Directions(1-4): Study the following information and answer the questions that follow

Unstanched haemorrhaging has only one end in all biological systems: death for an organism, extinction for a species. Researchers who study the trajectory of biodiversity loss are alarmed that, within the century, an exponentially rising extinction rate might easily wipe out most of the species still surviving at the present time.

The crucial factor in the life and death of species is the amount of suitable habitat left to them. When, for example, 90 per cent of the area is removed, the number that can persist sustainably will descend to about a half. Such is the actual condition of many of the most species-rich localities around the world, including Madagascar, the Mediterranean perimeter, parts of continental southwestern Asia, Polynesia, and many of the islands of the Philippines and the West Indies. If 10 per cent of the remaining natural habitat were then also removed – a team of lumbermen might do it in a month – most or all of the surviving resident species would disappear.

Today, every sovereign nation in the world has a protected-area system of some kind. All together the reserves number about 161,000 on land and 6,500 over marine waters. According to the World Database on Protected Areas, a joint project of the United Nations Environmental Program and the International Union for Conservation of Nature, they occupied by 2015 a little less than 15 per cent of Earth's land area and 2.8 per cent of Earth's ocean area. The coverage is increasing gradually. This trend is encouraging. To have reached the existing level is a tribute to those who have led and participated in the global conservation effort.

But is the level enough to halt the acceleration of species extinction? Unfortunately, it is in fact nowhere close to enough. The declining world of biodiversity cannot be saved by the piecemeal operations in current use alone. The extinction rate our behaviour is now imposing on the rest of life, and seems destined to continue, is more correctly viewed as the equivalent of a Chicxulub-sized asteroid strike played out over several human generations.

The only hope for the species still living is a human effort commensurate with the magnitude of the problem. The ongoing mass extinction of species, and with it the extinction of genes and ecosystems, ranks with pandemics, world war, and climate change as among the deadliest threats that humanity has imposed on itself. To those who feel content to let the Anthropocene evolve toward whatever destiny it mindlessly drifts, I say please take time to reconsider. To those who are steering the growth of reserves worldwide, let me make an earnest request: don't stop, just aim a lot higher.
I see just one way to make this 11th-hour save: committing half of the planet's surface to nature to save the immensity of life-forms that compose it. Why one-half? Because large plots, whether they already stand or can be created from corridors connecting smaller plots, harbour many more ecosystems and the species composing them at a sustainable level. As reserves grow in size, the diversity of life surviving within them also grows. A biogeographic scan of Earth's principal habitats shows that a full representation of its ecosystems and the vast majority of its species can be saved within half the planet's surface. At one-half and above, life on Earth enters the safe zone.

Q 1. Which of the following best summarizes the central idea of the passage?

1) It is crucial to save at least half of the earth in order to save every living being on it.

2) Saving human beings requires saving the earth.

3) The need of the hour is to save the endangered species from going extinct.

4) Mass extinction can be prevented by saving the earth.

Q 2. According to the passage, which trend is encouraging to the author?

1) Saving endangered species

2) Reviving extinct species

3) Natural area reserve system

4) Participation in global conservation effort

Q 3. Which of the following best explains the usage of the phrase "11th-hour save" in the context of the passage?

1) Using the earth's natural resources judiciously.

2) Conserve the immensity of life-forms on the earth.

3) Preventing mass extinction.

4) Not exhausting the resources from half of the planet.

Q 4. Which of the following is a rhetorical question that the author asks in the passage?

1) Is conserving the planet gradually enough to prevent mass extinction?

2) Is saving habitat save endangered species?

3) Is one half of the planet required to save life-forms on the earth?

4) Is human effort the only hope for their survival?

Directions(5-8): Study the following information and answer the questions that follow.

The traces of past water solutions are often hard to detect. During the 20th century, most rich countries deployed exquisite skill and vast resources to sever their relationship with their water past, creating the illusion that water on the landscape is nothing more than a modern, inert stage on which life plays out at the rhythm of the industrial economy. They wished to engineer away water, along with its unpredictability, burying it under a modern control of nature. For the most part, they succeeded.

No one in London (or anywhere else in the developed world beyond the UK, for that matter) wades a river going to work. The ancient tributaries of the Thames – the Walbrook, the Fleet, the Tyburn and the Westbourne – are lost inside the city's sewers. In the US, Manhattan has forgotten flowing water altogether, as 'Manahatta' – the island once watered by countless streams and springs – lies under a thick layer of 20th-century architecture. Most citizens of Tokyo or Osaka experience water from taps, a familiar jutting feature of bathrooms or kitchen walls everywhere in the rich world.

But as the train sped through Japan's constructed landscape, I realised that its relationship with water had a singular characteristic. Water, though controlled, had not disappeared. Japan's millennial landscape proudly bore centuries of visible scars from fighting with it. The past was in full view. Its legacy – the paddy fields, river development, levees constructed over centuries – seemed to be still central to the security infrastructure of the present.

Japan is not entirely alone in having integrated its water past visibly into the present. The Dutch, for example, rely on centuries of water management and associated historical infrastructure in their modern relationship to water. It is inevitable: the Netherlands is at the mouth of continental rivers and much of it is well below sea level, facing the same existential problems it faced in the 10th century. But it is an exception, alongside a few places like Venice, the ancient water city.

In most countries, water management is a modern solution to a contemporary problem. For the most part, the historical plumbing of Europe's landscape is buried under the cultivated fields of a land that enjoys a benign climate. Places with far more complex hydrology – India, the Amazon, even the Western US – once had rich Indigenous traditions of water management, but colonisation all but erased them. Modern infrastructure is a discontinuity entirely unrelated to their hydraulic past. China and Russia were transformed by communism's 20th-century ideological enthusiasm for hydraulic engineering. Almost everywhere, water's past is archeologically interesting, culturally important, but appears to be functionally obsolete, making it hard to read in the present.

But not in Japan. Conditions there are an unusual mix of difficult hydrology and historical continuity. The climate of this large, rich country is among the most diverse in the world, stretching from fully tropical latitudes at roughly 20 degrees north (south of Okinawa) to 45 degrees north, at the tip of Hokkaido, where midlatitude storms dominate. Its topography adds complexity. During the rainy seasons, water collects in about 3,000 unforgiving, short rivers, draining all sides of the young, steep mountains that cover most of Japan's territory, leaving marshes and swamps on what little flat land is left.

Q 5. Which of the following statements is NOT true to the context of the passage? Fact based

1) During the 20th century, many countries sever their relationship with their water past.

2) Japan is the only country having integrated its water past visibly into the present.

3) Water management is a modern solution to a contemporary problem.

4) India once had rich indigenous traditions of water management, but colonization erased it.

Q 6. Which of the following cannot be inferred from the passage?

1) Japan lost the sight of its water past.

2) China and Russia were transformed by communism's 20th-century ideological enthusiasm for hydraulic engineering.

3) Manahattan was once watered by countless streams and springs – lies under a thick layer of 20th-century architecture

4) The water past has become obsolete from many places.

Q 7. Which of the following is common between London and Manhattan?

1) They are inclined to use water transport.

2) They have an effective water management.

3) They have lost their water past to modernisation.

4) Their water's past is culturally important.

Q 8. Which of the following is NOT true about Japan according to the passage?

1) Water is not controlled.

2) Blend of difficult hydrology and historical continuity.

3) Water collection in about 3,000 short rivers during the rainy seasons.

4) Japan's history is not overshadowed by modernization.

Directions(9-12): Study the following information and answer the questions that follow

Desertification, the creation of desert-like conditions where none had existed before, is the result of the vagaries of most cases, in some, a combination of both. Such ecological deterioration in the Sahel has been likened in several ways to the increased size of live stock herds. During the 15 years preceding 1968, a period of extremely favourable rainfall, the pastoralists moved into the marginal regions in the north with relatively large herds. However, with the onset of a series of dry years beginning at the end of the rainy season in 1967, the pastoral population found themselves overtaxing very marginal rangelands, with the result that the nomads viewed themselves as victims of a natural disaster. The mistaken idea excuses the fact that long-range planning has failed to take rainfall variability into account. People blame the climate for agricultural failures in semi-arid regions and make it a escape-goat for faulty population and agricultural policies.

Deterioration and ultimately desertification in the Sahel and in other ecosystems can be combated only if an ecologically realistic carrying capacity for the rangelands is determined. Although there appears to be widespread agreement that such a determination would be significant, there has been little agreement on how to make operational the concept of carrying capacity, defined as the amount of grazing stock. Should the carrying capacity be geared to the best, the average, or the poorest years? Which combination of statistical measures would be most meaningful for the planning of long-term development of rangelands? On which variables should such an assessment be based — vegetation, rainfall, soil, ground and surface water or managerial capabilities? Such inconclusiveness within the scientific community, while understandable creates confusion for the land managers, who often decide to take no action or

who decide that all scientific suggestions are of equal weight and, therefore, indiscriminately choose any one of those suggested. Given the downward spiral of land deterioration, it becomes essential that an ecologically acceptable carrying capacity be established and enforced.

It will also be crucial that land managers know what statistical and quasi-statistical measures actually mean: no single number can adequately describe the climate regime of an arid or semi-arid region. Land managers must supplement such terms as the 'mean' with more informative statistical measures to characterise adequately the variability of the climate. The understanding of this high degree of variability will serve to remove one of the major obstacles to resolving the perennial problems of the Sahel and the other arid or semi-arid regions.

Q 9. Which of the following correctly describes the primary purpose of the author?

1) Criticizing a social attitude.

2) Suggesting an approach to solving problems.

3) Explaining the mechanics of a process.

4) Defending the theories of ecological scientists.

Q 10. According to the passage, which of the following contributed to the desertification of the Sahel? Fact based
(i) The size of livestock herds grazing on land
(ii) The quality of land in Sahel
(iii) The amount of rainfall after 1967

1) (i) only

2) (ii) only

3) (iii) only

4) (i), (ii), (iii)

Q 11. With which of the following statements concerning desertification would the author be most likely to agree?

1) It is the result of factors beyond the control of science.

2) It is a problem largely affecting arid regions.

3) It is not attributable to faulty agricultural policies.

4) It is not always the result of drastic climate changes alone.

Q 12. Which of the following can be inferred about the concept of the carrying capacity of land?

1) It is a theoretical rather than practical concept.

2) It is basically political rather than ecological.

3) It is independent of climatic conditions.

4) It is generally misrepresented by ecologists.

Directions (13-16): Study the following information and answer the questions that follow

Music makes you lose control, Missy Elliott once sang on a hit that is almost impossible to hear without bopping along. Now scientists have discovered that rats also find rhythmic beats irresistible, showing how they instinctively move in time to music.

This ability was previously thought to be uniquely human and scientists say the discovery provides insights into the animal mind and the

origins of music and dance.

“Rats displayed innate – that is, without any training or prior exposure to music – beat synchronisation,” said Dr Hirokazu Takahashi of the University of Tokyo.

“Music exerts a strong appeal to the brain and has profound effects on emotion and cognition,” he added.

While there have been previous demonstrations of animals dancing along to music – TikTok has a wealth of examples – the study is one of the first scientific investigations of the phenomenon.

In the study, published in the journal Science Advances, 10 rats were fitted with wireless, miniature accelerometers to measure the slightest head movements. They were then played one-minute excerpts from Mozart’s Sonata for Two Pianos in D Major, at four different tempos: 75%, 100%, 200% and 400% of the original speed. Twenty human volunteers also participated.

The scientists thought it possible that rats would prefer faster music as their bodies, including heartbeat, work at a faster pace. By contrast, the time constant of the brain is surprisingly similar across species.

However, the results showed that both the rat and human participants had optimal beat synchronicity when the music was in the 120-140 beats per minute (bpm) range – close to the Mozart composition’s original 132bpm – suggesting we share a “sweet spot” for hitting the beat. The team also found that rats and humans jerked their heads to the beat in a similar rhythm, and that the level of head jerking decreased the more that the music was sped up.

“Our results suggest that the optimal tempo for beat synchronisation depends on the time constant in the brain,” said Takahashi.

The team now plans to investigate how other musical properties such as melody and harmony relate to the dynamics of the brain. “Also, as an engineer, I am interested in the use of music for a happy life,” said Takahashi

Q 13. Which of the following statements does not align with the passage.

1) The scientists had estimated that the preference for the type of music would be similar across the species.

2) Rhythmic movements to music come natural in rats.

3) Emotions can be influenced through music.

4) The scientists believed that synchronisation to rhythmic beats were unique to humans.

Q 14. The author used the phrase “sweet spot” in the context of

1) An organ that triggers the effects of music in rat’s body

2) A specific range of bpm for listening to music in rat and human bodies

3) An organ that receives the effects of music in rats and humans alike

4) An optimal response to music in both rats and humans

Q 15. Which of the following is Not aligned with the study published in the journal Science Advances?

1) The study was conducted with the participants of different species

2) The humans prefer faster music as compared to rats

3) The rats have similar head movements to humans in response to music

4) The participants were exposed to four different tempos of the original speed of Sonata

---

Directions (13-16): Study the following information and answer the questions that follow

Music makes you lose control, Missy Elliott once sang on a hit that is almost impossible to hear without bopping along. Now scientists have discovered that rats also find rhythmic beats irresistible, showing how they instinctively move in time to music.

This ability was previously thought to be uniquely human and scientists say the discovery provides insights into the animal mind and the origins of music and dance.

"Rats displayed innate – that is, without any training or prior exposure to music – beat synchronisation," said Dr Hirokazu Takahashi of the University of Tokyo.

"Music exerts a strong appeal to the brain and has profound effects on emotion and cognition," he added.

While there have been previous demonstrations of animals dancing along to music – TikTok has a wealth of examples – the study is one of the first scientific investigations of the phenomenon.

In the study, published in the journal Science Advances, 10 rats were fitted with wireless, miniature accelerometers to measure the slightest head movements. They were then played one-minute excerpts from Mozart's Sonata for Two Pianos in D Major, at four different tempos: 75%, 100%, 200% and 400% of the original speed. Twenty human volunteers also participated.

The scientists thought it possible that rats would prefer faster music as their bodies, including heartbeat, work at a faster pace. By contrast, the time constant of the brain is surprisingly similar across species.

However, the results showed that both the rat and human participants had optimal beat synchronicity when the music was in the 120-140 beats per minute (bpm) range – close to the Mozart composition's original 132bpm – suggesting we share a "sweet spot" for hitting the beat. The team also found that rats and humans jerked their heads to the beat in a similar rhythm, and that the level of head jerking decreased the more that the music was sped up.

"Our results suggest that the optimal tempo for beat synchronisation depends on the time constant in the brain," said Takahashi.

The team now plans to investigate how other musical properties such as melody and harmony relate to the dynamics of the brain. "Also, as an engineer, I am interested in the use of music for a happy life," said Takahashi

Q 16. Which of the following is the conclusion of the passage?

1) Music has the same effect on other species as on humans.

2) Emotions can be altered through music.

3) The optimal tempo for beat synchronisation depends on the time constant in the brain.

4) Rats enjoy music as much as human do

Q 17. The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:

1. They seem to be entirely contingent, their amplification on the global scale dependent on how many people are paying attention.
2. Contemporary events appear in ever-shifting configurations.
3. A massacre and a wardrobe malfunction are put on the same level of intense scrutiny and curiosity, attitudes that just as quickly latch on to another object.
4. Moreover, the vicissitudes of spotlighting such events are daily, if not hourly: something that was the focus of attention yesterday may be forgotten today.

Q 18. The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:

1. Whitehead provides a fascinating picture of the coins by inventorying these singular items in collections around the world and tracing their history through records and commentaries over centuries.
2. He describes a range of coins, making special note of the Iconography of particularly striking pieces or unique imagery from each of the mints.
3. Examples of the latter include the gold Gemini of Ajmer (Twins facing each other and embracing") and Scorpio of Lahore ("tail to the left"), and the Fatehpur Aquarius.
4. Though no source lists a definitive number of different representations, Whitehead does give his readers an overview based on his consultation of existing material.

Q 19. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Shyamlatal, a natural rain-fed wetland located at an elevation of 1300m in Champawat District, owes its prime conservation value in the Himalayan state of Uttarakhand, India. A record of 64 species and 45 genera under six butterfly families was made from the catchment area of watershed and surrounding forests surveyed during 2016 to 2018. The overall species richness and diversity of butterflies varied across seasons and the high similarity in butterfly composition was observed during summer and autumn. Results provided baseline information on the importance of mosaic of vegetation in sustaining rich butterfly diversity around the wetland, which must be managed and conserved for maintaining ecological health and integrity of the region.

1) An overview of the natural diversity and ecological wealth of Uttarakhand.

2) Butterfly variety and abundance in wetland environment of Shyamlatal and the role of vegetation in maintaining butterfly diversity.

3) Butterfly variation and abundance in the Himalayas and how pollution is affecting the butterfly population.

4) Animal diversity in the Himalayas and how vegetation can go a long way in promoting ecological diversity.

Q 20. The four sentences (labelled 1, 2, 3, 4) below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequencing of the order of the sentences and key in the sequence of the four numbers as your answer:
1. Each site is shown in a busy cutaway illustration that spans two pages.
2. There are several subterranean settlements around the world, and this intriguing picture book profiles 15 of them.
3. Brief, standardized, small-font text entries cover the basics.
4. The name, who built it when and why, what people can do there (live, work, study, vacation), and interesting titbits are the other details that find place in the book.

Q 21. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Attribution is the process of inferring the causes of events or behaviors. In real life, attribution is something we all do every day, usually without any awareness of the underlying processes and biases that lead to our inferences. people make inferences about others in cases where actions are intentional rather than accidental. One possible explanation for these attributions is that when people see others acting in certain ways, they look for a correspondence between the person's motives and his or her behaviors. The inferences people then make are based on the degree of choice, the expectedness of the behavior, and the effects of that behavior.

1)
Attribution is a process which deals with how individuals understand the causes of everyday experience and can be based on a perceived alignment between a person's motivations and their behavior.

2)
Over the course of a typical day, we make numerous attributions about our own behavior as well as that of the people around us and we tend to do this in ways that allow us to make future predictions.

3)
The attributions we make each and every day has an important influence on our feelings as well as how we perceive other people; that is why we make attributions that place us in the best possible light.

4)
People observe others, analyze their behavior, and come up with their own common-sense explanations for such actions; these explanations are either externally or internally attributed to events or traits.

Q 22. The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

Some tiny birds take bold risks to gather a beakful of hair for their nests. The scientific term for the unusual behavior is kleptotrichy. Derived from the Greek words for "to steal" and "hair," kleptotrichy has rarely been described by scientists, but dozens of YouTube videos capture the behavior. Scientists generally assume that birds gather hair for their nests in low-risk ways, relying on carcasses or stray fluff shed into the wind. Hair-harvesting species tend to live in colder climates, so those birds probably prize hair's insulating properties, scientists says. Some birds might also spruce up their nests with mammal hair to confuse would-be predators and parasites.

1)
The scientific recognition granted to kleptotrichy on the basis of YouTube videos has reinforced the claim that popular observations precede science rather than the other way around, which is a completely valid way to do science.

2)
Though kleptotrichy has existed in the animal world for a long time, the lack of any scientific interest and research forced several YouTubers to document this behavior which has ultimately resulted in its worldwide recognition.

3)
Rarely described by scientists, Kleptotrichy is nevertheless a documented behavior that involves the risky harvesting of animal hair by some birds for numerous reasons ranging from its insulating properties to a desire to confuse possible predators.

4)
Kleptotrichy, though a documented behavior in some birds that involves the harvesting of animal hair for numerous reasons that include its insulating properties and to confuse possible predators, has captured the imagination of scientists.

Q 23. Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. “This find (the fish teeth) pushes back the antiquity of cooking by more than 600,000 years,” said Irit Zohar.
2. Archaeologists had in 2004 identified Benet Ya’aqov as a site where early humans controlled fire.
3. Fish-loving Bengal can tuck into this: the world’s first cooked meal was freshwater fish.
4. The teeth of two fish species from the carp family found at a site near the Jordan river in Israel represent the earliest evidence of cooking by humans
5. Until now, the charred remains of starchy wild root vegetablesin a cave in South Africa and dated to about 170,000 years ago were viewed as evidence of the earliest cooking.

Q 24. Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. In the north, led by just two states, the population is still rising.
2. In the richer south, numbers are stabilising and in some areas declining.
3. The cry of a baby born in India one day next year will herald a watershed moment for the country, when India overtakes China as the world’s most populous nation.
4. Yet the story of India’s population boom is really two stories.
5. A small family is now the norm in India, and the annual population growth rate less than 1%.
