

1. The intricate interplay, characterized by the subtle nuances and multifaceted interactions among genetic variations, underscores the inherent ---- of human diversity.

- A) divergence
- B) ubiquity
- C) ambiguously
- D) intricacy
- E) resilience

2. Biologists have ingeniously devised a molecular compound which ---- the intricate synaptic connections between neurons, akin to the structural reinforcement provided by steel bars within reinforced concrete.

- A) overcomes
- B) fortifies
- C) penetrates
- D) receives
- E) implements

3. As the internet becomes more pervasive, individuals are increasingly ---- cyberchondria, a psychological condition exacerbated by the ease of accessing medical information online, leading to heightened health-related anxiety.

- A) overcomes
- B) fortifies
- C) penetrates
- D) receives
- E) implements

4. If a chapter in European history were to be truly characterized as 'epochal', it ---- the tumultuous decades that ---- the fall of the Western Roman Empire and the subsequent migration period.

- A) may be / follow
- B) used to be / had followed
- C) had to be / were following
- D) must be / have followed
- E) might be / followed

5. Artifacts recently unearthed in a remote region of Africa ---- to 100,000 years ago - a staggering revelation that ---- what was previously believed that humans had settled in the area.

- A) were carbon-dated / predated
- B) are carbon-dated / would have predated
- C) have been carbon-dated / predates
- D) had been carbon-dated / has predated
- E) will be carbon-dated / will predate

6. The scientific exploration of the intricate interplay ---- celestial bodies within the solar system and the trajectories of human-made entities ---- the expansive realm of outer space, including spacecraft and satellites, is termed orbital mechanics.

- A) with / of
- B) between / at
- C) about / on
- D) beyond / without
- E) among / in

7. ---- all dogs exhibiting indications of possessing a 'theory of mind,' allowing them to understand that humans have different thoughts, it is improbable that they can extend this to comprehending why individuals behave differently from one another.

- A) In case of
- B) Because of
- C) Despite
- D) In the light of
- E) In contrast to

8. The Mars environment is exceptionally harsh compared to Earth, so we're not actively seeking evidence of current life and ----something physically moves in front of the cameras, detecting such life is improbable.

- A) if
- B) unless
- C) just as
- D) because
- E) whereas

9. Because of their cognitive limitations, preschoolers primarily view situations from their own perspective; - ---, they may struggle to grasp the multitude of reasons behind their parents' divorce, often leading them to mistakenly believe they are at fault.

- A) consequently
- B) however
- C) on the other hand
- D) in other words
- E) instead

Colliding tankers, damaged platforms and pipelines, as well as the release of residual oil from oil tanks, are potential causes for catastrophes. Pictures of dying seabirds show the **(10)**---- of such environmental damage. Yet, not all environmental hazards are this obvious. Water pollution **(11)**---- by the uncontrolled use of pesticides and heavy metals, such as mercury, lead, cadmium, and zinc, largely remains unnoticed. The dangerous prior assumption that oceans could naturally purify themselves **(12)**---- limit has caused possibly irreparable damage. Not only the oceans, but many creeks, rivers, and lakes have also suffered from human interference. Many lakes have become polluted **(13)**---- the chemicals added by household wastewater and the overfertilisation with phosphates in agriculture. **(14)**----, unknown effluents from industry and acid rain add to the acidification of water bodies, which contributes to the decrease of biodiversity.

10. A) improvement B) extent
C) suspension D) eradication
E) release
11. A) having triggered B) triggering
C) to have been triggered D) triggered
E) to have triggered
12. A) from B) upon
C) against D) for
E) without
13. A) except for
B) because of
C) contrary to
D) rather than
E) in pursuit of
14. A) For instance B) Therefore
C) Even so D) Moreover
E) Instead

Media multitasking, **(15)**---- scrolling through social media while watching a movie, may be linked to more lapses in attention and difficulty remembering things. "Our data support the idea that we should be aware of how we engage with media," says Kevin Paul Madore at Stanford University in California. He and his team compared people's self-reported levels of media multitasking **(16)**---- their performances in a memory task, as part of a study including 80 participants aged 18 to 26. The researchers specifically tested episodic memory, which helps us **(17)**---- events, by presenting the participants with images of objects on a computer and then later asking them to recall **(18)**---- they had seen the objects earlier. At the same time, the team used EEG and eye tracking to monitor people's attentiveness. Madore and his colleagues also asked participants to complete a questionnaire **(19)**---- how often they engage in various forms of media multitasking, such as texting while watching TV or reading while listening to music. They found that people who reported more frequent media multitasking had more lapses in attention during the memory task, which was associated with increased difficulties with remembering.

15. A) rather than B) despite
C) because of D) as well as
E) such as
16. A) towards B) with
C) onto D) in
E) beyond
17. A) realize B) acknowledge
C) surpass D) recall
E) enhance
18. A) unless
B) because
C) whether
D) in case
E) although
19. A) to determine
B) being determined
C) to have determined
D) to be determined
E) determining

Imagine if, when a pandemic swept across the globe, scientists responded quickly to develop effective vaccines only for a small number of wealthy countries to buy up almost the entire global supply, leaving virtually none (20)---- the rest of the world. That is (21)---- what happened in 2009 with the H1N1 flu pandemic. We (22)---- it to happen again with covid-19. In some ways we got lucky with H1N1: the virus became less virulent over time and vaccine supplies eventually increased enough to be included in the seasonal flu shot, enabling more people to get access. The jury is still out on whether something similar will happen with the coronavirus, but, either way, a return to normality will continue to elude us (23)---- people in all countries are protected. Thankfully, we now have several vaccines, (24)---- to end this crisis there must be rapid, fair and equitable access to them, particularly for those people living in the world's poorest countries, which are most in danger of missing out.

20.

- | | |
|------------|---------|
| A) over | B) from |
| C) towards | D) for |
| E) on | |

21.

- | | |
|---------------|-----------------|
| A) accurately | B) severely |
| C) closely | D) deliberately |
| E) precisely | |

22.

- A) may not allow
B) should not have allowed
C) don't have to allow
D) did not have to allow
E) must not allow

23.

- A) so that
B) if
C) because
D) until
E) when

24.

- | | |
|----------------------|----------------|
| A) meanwhile | B) in addition |
| C) therefore | D) in fact |
| E) on the other hand | |

Been spending a bit too much time indoors? You are not the only one. Many of us now spend up to 90 per cent of our lives indoors and our retinas are bombarded with artificial light late into the evening. That means (25)---- our ancestors, we are exposed to less light during the day and more light at night. This (26)---- to the light-dark cycle we (27)---- with is having a profound effect on our circadian rhythms, shifting sleep patterns and affecting our health way more than we might realise. Light levels help to regulate alertness and mood. We also rely on sunlight to convert cholesterol in the skin into vitamin D, which helps build strong bones, and plays a beneficial role (28)---- our immune system. Some headlines even suggest that sunlight could and help protect us from the coronavirus. (29)---- we are not sure whether the science back that up.

25.

- | | |
|-------------------|------------------|
| A) in addition to | B) therefore |
| C) in short | D) compared with |
| E) yet | |

26.

- | | |
|-----------------|----------------|
| A) perseverance | B) disruption |
| C) interference | D) maintenance |
| E) prevention | |

27.

- | | |
|-----------------|-----------------|
| A) had evolved | B) are evolving |
| C) would evolve | D) evolved |
| E) will evolve | |

28.

- A) among
B) about
C) for
D) with
E) in

29.

- | | |
|-------------------|--------------|
| A) Hence | B) Moreover |
| C) Yet | D) Similarly |
| E) In other words | |

Climate change will increase the risk of heavy rainfall and storm surges combining to cause extreme flooding around the UK, Germany and other parts of northern Europe. Coastal communities already face the (30)---- of a worst-case average sea level rise of about a meter by the end of the century, (31)---- temperatures rise. But Emanuele Bevacqua at the University of Reading, UK, and his colleagues found the risk from rising seas may be aggravated further (32)---- compound flooding, where heavy rainfall and storm surges occur simultaneously (33)---- greater impact. The results don't account for defenses and local topography, (34)---- Bevacqua says the potential hazard from compound flooding should still be factored into risk assessments for coastal communities. Today, the greatest risk of such floods in Europe is in the south.

30.
A) prospect
B) violation
C) obstacle
D) urgency
E) ambiguity
31.
A) unless
B) whereas
C) before
D) so that
E) as
32.
A) in
B) on
C) over
D) by
E) at
33.
A) having
B) to have
C) to have had
D) to be had
E) being had
34.
A) therefore
B) instead
C) but
D) otherwise
E) on the contrary

Humans have known about electricity for millennia, (35)---- it was not until Benjamin Franklin that we started understanding more about this energy source. Franklin, with his work in the mid-1700s, is credited (36)---- furthering understanding of electricity and establishing a foundation for other scientists and inventors. Later, in 1831, British scientist Michael Faraday (37)---- the basics of electricity generation. (38)---- in the 1870s, Thomas Edison mastered electricity for lighting and started a wave of invention and industry that would (39)---- bring electricity to everyday consumers.

35.
A) so
B) but
C) as
D) nor
E) thus
36.
A) off
B) on
C) with
D) under
E) at
37.
A) was discovering
B) had discovered
C) has discovered
D) used to discover
E) discovered
38.
A) Starting
B) To start
C) To have started
D) Being started
E) Started
39.
A) successively
B) eventually
C) mutually
D) predominantly
E) drastically

In this age of globalisation, you would expect people to value and be sensitive about their local differences and diversity. And few areas could be more critical than different peoples' understanding of the human mind when it comes to mental health and illness. **(40)**----, a Nigerian man might experience a culturally distinct form of depression by describing a "peppery" feeling in his head, **(41)**---- a Chinese farmer might speak only of shoulder or stomach aches. Salvadorean women refugees **(42)**---- psychological trauma after a long civil war, **(43)**----, often experience something called *calorias*, a feeling of intense body heat. For a long time, psychiatrists and medical anthropologists studying mental illness in different cultures have found that mental illnesses are not **(44)**---- distributed globally, and do not take the same form from place to place. Unfortunately, mental health professionals in the US, who dominate the global discussion about how mental illnesses are categorised and treated, have often ignored or dismissed these differences.

40.

- | | |
|----------------------|----------------|
| A) On the other hand | B) However |
| C) Similarly | D) For example |
| E) Otherwise | |

41.

- | | |
|---------------|------------|
| A) given that | B) just as |
| C) while | D) in case |
| E) so that | |

42.

- | | |
|-------------------|--------------|
| A) to suffer | B) suffered |
| C) being suffered | D) suffering |
| E) to be suffered | |

43.

- | | |
|----------------------|----------------|
| A) therefore | B) fortunately |
| C) in other words | D) in short |
| E) on the other hand | |

44.

- | | |
|---------------|---------------|
| A) adequately | B) closely |
| C) evenly | D) peculiarly |
| E) harmfully | |

Today's children are growing up in an environment dominated by screens. Whether it is learning in school **(45)**---- computer or tablet use, relaxing at home with video games and TV, or communicating with friends on their phones and social media, time **(46)**---- on screens has become an essential part of modern life. **(47)**---- this, much has been made in the media about the alleged dangers of screen time and the risks that it **(48)**---- to our young people's health, but this screen time panic isn't new. People have been voicing concerns about the harms of spending too much time on screens since the invention of television. The truth is the evidence for direct harm by screen time has always been contested. Although existing research demonstrates negative associations between screen time and mental health, sleep and fitness, we cannot be confident that these links are causal, or whether other factors are causing both negative health outcomes and higher screen time. **(49)**----, some more recent high-quality studies show that some screen time is better for mental health than none at all.

45.

- | | |
|------------|-------|
| A) over | B) on |
| C) with | D) in |
| E) through | |

46.

- | | |
|-----------------------|----------------|
| A) to have been spent | B) spending |
| C) to spend | D) to be spent |
| E) spent | |

47.

- | | |
|----------------|-------------------|
| A) Because of | B) Along with |
| C) Despite | D) In contrast to |
| E) Rather than | |

48.

- | | |
|---------------|---------------|
| A) heralds | B) eliminates |
| C) spurs | D) poses |
| E) fascinates | |

49.

- | | |
|-----------------|-----------|
| A) Consequently | B) Thus |
| C) In fact | D) Rather |
| E) Ironically | |

A dazzling fireball that ended its cosmic journey over central Alberta, Canada could change astronomers' understanding of how the solar system formed 4.5 billion years ago. The meteoroid is thought to have come from the Oort Cloud, a reservoir of celestial objects that encircles the entire solar system and separates it from interstellar space. Scientists have never directly observed rocky objects in the Oort Cloud and have believed that it holds only icy objects. But the new rocky object challenges popular theories of the Oort Cloud's formation, and the early solar system's formation in general, according to a recently published study. "This discovery supports an entirely different model of the formation of the solar system, one which backs the idea that significant amounts of rocky material co-exist with icy objects within the Oort cloud," study author Denis Vida said in a statement. "This result is not explained by the currently favoured solar system formation models. It is a complete game changer." NASA has assumed the Oort Cloud formed when gravity from the newly formed planets pushed icy objects away from the sun. Gravity from the Milky Way galaxy caused the objects to settle on the edge of the solar system instead. A popular current theory about how the solar system formed is the pebble accretion model, which describes millimetre-size pebbles being sucked together over time to form celestial bodies. "These findings challenge solar system formation models based on pebble accretion alone, which currently cannot explain the high observed abundance of rocky material in the Oort cloud as derived from fireball measurements and telescopic data," the authors wrote.

50. It is clear from the passage that the meteoroid that ended its journey over Canada ----.

- A) has added nothing new to the present theories about the Milky Way galaxy
- B) was much bigger than the ordinary ones and provided more information
- C) was an icy object that can only be found in the Oort Cloud
- D) is assumed by scientists to have originated in Oort Cloud
- E) is important in that it has confirmed the current theory about the formation of Oort Cloud

51. Which of the following can be inferred from the passage about the recently published study?

- A) It may change NASA's assumptions about the formation of Oort Cloud.
- B) It claims that the meteoroid contains both ice and rock particles.
- C) It has basically similar claims to the previous research about the formation of Oort Cloud.
- D) Its results are totally in line with the pebble accretion model.
- E) It might spark a new controversy about NASA's credibility.

52. Which of the following can replace the underlined verb 'accretion' in the passage?

- A) reflection
- B) diminishment
- C) punishment
- D) accumulation
- E) reduction

53. Which of the following best describes the writer's tone?

- A) critical
- B) humorous
- C) informative
- D) provoking
- E) conciliatory

54. ----, therefore tropical forests have suffered the most, with some of the highest rates of agricultural conversion over the last few decades.

- A) The tropical domain has the largest proportion of the world's forests
- B) People have converted nearly half of the world's land into agriculture
- C) Agriculture was the key development in the rise of sedentary human civilization
- D) Tropical forests are some of the richest, most exciting areas on earth
- E) About 80% of the world's documented species can be found in tropical rainforests

55. Oil produced from biomass can provide a sustainable alternative to fossil fuels, ----.

- A) so such organisms and their resulting fossil fuels typically have an age of millions of years
- B) for they contain high percentages of carbon and include petroleum, coal, and natural gas
- C) but technological challenges make it difficult to scale up production
- D) yet it is a kind of liquid fuel made from biomass materials such as municipal wastes
- E) even if biomass crops are distributed abroad in the world and the amount is very large

56. The Netherlands has developed an ingenious system for keeping the sea at bay, part of which are the Kinderdijk Windmills, ----.

- A) unless the local authorities decide that they needed to pump water into a local reservoir to protect the polders
- B) even though a millennium ago, the area around Kinderdijk was a peat bog only visited by fishermen
- C) however, it is the largest concentration of old windmills in the Netherlands and one of the best-known Dutch tourist sites
- D) since much of the country was once underwater and still remains at risk of being inundated by the sea
- E) but these windmills are built out of brick, they have windows and are about 30 m high on average

57. ----, others are at greater risk than before.

- A) Because the world locks down to avoid further spread of the devastating coronavirus
- B) Though endangered species are experiencing more poaching during coronavirus lockdowns
- C) Whereas it is of paramount importance that some biologists continue collecting data even during lockdowns
- D) Since Earth is currently in its sixth known extinction event, and our co-existence with wildlife leaves much to be desired
- E) While current lockdowns around the world have left some animals thriving in peace and quiet

58. Even though a yellow fever vaccine has been available since the 1930s, ----.

- A) it halted progress on the Panama Canal in the 1900s and shaped the history of Atlantic coast cities from Philadelphia to Rio de Janeiro
- B) the disease, transmitted by mosquitoes, continues to afflict 200,000 people a year, a third of whom die, mostly in West Africa
- C) the virus that causes it lives in primates and is spread by mosquitoes that tend to dwell high in the canopy where these primates live
- D) shrinking habitat has been shown to concentrate howler monkeys – one of the main South American yellow fever hosts
- E) yellow fever outbreak was reported for the first time in in Kenya, where deforestation had fragmented the forest

59. Unless accommodations are built into autonomous vehicle designs ----.

- A) companies risk undermining transportation access for the very communities this technology is promising to include
- B) autonomous vehicles could improve access to transportation for every individual that they demand
- C) for individuals in emergency situations, the driver bridges the gap between personal capability and vehicle accessibility
- D) synchronizing vehicle movement with distance and traffic patterns would result in more efficient service
- E) these advances should mean fewer cars, less traffic, more economical fuel use and increased vehicle availability

60. Even if no one knows when the first printing press was invented or who invented it, ----.

- A) the printing press is a device that allows for the mass production of uniform printed matter
- B) it revolutionized society there before being further developed in Europe in the 15th Century
- C) the oldest known printed text originated in China during the first millennium A.D.
- D) it was during this period of early printing that rolled-up scrolls began to be replaced by books
- E) the first moveable type was carved into clay and baked into hard blocks that were then arranged onto an iron frame

61. Organic agriculture provides more rural employment opportunities ----.

- A) since the difference in the nutritional value of organic and conventional food is so small
- B) for organic ingredients most likely have slightly higher levels of some vitamins
- C) though organic food is more expensive than conventional food at present
- D) as it pays higher wages and offers better working conditions than conventional farms
- E) because organic management is more labor-intensive than conventional practices

62. Although botanical gardens remain significant for recreation and education, ----.

- A) the arrangement of the botanical garden must balance an aesthetic presentation with educational purposes
- B) they may specialize in local flora or present plants from around the world, within the limits of the local soil and climate
- C) the most important trend in them worldwide has been an increasing awareness of their potential to assist in conservation efforts
- D) American botanical gardens, especially those further north, must account for seasonal changes in planning their design
- E) The urbanization of the American landscape in the twentieth century has increased the prominence and viability of botanical gardens

63. As the demand for health-care services continues to increase, ----.

- A) the advanced technology used in these surveillance systems has provided a significant amount of physiological data
- B) even the most modern patient monitoring systems carry significant drawbacks that limit their effectiveness and/or applicability
- C) major opportunities for improvement in both equipment design and monitor utilization have been identified
- D) clinically efficient and cost-effective patient monitoring takes on a critically indispensable role
- E) clinical alarm activity can affect patient safety and may have a negative impact on care providers

64. As harmful bacteria are becoming ever more resistant to antibiotics, ----.

- A) the use of new drugs has started to yield positive results
- B) as many as 500 new drugs will have been produced to fight off viruses by then
- C) doctors have, in turn, started to use phages – viruses that infect bacteria – as a new line of attack
- D) the developments in the pharmaceutical industry have seen a decline
- E) antibiotic resistance had already become a serious issue affecting millions of people