

1. Photochemical smog refers to poor air quality caused by a mixture of nitrogen oxides and volatile organic compounds (VOCs). Photochemical smog is associated with high air pressure. This is because winds in a high-pressure system are usually weak. Hence, pollutants remain in the area and are not dispersed. Poor air quality often persists for many days because stable high-pressure conditions generally prevail for a few days. ---- In monsoonal areas, on the other hand, smog occurs in the dry season.

- A) However, the chemical reactions between VOCs nitrogen oxides and sunlight can produce ground-level ozone.
- B) Ozone formation may take a number of hours, by which time the polluted air has drifted into surrounding suburban and rural areas.
- C) In some climates, notably Mediterranean climates, these conditions persist all season; therefore, poor air quality can remain for months.
- D) Conversely, winter smogs are associated with temperature inversions and high levels of pollutants due to increased heating of industries.
- E) Cloud formation and precipitation are created by the upward air movement.

2. Lake Toba is in the middle of Northern Sumatra. It is known as a caldera, the technical term for the crater formed by a volcanic eruption. The size of the lake can be attributed to Toba's eruption, which was the largest that has occurred, anywhere on earth, within the past two million years. About 74,000 years ago a high volcanic mountain that stood on the area, now occupied by Lake Toba, erupted and blew skyward a mass of ash and volcanic debris. The entire subcontinent of India was covered with ash. ---- During that time, throughout the world, millions of all forms of life died and thousands of species vanished.

- A) All around the globe, sunshine was reduced and temperatures dropped by about 3 degrees.
- B) It is a big lake, eighteen by sixty miles in extent and as deep as five thousand feet in places.
- C) There are many locations around the world where geologists have identified these super volcanoes.
- D) Studies have recently showed that eruptions bigger than Toba might have occurred with more tragic consequences.
- E) Otherwise, in Yellowstone National Park, there was an eruption about 640,000 years ago.

3. Numerous wild almond species are found in the mountainous and desert regions extending from southwestern Europe to Afghanistan, Turkistan, and western China, sometimes occurring as extensive forests. The cultivated almond species apparently originated in central Asia from hybridization among native species followed by local seedling selection by native peoples. ---- From there seeds were used to introduce the crop to other parts of the world, including the United States, Australia, South Africa, and South America.

- A) Traditional culture in European and Asian areas is largely restricted to hillsides as almond trees can withstand considerable drought
- B) The almond is the flat pale sweet nut of the almond tree used in cooking and to make almond oil.
- C) Its cultivation, however, spread with civilisation along the shores of the Mediterranean Sea into North Africa and to Italy, Spain, southern France, and Portugal.
- D) Italy has historically been a leading producer, primarily from the Bari and Sicily areas, but production has declined sharply.
- E) In some less developed parts of the world, almonds are knocked to the ground by poles.

4. The expansion of our universe is much like the inflation of a balloon. The microwave background radiation fills our universe and defines a reference frame, analogous to the rubber (the surface) of an inflating balloon, with respect to which motion can be measured. The distances to remote galaxies are increasing, and astronomers casually say that distant galaxies are 'receding' or 'moving away' from us. ---- Instead, the space between the galaxies and us is expanding. Individual galaxies move around at random within clusters, but the clusters of galaxies are essentially 'at rest'.

- A) However, the galaxies are not travelling through space away from us.
- B) This is because galaxies are not fragments of a big bang bomb.
- C) Yet, the universe does not seem to have an edge or a centre or an outside.
- D) The formation of all galaxies and planets has depended on the expansion.
- E) That is, most scientists think they understand it, but few agree on what it really means.

5. It is estimated that if all the water on Earth were spread evenly over the planet, the resulting layer of water would be almost 3 kilometres thick. ---- It is stored mainly in the oceans, which hold about 97.2 per cent of all the water in the world. Of the remaining 2.8 per cent, it is found in ice sheets, glaciers, saltwater lakes, rivers, the atmosphere and so on. Humans use less than 1 per cent of all the water on the planet - mostly from groundwater, lakes, and rivers - some of which returns to the atmosphere and falls as rainwater, but much of which is not renewed.

- A) In contrast, precipitation barely contributes to the overall amount of water.
- B) However, the distribution of water is far from being even in reality.
- C) Similarly, much of the water reaching the surface evaporates back into the atmosphere.
- D) Therefore, many people separate clean water sources from hydrologic cycles.
- E) For example, places such as glacial deposits have more underground water than others.

6. Questions about the biology of aging and the average longevity of populations have always been of great fascination to scientists. The ongoing research of gerontologists from a broad range of scientific disciplines has, in the early twenty-first century, produced a more complete understanding of the underlying biological forces that contribute to aging and the duration of life. ---- Such advances have led some to believe it is only a matter of time before the same will be done for humans.

- A) Therefore, advances in the biomedical sciences may proceed at a faster pace than in recent decades.
- B) Moreover, scientists have succeeded in experimentally extending the lifespan of several non-human organisms.
- C) Advances in the biomedical sciences may well make immortality a realistic goal for the twenty-first century.
- D) On the other hand, there is not enough evidence to support the claims of anticipated dramatic increases in human life expectancy.
- E) In its simplest form, aging may be thought of as the accumulation of random damage to the building blocks of life.

7. Agnosia is a neuropsychological disorder characterised by the inability to recognise common objects, persons, or sounds. The disorder can affect visual, auditory or tactile object recognition, but visual agnosia is the most common form of the condition, and most often expressed as an inability to recognise people. ---- The condition may also arise following head trauma or stroke, or following carbon monoxide poisoning or anoxia.

- A) Patients are often uncomfortable in social situations, although many learn to recognise people using other visual cues.
- B) Tactile agnosia, also called astereognosis, is often difficult to recognise as we rarely identify objects solely by feel.
- C) Agnosics can see, but they lack higher level visual perception, which interferes with object information gathering.
- D) Agnosia is caused by lesions to the parietal and temporal lobes of the brain, regions involved in storing memories.
- E) In addition to being the most common form of agnosia, visual agnosias are also the best understood.

8. Oppositional defiant disorder (ODD) is a disorder found primarily in children and adolescents. It is characterised by negative, disobedient, or defiant behaviour that is worse than the normal 'testing' behaviour most children display from time to time. ---- These difficult periods are part of the normal developmental process of gaining a stronger sense of individuality and separating from parents. ODD, however, is defiant behaviour that lasts longer and is more severe than normal individuation behaviour, but is not so extreme that it involves violation of social rules or the rights of others.

- A) It is usual for children with ODD to not perceive themselves as being difficult and to blame all their problems on others.
- B) Very young children with the disorder will throw temper tantrums that last for 30 minutes or longer, over seemingly trivial matters.
- C) ODD is thought to occur in about 6 per cent of all children and is more common in families of lower socioeconomic status.
- D) Most children go through phases of being difficult, particularly during the period from 18 months to three years, and later during adolescence.
- E) Treatment is usually a long-term commitment and may take a year or more for some noticeable improvement.

9. Antisocial personality disorder (APD) is highly unresponsive to any form of treatment, in part because persons with APD rarely seek treatment voluntarily. If they do seek help, it is usually in an attempt to find relief from depression or other forms of emotional distress. Although there are medications that are effective in treating some of the symptoms of the disorder, non-compliance with medication regimens or abuse of the drugs prevents the widespread use of these medications. ---- In other words, if a person diagnosed with APD is placed in an environment in which they cannot victimise others, their behaviour may improve. It is unlikely, however, that they would maintain good behaviour if they left the disciplined environment.

- A) If some form of individual psychotherapy is provided, the therapist's primary task is to establish a relationship with the patient.
- B) Measures intended to prevent antisocial personality disorder must begin with interventions in early childhood.
- C) The most successful treatment programmes for APD are long-term structured residential settings in which the patient systematically modifies behaviour.
- D) The impulsiveness that characterises the disorder often leads to a jail sentence or an early death through suicide.
- E) The patients can hardly establish positive relationships with people around them, even with the closest ones.

10. There are many simple ways to be nicer to people, and we like to believe that all that kindness and consideration will be appreciated. However, being nice may not do us any favours. According to a study, people who are nice - defined as sensitive to unfairness or inequity - are more likely to show symptoms of depression than people who tend to be selfish and egotistical. Researchers started by giving nearly 350 people a personality test to determine whether they were more 'pro-social' or 'individualist'. ---- What they found was the brain images were quite different between the two types of people, and that nicer people are more vulnerable to depression because they experience extreme empathy, guilt and stress.

- A) Then, they used an imaging technique to see which areas of the brain were activated during specific situations.
- B) Overall, they usually aim at measuring people's desire to share financial resources with those less fortunate.
- C) Whether the pattern of thinking that was considered 'pro-social' was linked with depression was an area of previous research.
- D) In other words, people are encouraged to be nice, but it turns out this positive quality can have a very real negative outcome.
- E) On the other hand, it is still not certain which types of people are more prone to depression.

11. The placebo effect occurs when a person takes a placebo (a substance that has no effect) and feels better. If you regularly take sleeping pills, you probably do not realize that you have experienced the placebo effect. Sleeping pills lose their effectiveness after six weeks of regular use. Therefore, if you have been taking sleeping pills for more than a few months and they still put you to sleep, it is the placebo effect working, not the pill. ---- However it works, the very power of the placebo effect demonstrates that by maximizing your belief in sleep improvement techniques, you can sleep better.

- A) Although we do not know the exact mechanism underlying the placebo effect, it is probably due to the effects our thoughts have on our brain.
- B) In fact, about one third of pain patients will respond as well to a placebo as they will to morphine.
- C) Negative thoughts about sleep can have a profoundly adverse effect on the duration and quality of one's sleep.
- D) Stress occurs almost automatically, so you are not always aware of it and its negative impact on your sleep.
- E) About 20 per cent of a population sleeps six or fewer hours per night.

12. Self-control strategies are cognitive and behavioural skills used by individuals to maintain self-motivation and achieve personal goals. They are based primarily on the social cognitive theory of Albert Bandura. According to Bandura, one's behaviour is influenced by a variety of factors, including one's own thoughts and beliefs, and elements in the environment. Most people who decide to use self-control strategies are dissatisfied with a certain aspect of their lives. For example, they may feel they smoke too much, exercise too little, or have difficulty controlling anger. ---- Self-control programmes may also be designed without the help of a professional, especially if the problem being addressed is not severe.

- A) Environmental self-control strategies involve changing times, places, or situations where one experiences problematic behaviour.
- B) Self-control strategies are often taught in treatment centres, group or individual therapies, schools, or vocational settings.
- C) The individual is responsible for using selfcontrol strategies in real-life situations to produce the desired changes.
- D) Self-control strategies help individuals to become aware of their own patterns of behaviour and to alter them so that the behaviour will be more or less likely to occur.
- E) Individuals achieve self-control through continuous monitoring, evaluating, and reinforcement of their own behaviour.

13. (I) Self-sufficiency is a way of life where you endeavour to produce all you need from the resources that are available to you. (II) Accordingly, there is an expectation that energy and food prices are about to increase as resources become scarcer. (III) In the past, such a lifestyle was essential for subsistence farmers; the communication infrastructures did not exist and people had to live on what they could obtain within a few miles of their homes. (IV) Communities formed where natural resources were concentrated and people traded their skills and produced to ensure everyone had all they needed to live. (V) It was often a matter of trying to survive rather than having a good quality of life

A) I B) II C) III D) IV E) V

14. (I) While animal experimentation might be thought of as a modern practice, humans have been learning from animals since prehistory. (II) With the rise of biotechnology, the scientific use of animals has dramatically increased, and now, biomedical research involves the use of several million animal subjects, mostly rodents, each year. (III) Early human hunters' knowledge of the natural world was likely formed by their awareness of the life cycles and migration patterns of prey species. (IV) Prehistoric understanding of anatomy and physiology was no doubt the byproduct of butchering animals for food. (V) Furthermore, in classical antiquity, scientifically sophisticated knowledge of animal physiology emerged, indicating that the dissection of animals for the purpose of gaining such knowledge had begun.

A) I B) II C) III D) IV E) V

15. (I) As humanity discovers more about genetics, some fascinating (and scary) options begin to present themselves. (II) In addition to curing diseases with this new information, scientists may also soon discover the genes for height, physical beauty, increased memory, and maybe even musical ability (III) Further down the line, they may be able to manipulate these genes, opening the door to enhancing these abilities and traits in children. (IV) It is not difficult to see why tailoring genes is much different from selecting a really good school. (V) They may even discover how to give kids new abilities altogether.

A) I B) II C) III D) IV E) V

16. (I) When a freshly cut piece of lead metal is exposed to the air, it quickly reacts with oxygen to form a thin outer layer of lead oxide. (II) This prevents further reaction between the metal and oxygen and other constituents of the air. (III) Metallic lead is used in a pure or nearly pure form, usually because of its high density and ability to be bent and shaped. (IV) A similar phenomenon occurs when the metal is placed into water. (V) Compounds present in water react with lead to form an outer skin of lead carbonate, lead silicate, or similar compounds that protect the metal from further interaction.

A) I B) II C) III D) IV E) V

17. (I) Between Scotland, Greenland and the eastern coast of Canada, an array of underwater sensors stretches for more than 3,000 kilometres. (II) The oceans are the biggest, wildest and least understood part of the planet. (III) We are getting to know them better every day, thanks to a host of technologies that are measuring the depths in new inventive ways. (IV) Some researchers are rigging the oceans with novel devices, or probing them with algorithms, while others are capturing things from the sea and transporting them into the lab to study in detail. (V) Together, these approaches are offering brand new insights into the underwater world, at a time when it has never been more important to decipher the inner workings of the oceans.

A) I B) II C) III D) IV E) V

18. (I) Between Scotland, Greenland and the eastern coast of Canada, an array of underwater sensors stretches for more than 3,000 kilometres. (II) The oceans are the biggest, wildest and least understood part of the planet. (III) We are getting to know them better every day, thanks to a host of technologies that are measuring the depths in new inventive ways. (IV) Some researchers are rigging the oceans with novel devices, or probing them with algorithms, while others are capturing things from the sea and transporting them into the lab to study in detail. (V) Together, these approaches are offering brand new insights into the underwater world, at a time when it has never been more important to decipher the inner workings of the oceans..

A) I B) II C) III D) IV E) V

19. (I) The variation in milliseconds between your heartbeats is known as your heart rate variability (HRV). (II) These small differences in heart rate are normal - in fact, the more variation the better. (III) This irregularity should not be confused with cardiac arrhythmia, which involves our heart rate, or pulse, which is measured in beats per minute. (IV) Other diseases of the autonomic nervous system can be detected and monitored using HRV, such as autonomic neuropathy - damage to the nerves that control everyday functions. (V) In fact, cardiac arrhythmia is a serious condition that involves the heart beating too fast or too slowly, or throwing in extra, irregular beats.

A) I B) II C) III D) IV E) V

20. (I) Over 300 people are known to have died climbing Everest since 1922. (II) Injuries and bad weather can be deadly in this remote environment, and our bodies cannot cope with low oxygen levels at high altitude. (III) Altitude sickness can lead to fatal pulmonary or cerebral oedemas, which occur when the lack of oxygen results in leakage of fluid into the lungs or brain. (IV) Altitude is measured relative to the mean sea level in the local area - so the exact height depends on which local area is chosen as a reference point. (V) To avoid this, mountaineers acclimatise in stages, allowing their bodies to adjust gradually.

A) I B) II C) III D) IV E) V

21. (I) Insomnia exists only in comparison with what one considers to be normal sleep. (II) With insomnia, sleep falls short of the expectation of how it should be experienced. (III) A variety of physiological changes occur throughout the body during sleep. (IV) People assess their sleep against a standard, but normal sleep is relative. (V) Various criteria and standards may be used to describe sleep as normal or abnormal.

A) I B) II C) III D) IV E) V

22. (I) There are many factors to be considered in choosing a suitable anaesthetic agent for each patient. (II) Ensuring good muscle relaxation while having only few toxic or adverse effects, for example, is one of them. (III) Besides, the ideal anaesthetic should allow rapid induction followed by ease of control and the possibility of rapid reversal. (IV) As the anaesthetic is chemically bound to its receptor, however, removal from the system is often slow and other drugs may be required to reverse its effects. (V) Future advances in anaesthesia will depend upon developments in the computerisation of monitoring the patient's physiological status.

A) I B) II C) III D) IV E) V

23. (I) Dementia is a condition characterised by a chronic decline in cognitive functions contrasted with a person's usual state of functioning. (II) It is seen most often in people sixty-five years and older, and the incidence increases with age. (III) Although aging results in mild slowing for some cognitive functions, normal aging does not cause significant memory loss. (IV) There are various causes and types of dementia, but most types have certain characteristics in common. (V) Persons with dementia often have problems with short-term memory, such as forgetting names and recent events.

A) I B) II C) III D) IV E) V

24. (I) Blood banks are a vital part of any health service, giving doctors rapid access to this lifegiving fluid. (II) But blood is notoriously hard to store. (III) Left to itself, it clots and loses vital components like platelets. (IV) As it is also delicate, red blood cells rupture if badly handled, any contamination can make it potentially lethal. (V) Plasma is the liquid component of blood, and could be given to anyone, regardless of blood group.

A) I B) II C) III D) IV E) V

Elephants have a small mouth and a large, mobile tongue which cannot extend past the short lower lip. Contributing to the elephant's unique appearance is its long, flexible trunk, which is a fusion and elongation of the nose and upper lip. The trunk, with no bones and more than 100,000 muscles, is so strong and flexible that it can coil like a snake around a tree and uproot it. At the end of this mighty 'limb', which trails on the ground unless curled up at the end, are two nostrils and flexible finger-like projections. The tip is so sensitive and functional that it can wipe a grain of sand from the elephant's eye and detect delicate scents blowing in the breeze. Using this remarkable appendage, an elephant can feed by plucking grass from the ground, or leaves from a tree, placing it in its mouth. Water drawn up the trunk may be squirted into the mouth for drinking, or sprayed over the body for bathing and cooling. Loud trumpeting sounds and soft, affectionate murmurs can echo through the trunk. The trunk is also used to tenderly discipline, caress, and guide offspring, to fight off predators, and to push over trees during feeding. The trunk is clearly an essential organ. It is also sometimes the object of attack by an enemy, and damage to it causes extreme pain and can lead to death.

25. According to the passage, which of the following statements is true?

- A) Its long trunk may limit the elephant's flexibility from time to time.
- B) New-born elephants can effectively use their trunks to protect themselves.
- C) Elephants use their trunk for various tasks from rubbing their skin to sharpen their tusk.
- D) The elephant is quite skilful with the trunk as it can pick out a grain of sand from its eye.
- E) Elephants constantly check their territory by smelling the air via the trunk, keeping it safe from predators

26. According to the passage, an elephant's trunk ----.

- A) is much longer in female elephants compared to male ones
- B) has many functions like uprooting trees and plucking grass but damage to it may prove fatal
- C) can regrow if somehow lost, due to its unique regenerative ability
- D) varies in length according to the animal's origins, environment and age
- E) is almost always an object of attack by an enemy because it is soft and delicate

27. What is the passage mainly about?

- A) Reasons why elephants are too sensitive
- B) Various function an elephant's trunk has
- C) Survival techniques used by elephants in nature
- D) The general anatomy of elephants
- E) The differences between the male and female elephants

The structure of a planet's atmosphere depends on a number of factors. One is proximity to the Sun. Those planets closest to the Sun are less likely to contain lighter gases that are driven off by the Sun's radiant energy. Mercury illustrates this principle. It is so close to the Sun that it has essentially no atmosphere. The major gases found in this planet's very thin atmosphere are helium and sodium, both of which are probably remnants of the Sun's solar wind rather than intrinsic parts of the planet's own structure. Some astronomers believe that contributions come from gases seeping out from the planet's interior. Another property determining the nature of a planet's atmosphere is cloud cover. It has a variety of sometimes contradictory effects on a planet's atmosphere. As sunlight reaches the planet, clouds will reflect some portion of that sunlight back into space. The amount that is reflected depends partly on the composition of clouds, with whiter, brighter clouds reflecting more light than darker clouds. Some of the light that does pass through clouds is absorbed by gases in the planet's atmosphere, and the rest reaches the planet's surface.

28. According to the passage, the structure of a planet's atmosphere ----.

- A) is mainly reformed by the proximity to the Sun
- B) can be determined by the cloud cover
- C) depends largely on the Sun's radiant energy
- D) can change the composition of clouds
- E) takes a long time to be formed

29. It is clearly stated in the passage that Mercury's atmosphere ----.

- A) is the thinnest one compared to other planets
- B) contains only two gases - helium and sodium
- C) has only the gases seeping out from its interior
- D) is mainly formed by external sources
- E) is considerably affected by intrinsic elements

30. The passage mainly focuses on ----.

- A) the contradictory effects of cloud cover on the nature of atmosphere
- B) the reasons why Mercury is different from other planets
- C) the negative effects of the Sun's energy on Mercury's atmosphere
- D) the consequences of light absorption on Mercury's interior structure
- E) the factors impacting the structure of a planet's atmosphere

Lake Baikal, located in Siberia in the middle of Asia, is both the oldest and deepest lake in the world. It contains one-fifth of all the unfrozen freshwater in the world. Because of its distance from other water bodies, at least 1200 different animal species have evolved in it and at least 80 per cent of these species are only found in Lake Baikal. One of the most interesting animals in the lake is a seal called the nerpa. It is the only mammal that inhabits the lake. The most numerous animal in Lake Baikal is the Baikal crustacean. It is extremely small, about the size of a grain of rice. It feeds on microscopic algae and bacteria by filtering water. The total flow of water through the mouths of these tiny animals is equivalent to ten times the flow of all the rivers that enter Lake Baikal each year. The work of these small animals is credited with keeping the lake so clear. One of the most interesting fish in Lake Baikal is the oil fish. They are relatively small and transparent. About 35 per cent of their body weight is made up of an oil that is a very pure form of vitamin A. The fish is used to treat many diseases, such as arthritis, and to soothe wounds that would not heal.

31. According to the passage, which of the following is true about Lake Baikal?

- A) It has a variety of endemic species due to its location.
- B) Most of the species living in it are found at deep levels.
- C) Its area covers nearly a quarter of the total water bodies of seas.
- D) Despite of its magnitude, it is not a suitable habitat for sea mammals.
- E) It hosts a type of seal that can rarely be seen in lakes

32. It is clear from the passage that ----.

- A) the Baikal crustacean is the smallest living organism that can be seen in Lake Baikal
- B) Lake Baikal's mammal diversity outnumbers other species in total
- C) Lake Baikal is the home of nearly 80 per cent of 1200 animals that can be seen in Siberia
- D) bacteria and algae are the main sources of nutrition for animal species in the lake
- E) in search of nutrients, the Baikal crustacean inadvertently cleans the lake

33. According to the passage, the oil fish ----.

- A) feeds on microscopic algae and bacteria
- B) cannot be prey for sea creatures thanks to its thick skin
- C) can be used for various medicinal purposes
- D) synthesises about 35 per cent of vitamin A in their body
- E) contains an oil that is essential for storing vitamin A

NASA has recently conducted a study on astronauts who are identical twins to observe changes in the body of astronauts during spaceflights. As a part of this study, an astronaut named Scott Kelly spent a year in space. When he returned, it must have really annoyed his identical twin brother - retired astronaut Mark Kelly - that Scott was five centimetres taller than when he left. However, Scott's temporary increase in height was not the only thing that changed during his trip. While Scott was in space, Mark went about his daily life on Earth. During the year-long mission, researchers tracked biological markers in both brothers to pinpoint any changes. Because the twins share the same genetic code, researchers reasoned that any observed differences could tentatively be linked to Scott's time aboard the International Space Station. The results of NASA's Twins Study, show that living in a microgravity environment can damage DNA, change the way thousands of genes are expressed, increase the length of the telomeres that protect our genetic code, thicken artery walls, modify the microbiome, and increase inflammation - just to name a few effects. Fortunately for astronauts, the vast majority of these changes seem to disappear within a few short months of returning to Earth.

34. According to the passage ----.

- A) researchers began tracking biological markers once Scott Kelly ended his spaceflight
- B) Mark Kelly needed to make changes in his daily routine when Scott was on a spaceflight
- C) Mark Kelly volunteered for the study since he would have the chance to help his brother
- D) NASA's Twins Study has not yielded any important findings at all
- E) NASA observed Scott and Mark Kelly for a year to see any biological changes in their body

35. One can understand from the passage that ----.

- A) spaceflights might cause some serious side effects that interfere with the overall health of astronauts
- B) NASA observed the twin brothers in the same environment
- C) physical change in the height of Scott was the only change he experienced during his spaceflight
- D) all health problems associated with space missions will disappear right after the missions have ended
- E) the DNA of the astronauts usually remains unaffected no matter how much time they spend in space

36. One can conclude from the passage that NASA ----.

- A) is interested in identical twins as test subjects since they spent the same amount of time in space
- B) has selected identical twin astronauts for the study because of their unusual genetic codes
- C) has ruled out the theory that microgravity manipulates the genes
- D) discovered most changes that astronauts experienced in a microgravity setting are likely to vanish after their return
- E) focused on how to reverse serious side effects of spaceflights just after returning to Earth

In an aquarium at the University of Nottingham, England, a small fish has surprised biologists. The fish, a female stickleback, became pregnant with her eggs that developed embryos while they were still inside her, something totally contrary to sticklebacks' normal way of reproducing. Like almost all other fish, the female should lay her eggs and the male then fertilise them with his sperm. The scientists discovered the fish's extraordinary condition in connection with another research project, in which they studied stickleback eggs. Whereas the embryos in the eggs were healthy and viable, their mother, nicknamed Maria, was swollen and close to death. The scientists put her to sleep, subsequently extracting the eggs with the embryos, only 56 of which survived until adulthood. The scientists initially believed that Maria had cloned herself, but DNA studies showed that the offspring had two parents, so the eggs must have been fertilised. One explanation could be that Maria passed through a place where another female's eggs had already been fertilised, with some of that male's sperms ending up in Maria's oviducts.

37. According to the passage biologists were surprised because ----.

- A) they came across a case which is contrary to the way reproduction traditionally occurs in a stickleback fish
- B) 56 of the fertilised eggs of a stickleback fish survived for the first time in a research project
- C) the eggs of a stickleback fish were fertilised in an aquarium where there were no male stickleback fish
- D) stickleback fish in the aquarium at Nottingham University became pregnant although she was injured
- E) the embryos extracted from the stickleback fish which was swollen were still healthy and viable

38. It is understood from the passage that Maria ----.

- A) displayed an extraordinary way of fertilisation
- B) was put to sleep in order to be fertilised healthily
- C) delivered all of her offspring in good health
- D) laid eggs although she was far too swollen
- E) was definitely successful in cloning herself

39. The passage is mainly about ----.

- A) the unexpected case of Maria's fertilised eggs
- B) the reproduction process of the stickleback fish
- C) DNA studies of the eggs extracted from Maria
- D) the survival of the 56 embryos of a stickleback fish
- E) a comparison of two projects conducted on stickleback fish

A widely reported study claimed to show 'very clear' differences between the brains of men and women. Although this study was trumpeted in the media as 'proving' that male and female brains are inherently different, the actual evidence falls way short of such claims. Distinctions do exist. Genetic differences due to sex chromosomes, varying hormone regulation during development and obvious anatomical differences are all reflected in the structure of the brain. But whether these have any impacts on the functioning of the mature adult brain is a lot harder to determine. There are just too many other factors and variables which cannot be screened out by modern research methods and can affect how we use our brains. We all grow and develop in a society that imposes countless differences between males and females from birth. Given how our brains grow in response to our environment, any of these could turn out to be a big influence over how our brains work as adults. Why is so much energy, which could be better used elsewhere, ploughed into an effort to show functional differences between the brains of men and women - especially when it is far from certain such things even exist?

40. Which of the following is a factor or variable that modern research methods cannot screen out?

- A) Structural differences caused by sex chromosomes
- B) Developmental hormone regulation
- C) Genetic differences between men and women
- D) Differences in male and female anatomy
- E) The influence of societal gender imbalance on the brain

41. Which of the following is the main purpose of the author?

- A) To inform the readers about the structural differences between male and female brains affecting hormones and anatomy
- B) To put the blame on society in general for imposing differences between males and females from very young ages
- C) To criticise researchers for wasting their valuable time and energy on trying to prove differences that might not even exist
- D) To praise the media for forcefully reporting a scientific development that proves the innate differences between male and female brains
- E) To emphasise the elasticity of human brain in receiving information from the environment and quickly adapting to those influences

42. Which of the following best describes the author's tone?

- A) supportive
- B) critical
- C) admiring
- D) optimistic
- E) indifferent

A pandemic is an outbreak of an infectious disease that spreads across a large region, a continent, or even the world. According to the World Health Organization (WHO), a pandemic can start when three conditions have been met: the emergence of a disease new to the population, a disease that infects humans, causing serious illness, and one that spreads easily and persists among humans. A disease is not a pandemic because it is widespread or kills a large number of people. It must also be infectious. For example, cancer is responsible for a large number of deaths but is not considered a pandemic. The plague of Justinian in the sixth century that devastated the eastern capital of the Roman Empire in Constantinople was the first well-known pandemic in Europe. It also marks the first detailed record of the bubonic plague that later would be known in London as the Black Death. In Constantinople, while Justinian was the Roman Emperor large quantities of grain were shipped from Egypt and it is thought that the disease was brought into Europe via rat and flea populations in the grain.

43. According to the passage a disease is considered as a pandemic only if it ----.

- A) is found in many parts of the world, and increases death rates
- B) is contagious, thus spreading to larger areas
- C) is announced by the WHO that it has killed thousands of people
- D) lasts for a while and results in hundreds of hospitalisations throughout the world
- E) infects many people resulting in potential chronic illnesses

44. It is stated in the passage that ----.

- A) the first known pandemic emerged in Middle Age London
- B) the bubonic plague was transmitted by the infected people who travelled around the world
- C) the bubonic plague was mistakenly thought to be non-infectious
- D) the plague is believed to have arrived in Europe through the grains from Egypt
- E) the plague of Justinian, first seen in Britain, was the starting point for the Black Death

45. What is the main purpose of the passage?

- A) To give brief information about pandemics and their history
- B) To inform readers about the possible consequences of pandemics
- C) To highlight the reasons for the spread of pandemics
- D) To show how the WHO deals with pandemics
- E) To introduce the ways used to deal with pandemics in on air Europe

Rabies is caused by a virus that is transmitted through the bite of an animal that is already infected. It is classified as a zoonosis, which is a term that refers to any disease of animals that can be transmitted to humans. More than 90 per cent of animal rabies cases occur in such wild animals as skunks, bats, and raccoons, with such domestic animals as dogs and cats accounting for fewer than 10 per cent of the cases. The World Health Organization (WHO) estimates that between 35,000 and 50,000 individuals worldwide die each year as a result of rabies. The highest incidence of rabies occurs in Asia where, in 1997, over 33,000 deaths were noted, most occurring in India. Onset is delayed, usually weeks to months after the person has been bitten. Early symptoms of rabies include fever, headache, and flu-like symptoms. These conditions progress to anxiety, hallucinations, muscle spasms, nartial naralysis fear of water (hydronhobia) and other neurological symptoms as the virus spreads to the central nervous system. Medical treatment must be sought soon after exposure because death always follows once the infection becomes established.

46. It is stated in the passage that zoonosis ----.

- A) is a type of infection, but with more severe effects
- B) is an umbrella term including animal bite infections like rabies
- C) refers to animals transmitting certain diseases with the saliva
- D) is a kind of infection mostly seen in cats and dogs
- E) means nasty bites from seriously infected wild animals

47. One can understand from the passage that symptoms of rabies ----.

- A) might be hidden for several weeks after the animal bite
- B) could be observable immediately after the infection
- C) can deteriorate when the person develops fear of water
- D) can be relieved through medication even long after exposure
- E) are seen only after the virus invades the nervous at system

48. According to the passage, in all cases of rabies, ----.

- A) the virus is immediately established into the central nervous system
- B) medical care could save the person infected by the virus even if it becomes established
- C) if the patient is not treated soon, the animal bite can have fatal outcomes
- D) the animal with the virus is taken under control to determine medical treatment options
- E) a persistent headache sets in as soon as an individual gets bitten by a rabid animal

Western civilisation has had a love affair with sugar and chocolate for almost 500 years. For most of this time, these products were considered luxuries and few could easily afford to buy them or buy products made from them. Due to improvements in technology and agriculture, the price of sugar and chocolate declined greatly during the 19th century, such that most Americans could easily afford to buy sweets and chocolates. Moreover, generic American soft drinks originated in the late 18th century and rapidly expanded during the second half of the 19th century. At first, soft drinks were considered medicinal as many of America's most famous sodas were invented by medical professionals in drugstores. Soft drinks were products of the medical profession but they became popular largely due to the temperance movement that presented alternatives to alcoholic beverages. Years later, simultaneous with the growth of fast food and junk food, there has been a tremendous increase in obesity. The percentage of children and adolescents who are obese has doubled in the last 20 years. Today, 25 per cent of American children are classified as overweight. This should come as no surprise, for junk food and fast food are heavily marketed to America's youth, who consume vast quantities of both.

49. According to the passage, up until the 19th century, ----.

- A) sweets were a rare commodity exclusive to those who could afford it
- B) fast food consumption was directly correlated with increasing income
- C) the appeal of chocolate was that it was inexpensive
- D) the criticism of fast food spread throughout the country
- E) fast food was as popular as sweets

50. Despite their current prevalence, soft drinks ----.

- A) were originally developed as a pharmaceutical product
- B) were repeatedly praised for being tastier than medicine
- C) could surprisingly be purchased by lower middle-class
- D) had to be sold in drugstores rather than market chains
- E) are the leading cause of the increase in obesity

51. We understand from the passage that ----.

- A) there is a close relationship between fast food advertisements and the rise of childhood obesity
- B) obesity figures are low, but more people die prematurely due to illnesses related to obesity
- C) food production is not systemic, and is just a phenomenon of the fast food and junk food industries
- D) fast food materialised in the 20th century with the growth of multinational food companies
- E) eating fast food shows the relatively low value many Americans place on the food

Anxiety disorders, like other psychological disorders, are caused by a combination of biological, psychological, and social factors. If you have a family history of anxiety disorders, you may be more vulnerable to stress, and this may increase your risk of developing one. Sometimes, there may be a medical factor that is responsible for your anxiety, such as thyroid disease or substance abuse. And any such possible medical cause must be ruled out before your doctor can diagnose anxiety as a psychological disorder. To be diagnosed with generalised anxiety disorders, you must be unrealistically anxious about two or more life circumstances for at least six months. You must also have at least three of the following symptoms: problems with sleeping, fatigue, muscle tension, restlessness, inability to concentrate and irritability. Depending on your particular symptoms, your doctor may advise therapy, medication, or both. On the other hand, symptoms may be relieved by regular exercise, relaxation methods, avoiding caffeine and not smoking.

52. According to the passage, anxiety disorders ----.

- A) are a combination of other psychological disorders
- B) have three types and usually last for six months
- C) are psychological problems mostly caused by environmental factors
- D) should be diagnosed after eliminating other medical causes
- E) may result from therapies and medication

53. It is clear from the passage that, if your parents suffer from anxiety disorders, ----.

- A) this will increase your risk of developing an anxiety disorder
- B) there is probably a social factor causing it
- C) they should immediately take some medication
- D) they are advised to undergo a six-month therapy programme
- E) they should be careful with their eating habits

54. It can be concluded from the passage that ----.

- A) if you cannot concentrate on your job, you certainly have an anxiety disorder
- B) negative effects of anxiety can be lessened by several practices
- C) anxiety disorders are becoming more common day by day
- D) people with anxiety disorders have difficulty in waking up
- E) therapy and medication must be used together to get over anxiety disorders