In one case in Brazil's Rondônia state, a single man, often referred to as “the Last of His Tribe,” remains in a patch of forest surrounded by 55 cattle ranches. His people were likely killed by ranchers years ago. When he was discovered in 1996, he shot arrows at anyone who dared to approach his home. Funai officials sometimes check up on his 60 house and garden, and, as far as anyone knows, he's still living there today.

31. Which of the following best tells what this passage is about?

- A. The reason uncontacted people prefer to remain uncontacted
- B. The distribution of uncontacted tribes in the world
- C. The last uncontacted man in Rondônia
- D. Clashes between uncontacted people and the modern world

32. The uncontacted people are referred to as “so-called” uncontacted people because they

- A. receive aid from the government
- B. have contact with other uncontacted peoples
- C. have brushes with the modern world
- D. are not all members of the same tribe

33. The relationship between ranchers and uncontacted indigenous people is best described as

- A. Competitive
- B. Mysterious
- C. Predatory
- D. Hostile

36. According to the passage, where are the majority of the uncontacted tribes?

- A. India
- B. Brazil
- C. Colombia
- D. Peru

34. People coming out of isolation claimed they were not initially interested in entering the outside world primarily because they

- A. Preferred the simplicity of life in isolation
- B. Were afraid of the consequences of contact
- C. Were told by ancestors to avoid contact
- D. Were unwilling to abandon the land they occupied

35. What does the passage suggest about the dealing of the Sentinelese by fishermen?

- A. They are tolerant of each other
- B. They did not have contact with each other
- C. The fisherman are killed by the Sentinelese
- D. The Sentinelese are killed by fishermen.