

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

1. Consider the following statements about the “Agriculture Innovation Mission for Climate (AIM for Climate)

1. This initiative was launched by India and USA
2. The objective of this mission is to increase investments in climate smart agriculture and food systems
3. This initiative is being implemented for 5 years between 2021-25

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: c (2 and 3 only)

Statement 1 is incorrect: The Agriculture Innovation Mission for Climate (AIM for Climate/AIM4C) is a joint initiative by the United States and the United Arab Emirates. AIM for Climate seeks to address climate change and global hunger by uniting participants to significantly increase investment in and other support for climate-smart agriculture and food systems innovation over five years (2021 – 2025).

Statement 2 is correct: Demonstrate collective commitment to significantly increase investment in agricultural innovation for climate-smart agriculture and food systems over five years (2021-2025). Support frameworks and structures to enable technical discussions and the promotion of expertise, knowledge, and priorities across international and national levels of innovation to amplify the impact of participants’ investments. Establish appropriate structures for exchanges between Ministers and chief scientists, and other appropriate stakeholders as key focal points and champions for cooperation on climate-related agricultural innovation to engender greater co-creation and cooperation on shared research priorities between countries.

Statement 3 is correct: This initiative is being implemented for a period of 5 years between 2021-25

2. Consider the following statements about Dhara Mustard Hybrid (DMH-11)

1. DMH-11 was the second genetically modified crop being allowed for commercial cultivation
2. It is developed by Indian Council of Agriculture Research (ICAR)
3. Barnase-Barstar gene system was used to prevent self-pollination
4. DMH-11 will impact the honey production in India

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is incorrect: The Genetic Engineering Appraisal Committee (GEAC) that functions under the Union Environment Ministry has yet again cleared the proposal for the commercial cultivation of genetically modified (GM) mustard. The environmental clearance means that the genetically modified (GM) mustard, named Dhara Mustard Hybrid (DMH-11), can now be grown in open fields for trials, demonstrations and seeds, a precursor to the approval for commercial cultivation of the country's first GM food crop. However since the final approval by the government is not yet obtained a pre-field trials are going on commercial scale.

Statement 2 is incorrect: Dhara Mustard Hybrid (DMH-11) is transgenic mustard developed by Delhi University for seed production and testing before its commercial release. Thus The crop is not developed by the Indian Institute of Rice Research.

Statement 3 is correct: The main reason for introducing the Barnase-Barstar gene system into the transgenic mustard line, was for heterosis breeding and to prevent self-fertilization. The insertion of the Barnase gene induces genetic male sterility by preventing the production of the male gametophytes (pollen grains) in the mustard plant.

Statement 4 is correct: cultivators have opposed the GM mustard variety and asked the Government not to approve it for commercial cultivation, claiming that it may adversely affect the livelihood of lakhs of farmers.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

3. Consider the following statements about 'The Maritime Anti-Piracy Act: 2022'

1. This act didn't clearly define the term 'Piracy'
2. It applies to India's Exclusive Economic Zone, which lies up to 200 nautical miles and also beyond.
3. This act authorised the coast guard to arrest any person who involved in Piracy
4. The highest punishment prescribed under this act is death sentence

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is incorrect: The act clearly defined the term 'piracy' as

(i) any illegal act of violence or detention or any act of depredation committed for private ends by any person or by the crew or any passenger of a private ship and directed on the high seas against another ship or any person or property on board such ship; (ii) any act of voluntary participation in the operation of a ship with knowledge of facts, making it a pirate ship; (iii) any act of inciting or of intentionally facilitating an act described in sub-clause (i), (iv) any act which is deemed piratical under the international law including customary international law.

Statement 2 is correct: Parliament has passed the Maritime Anti Piracy Act 2022. The Act enables Indian authorities to act against high-seas piracy. It will apply to all sea areas surrounding and extending beyond India's Exclusive Economic Zone or 200 nautical miles from the coast. The Act defines piracy as any illegal act of violence, detention, or destruction against a ship, aircraft, or person, for private purposes, by the crew or passengers of a private ship or aircraft.

Statement 3 is incorrect: Section 6 provides the list of persons/authorities to arrest any person
Conferment of power of arrest, investigation, etc.—
Notwithstanding anything contained in the Code, the Central Government may, for the purposes of this Act, by notification, confer the powers of arrest,

investigation and prosecution of any person exercisable by a police officer under the Code on any of its officer or such officer of a State Government.

Statement 4 is correct: Section 3 provides for the punishment under this act

Punishment for piracy.—Whoever commits any act of piracy, shall be punished— (i) with imprisonment which may extend to imprisonment for life or with fine or with both; or (ii) with death or with imprisonment for life, if such person in committing the act of piracy causes death or an attempt thereof, and in addition shall also be subject to restitution or forfeiture of property involved in the commission of such offence.

4. Consider the following statements

1. Great Indian bustards are found only in the state of Rajasthan.
2. Hoolock gibbons are the only ape found in India
3. Asiatic lions can be found only in Gir Forest
4. Lion tailed macaque is found only in Kerala and Tamilnadu

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is incorrect: Great Indian Bustard (*Ardeotis nigriceps*) is a flagship species with a population ranging from 35 to 40 and is mainly concentrated in the Sudashri landscape area of Desert National Park Sanctuary in Rajasthan. Another satellite called Naath ji ka tanka- Ramdeora Closure in Rajasthan has a population of 5 to 10 individuals. Historically, the great Indian bustard was distributed throughout Western India, spanning 11 states and parts of Pakistan. Its stronghold was once the Thar desert in the northwest and the Deccan plateau of the peninsula. Today, its population is confined mostly to Rajasthan and Gujarat. Small populations occur in Maharashtra, Karnataka and Andhra Pradesh. IUCN status : Critically Endangered.

Statement 2 is correct: The Hoolock gibbon is the only ape species found in the Indian subcontinent. It

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

is further classified into Western and Eastern Hoolock Gibbons, depending on their range. Western Hoolock Gibbons are found throughout northeast India, in regions between the south of the Brahmaputra River and east of the Dibang River, where they reside in forests. Assam is home to India's only ape species, the hoolock gibbon. The Hoollongapar Gibbon Sanctuary, located in Jorhat, Assam, covers an area of about 20.98 sq km, enveloped by gorgeous tea gardens and lovely little northeastern hamlets such as Rampur, Madhpur, Lakhimpur and Velleoguri. Along with habitat loss and human interference with their habitats, the gibbons are also hunted for food or perceived medicinal benefits.

Statement 3 is correct: Asiatic lions were once distributed up to the state of West Bengal in the east and Rewa in Madhya Pradesh, in central India. At present, Gir National Park and Wildlife Sanctuary is the only abode of the Asiatic lion. The last surviving population of the Asiatic lions is a compact tract of dry deciduous forest and open grassy scrublands in the southwestern part of the Saurashtra region of Gujarat.

Statement 4 is incorrect: The lion-tailed macaques are only native to India. There, they live in the Western Ghats hills and mountains of southwestern India. They are primarily endemic to small and severely fragmented rainforests of the Western Ghats in Karnataka, Kerala and Tamil Nadu.

5. Consider the following statements about Key Biodiversity Areas (KBA)

1. KBA is a site that contributes significantly to the global persistence of biodiversity.
2. It helps private sector companies and financial institutions to minimize the environmental and social risks of a project
3. IUCN provides guidelines for inclusion of any site into KBA
4. All Important Bird and Biodiversity Areas (IBAs) are KBAs.

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: Key Biodiversity Areas (KBAs) are the most important places in the world for species and their habitats. Faced with a global environmental crisis, we need to focus our collective efforts on conserving the places. The KBA Programme supports the identification, mapping, monitoring and conservation of KBAs to help safeguard the most critical sites for nature on our planet – from rainforests to reefs, mountains to marshes, deserts to grasslands and the deepest parts of the oceans. Key Biodiversity Areas (KBAs) is a site that contributes significantly to the global persistence of biodiversity. This can mean that the site contains many unique species and is home to one species found nowhere else or in only a few other places.

Statement 2 is correct: If a site is recognized as a KBA, that can be hugely influential to private sector companies and financial institutions who have committed to the Equator Principles—a framework to minimize the environmental and social risks of a project. Among these, the International Finance Corporation's Performance Standards on Environmental and Social Sustainability (2012), now adopted by the 84 Equator Principles Financial Institutions, and the World Bank Environmental and Social Framework (2016), have become globally recognized standards in dealing with environmental and social risk management. Both of these standards introduce the concept of critical habitats, which significantly overlaps with KBAs.

Statement 3 is correct: IUCN has provided a criteria to include any site into KBA based on various parameters and it also provided for provisions for boundaries etc.

Statement 4 is correct: Important Bird and Biodiversity Areas (IBAs) are sites of international significance for the conservation of the world's birds and another biodiversity. They also provide essential benefits to people, such as food, materials, water, climate regulation and flood protection, as well as opportunities for recreation and spiritual fulfilment. All IBAs are KBAs for birds at the global or regional level. IBAs comprise 80% of KBAs identified to date and will form the backbone of a globally

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

comprehensive set of KBAs. For example, in five global biodiversity hotspots spanning all or part of 74 countries and territories, globally important terrestrial sites have been systematically identified for birds, mammals, reptiles, amphibians and plants; 68% of the resulting 1,993 KBAs are IBAs. In contrast, these sites cover 76% of the total area of the KBA network in these hotspots.

6. Consider the following statements about Air Pollution in India

1. The SAFAR App introduced by the Ministry of Environment, Forest and climate change measures the location-specific air quality of the city.
2. The Alliance for Clean Air, launched by the World Economic Forum at the COP26 climate change conference in 2021 to reduce air pollution across value chains.
3. IQAir AirVisual app provide air pollution related data across over 10,000 cities world wide
4. Indore air pollution is 5 times more worse than outside air pollution in India

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is incorrect: Ministry of Earth Sciences, Government of India, has the distinction of providing India's first locationspecific Air Quality Forecasting system SAFAR for Metro cities. SAFAR was conceived and developed by the ministry's constituents and India's premier research institute, the Indian Institute of Tropical Meteorology, Pune. While the multilingual app is available in four languages (English, Hindi, Gujarati, and Marathi), its interface resembles a website from the early 2000s.

Statement 2 is correct: The Alliance for Clean Air launched at COP26 (Glasgow) in 2021 by the World Economic Forum in partnership with the Clean Air Fund brings together business leaders to measure and reduce value chain air pollutant emissions, invest in innovation, and work with policymakers and peers to

champion the social, economic and climate benefits of tackling air pollution.

Statement 3 is correct: IQAir AirVisual - one of the most comprehensive air pollution monitors, providing real-time weather data for over 10,000 cities worldwide. The app also offers health recommendations to help you achieve minimum exposure to pollutants.

Statement 4 is correct: Experts said that as most people spend winter days inside and even though the indoor air quality may appear to be better than outdoor air quality, it can be up to five times worse. The indoor and outdoor air pollution are often treated as two separate entities but outdoor pollutants, such as vehicle exhaust fumes, pollen and mould spores, can also enter our indoor spaces.

The harmful dust, dirt and gases present inside buildings are linked to several health concerns like cardiovascular diseases, chronic lung diseases and/or development of several infections. The main cause behind indoor air pollution is known to be gases or particles released into the air, substances like building materials, tobacco smoke, wood-burning stoves cause indoor pollution.

7. Consider the following statements about Seaweed Mission

1. It was launched by Technology Information, Forecasting and Assessment Council (TIFAC).
2. Seaweed is chock-full of vitamins, minerals, and fiber and can be tasty.
3. Seaweed benefits from ocean acidification as it improve the carbon dioxide availability to seaweed
4. Seaweed helps in production of bioethanol

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: Technology Information, Forecasting and Assessment Council (TIFAC) under the Department of Science & Technology, Government of India, launched by Seaweed Mission

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

for commercial farming seaweeds and its processing for value addition towards boosting the national economy.

Statement 2 is correct: Seaweed is chock-full of vitamins, minerals, and fiber and can be tasty. For at least 1,500 years, the Japanese have enrobed a mixture of raw fish, sticky rice, and other ingredients in a seaweed called nori. The delectable result is a sushi roll. Many types of seaweed contain anti-inflammatory and anti-microbial agents. Certain seaweeds possess powerful cancer-fighting agents that researchers hope will eventually prove effective in treating malignant tumors and leukemia in people.

Statement 3 is incorrect: Ocean acidification can have both positive and negative impacts on seaweed. Here are some of the effects:

1. **Growth and Photosynthetic Capacity:** Previous studies have shown that seaweeds grown under acidified conditions may alter their growth and photosynthetic capacity. Some species of seaweed may experience reduced growth rates and impaired photosynthesis when exposed to increased acidity in the ocean.
2. **Productivity:** However, there have been cases where seaweed actually grew more and photosynthesized more effectively in acidified water. This suggests that the impact of ocean acidification on seaweed productivity can vary depending on the species and environmental conditions.
3. **Grazing Pressure:** Ocean acidification has been found to decrease grazing pressure on seaweed. This means that certain herbivores that feed on seaweed may be less inclined to consume it when exposed to acidified conditions. This could potentially lead to an increase in seaweed abundance in certain areas.
4. **Ecological Importance:** Seaweeds play a crucial role in marine ecosystems by providing habitat, food, and shelter for a variety of organisms. Changes in seaweed abundance and distribution due to ocean acidification can have cascading effects on the entire ecosystem.

5. **Aquaculture:** Ocean acidification scenarios may impact the productivity of aquacultured seaweeds. The tolerance ranges of different seaweed species to acidification can determine whether their productivity increases or decreases under such conditions.

It is important to note that the specific effects of ocean acidification on seaweed can vary depending on factors such as species, location, and the severity of acidification. Further research is needed to fully understand the long-term consequences of ocean acidification on seaweed and marine ecosystems.

Statement 4 is correct: Ethanol can be easily produced from seaweeds by hydrolyzing glucans to obtain glucose and ferment the resulting glucose. However, the low glucan contents in seaweeds reduce the yields and concentrations of the ethanol produced in this manner.

8. Consider the following statements about Lead pollution

1. Global Environment Facility funds projects in different countries that aim to support enacting legally binding controls on lead paint.
2. As per WHO, lead exposure to 10 PPM is safe for human beings
3. Lead in bones is a source of Lead pollution to new born children
4. India has not introduced any legally binding control on lead paints

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: WHO has joined with the United Nations Environment Programme to form the Global Alliance to Eliminate Lead Paint. WHO is also a partner in a project funded by the Global Environment Facility that aims to support at least 40 countries in enacting legally binding controls on lead paint. The phasing out of lead paint by 2020 is one of the priority actions for governments included in the WHO.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Statement 2 is incorrect: There is no level of exposure to lead that is known to be without harmful effects. Hence there are no global safe limits on the exposure of Lead

Statement 3 is correct: Lead is a cumulative toxicant that affects multiple body systems and is particularly harmful to young children. Lead in the body is distributed to the brain, liver, kidney and bones. It is stored in the teeth and bones, where it accumulates over time. Human exposure is usually assessed through the measurement of lead in blood. Lead in bone is released into the blood during pregnancy and becomes a source of exposure to the developing fetus.

Statement 4 is incorrect: As of 30 June 2022, 45% of countries have confirmed that they have legally binding controls on the production, import, sale and use of lead paints. India has introduced legally binding control on lead paint.

9. Consider the following statements about Noise pollution

1. The World Health Organization (WHO) recommends that noise exposure levels should not exceed 70 dB over a 24-hour period and 85 dB over a 1-hour period to avoid hearing impairment.
2. In India, Noise Pollution Control and Regulations Rules, 2000, notified under Air (Prevention and Control of Pollution) Act, 1981 to regulate noise pollution
3. Under these rules, state governments are authorised to categorise areas into specific zones and provide various noise pollution standards
4. 100 meters around hospital, school, religious places and court are declared as noise free zones.

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: The World Health Organization (WHO) recommends that noise exposure levels should not exceed 70 dB over a 24-

hour period and 85 dB over a 1-hour period to avoid hearing impairment.

Statement 2 is incorrect: Earlier, noise pollution and its sources were addressed under the Air (Prevention and Control of Pollution) Act, 1981. They are now, however, regulated separately under the Noise Pollution (Regulation and Control) Rules, 2000, notified under Environment Protection Act, 1986 (the "Environment Act"). Additionally, noise standards for motor vehicles, air-conditioners, refrigerators, diesel generators and certain types of construction equipment are prescribed under the Environment (Protection) Rules, 1986. Noise emanating from industry is regulated by State Pollution Control Boards / Pollution Control Committees (SPCBs / PCCs) for states / Union territories under the Air (Prevention and Control of Pollution) Act, 1981.

Statement 3 is correct: (1) The ambient air quality standards in respect of noise for different areas/zones shall be such as specified in the Schedule annexed to these rules.

(2) The State Government [3][shall] categorize the areas into industrial, commercial, residential or silence areas/zones for the purpose of implementation of noise standards for different areas.

(3) The State Government shall take measures for abatement of noise including noise emanating from vehicular movements and ensure that the existing noise levels do not exceed the ambient air quality standards specified under these rules.

Statement 4 is incorrect: State government consider an area comprising not less than 100 meters around hospitals, educational institutions and courts may be declared as silence area/zone for the purpose of these rules not include any religious place under the silence zone.

10. Consider the following statements about Biodiversity Heritage Sites (BHS)

1. BHS are well defined areas that are unique, ecologically fragile ecosystems
2. The State Government shall notify areas of biodiversity importance as biodiversity heritage sites under the biological diversity act, 2002

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

3. Ameenpur lake is the only site from Telangana listed as BHS
4. Kerala has the highest number BHS sites in India

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: Biodiversity Heritage Sites (BHS) are areas that are unique, ecologically fragile ecosystems having rich biodiversity comprising of any one or more of the components such as; species richness, high endemism, presence of rare, endemic and threatened species, keystone species, species of evolutionary significance, wild ancestors of domestic/cultivated species or landraces or their varieties, past pre-eminence of biological components represented by fossil beds and having cultural or aesthetic values.

Statement 2 is correct: Section 37 of the Biological Diversity Act, the State Governments are empowered to notify in the official gazette, in consultation with 'local bodies,' areas of biodiversity importance as Biodiversity Heritage Sites. Under sub-section (2) of Section 37 of the BD Act, the State Government may frame rules for the management and conservation of BHS in consultation with the Central Government. Under sub-section (3) of Section 37 of the BD Act, the State Governments are empowered to frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification.

Statement 3 is correct: Ameenpur lake in the only site in Telangana to be listed in Biodiversity Heritage list

Statement 4 is incorrect: Karnataka (13) has highest BHS followed by Kerala (12) and Maharashtra (9)

11. Consider the following statements about Coral Reefs

1. Coral reefs are referred to as the medicine chests of the sea

2. Zooxanthellae are generally slow-growing colonies of animals, while corals are fastgrowing plants
3. Corals are included in Schedule I of the Wildlife protection act of 1972.
4. Corals are the largest living structures and only structures visible from space

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: Coral reefs are often referred to as the medicine chests of the sea. A number of creatures found on reefs produce chemical compounds that have been isolated to treat human diseases—and researchers believe that many more are yet to be discovered. Soft corals, in particular, have been found to possess compounds that could be used to treat various types of cancers. E.g., Secosteroids and Norcembranoids from the Soft Coral *Sinularia nanolobata*.

Statement 2 is incorrect: Corals are invertebrate animals belonging to a large group of colorful and fascinating animals called Cnidaria. Coral has a symbiotic relationship (each gives something to the other and gets something back in return) with 'zooxanthellae' microscopic algae which live on coral. The corals are generally slow-growing colonies of animals, while zooxanthellae are fast-growing plants.

Statement 3 is correct: Corals are marine invertebrates that attach themselves to rocky intertidal regions or the ocean floor and are carnivorous animals. Corals are Schedule 1 species under the Wildlife Protection Act, 1972, meaning corals have the same protection as that of a tiger or a leopard.

Statement 4 is correct: Hard corals extract abundant calcium from surrounding seawater and use this to create a hardened structure for protection and growth. Coral reefs are therefore created by millions of tiny polyps forming large carbonate structures and are the basis of a framework and home for hundreds of thousands, if not millions, of other species. Coral

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

reefs are the largest living structure on the planet and the only living structure to be visible from space.

12. Consider the following factors which influence the degree of ecological diversity of a region

1. Edge effect
2. Geological history
3. Ecological Niche
4. Having a similar habitat

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Explanation: An ecosystem is a structural and functional unit of the biosphere consisting of a community of living beings and the physical environment, interacting and exchanging materials between them. Certain factors determine the degree of diversity in a region or place for ecosystem diversity

- Ecotone or Edge effect – Ecotone is a zone of junction between two or more diverse ecosystems. It may be narrow or wide. The number of species and the population density of some species are much greater in this zone than in either community, which is called the edge effect.
- Geological History – Historically, some forests, like Evergreen forests, witness no changes in the ecosystem; therefore, it determines the species richness in that particular ecosystem. In contrast, Species richness in the Arctic regions is low, as there is a change in the ecosystem. So, Geological history determines the diversity of the species.
- An ecological Niche is a species' unique functional role or place in an ecosystem. A niche is unique for a species, meaning no two species have identical niches. Niche plays an important role in the conservation of organisms. If the species is conserved, then the requirements of its niche should be fulfilled.

- Having a similar habitat – A large number of different species in a particular habitat determines species richness (a measure of the number of different types of species in an ecosystem).

13. Consider the following statements about Black Carbon

1. Black carbon is formed primarily by the high temperature incomplete combustion of fossil fuels
2. Black carbon has a cooling effect on the earth

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: a (Only 1)

Statement 1 is correct: Black carbon, or soot, is part of fine particulate air pollution (PM_{2.5}) and contributes to climate change. Black carbon is formed by the incomplete combustion of fossil fuels, wood and other fuels. Complete combustion would turn all carbon in the fuel into carbon dioxide (CO₂), but combustion is never complete, and CO₂, carbon monoxide, volatile organic compounds, and organic carbon and black carbon particles are all formed in the process. The complex mixture of particulate matter resulting from incomplete combustion is often referred to as soot.

Statement 2 is incorrect: Black carbon warms the atmosphere because it is very effective at absorbing light. It exacerbates warming of the air and surfaces in regions where it is concentrated, altering weather patterns and ecosystem cycles.

14. Consider the following statements about Epiphytes

1. Epiphytes are organisms that grow upon a living plant for support and are not parasites.
2. Most orchids are epiphytes
3. The richest concentration of orchids is believed to be in Ziro Valley, Himachal Pradesh
4. Epiphytes obtain their water and other essential minerals from host tree

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: Epiphyte, also called air plant, is any plant that grows upon another plant or object merely for physical support. Epiphytes have no attachment to the ground or other obvious nutrient sources and are not parasitic on the supporting plants. Aerial roots of epiphytes are greenish and covered with spongy tissue (Velamen) with which they absorb atmospheric moisture.

Statement 2 is correct: Approximately 70 percent of all orchids are epiphytes, plants that grow on other plants. Epiphytic orchids are largely confined to the tropics and subtropics, where day length and the aspect of the sun vary little with the seasons and temperature ranges are generally stable and above freezing. In contrast, almost any part of a tree can be host to epiphytic orchids.

Statement 3 is incorrect: Botanical Survey of India published the first comprehensive orchid census of the country last year, and Arunachal Pradesh emerged as its top contributor. Unsurprisingly, nearly half (612 out of 1256) of India's orchid species can be found in the Northeastern state. In Arunachal Pradesh, the richest concentration of orchids is believed to be in Ziro Valley. An orchid translocation project since 2017 has led to the discovery of more than 20 species in the area. Ziro Valley is located in Arunachal Pradesh, not in Himachal Pradesh.

Statement 4 is incorrect: Epiphytes are organisms, especially plants that live on other plants. They are sometimes called epibionts and air plants. Generally, they require physical support from other plants. However, they obtain water and nutrients from air, rain, other debris accumulating around the epiphyte. Epiphytes are essentially photosynthetic.

15. Which of the following best describes 'Flame of the Forest', recently seen in news?

- (a) A tree blossomed with flowers like a flame in the leafless season.
- (b) Fire developed in the forest due to strong wind

(c) A lady who worked for the development of the forests

(d) An insect that glows like a flame in the forest.

Ans: a (A tree blossomed with flowers like a flame in the leafless season)

Explanation: Butea Monosperma, popularly known as 'Flame of the forest,' is in full bloom in rural parts of the district, presenting an enchanting sight. The blooming of this flower also heralds the Spring season. From a distance, it's like seeing a brightly lit torch, given its bright orange colour. These trees are distinct as they wear more flowers than leaves. During this season, children in rural areas mash the flowers to extract juice, which is then used as a colour to sprinkle on each other on Holi, the festival of colours. Though people cultivate this tree in their compounds, they are mostly found in the wilderness.

16. Consider the following statements about India's Nationally Determined Contributions (NDCs)

1. Reducing the emission intensity by 45% by 2040 from 2005 level
2. 50% cumulative installed electric power capacity from non-fossil fuel resources by 2025
3. Creating additional carbon sink of 2.5 to 3 billion tonnes of CO₂ through additional forest and tree cover by 2030
4. Healthy and Sustainable way of living through a mass movement for 'LIFE: Life Style for Environment'

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Explanation: The updated Nationally Determined Contribution (NDC) seeks to enhance India's contributions towards strengthening the global response to the threat of climate change, as agreed under the Paris Agreement. The updated list of Nationally Determined Contributions (NDCs) include

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

- India is committed to reducing the Emissions Intensity of its GDP by 45 percent by 2030 (not 2040) from the 2005 level.
- Achieving about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030
- Creating an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030
- Propagating a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for 'LIFE' – 'Lifestyle for Environment'.

India also submitted its Long-Term Low Carbon Development Strategy on 14 November 2022, under the Paris Agreement, to the United Nations Framework Convention on Climate Change (UNFCCC).

17. Consider the following statements about favourable conditions for Heat Wave generation

1. Prevalence of hot, dry air over a region
2. Absence of moisture in the upper atmosphere
3. Sky should be practically cloudless
4. Large amplitude anti-cyclonic air flow over the area

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Explanation: A heat wave is declared if the maximum temperature of a station reaches at least 40 degrees Celsius in the plains, at least 37 degrees in coastal areas and at least 30 degrees in hilly regions, and the departure from normal is at least 4.5 degrees. Favourable conditions to declare a heat wave condition include

- Transportation / Prevalence of hot, dry air over a region (There should be a region of warm, dry air and an appropriate flow pattern for transporting hot air over the region).

- Absence of moisture in the upper atmosphere (As the presence of moisture restricts the temperature rise).
- The sky should be practically cloudless (To allow maximum insulation over the region).
- Large amplitude anti-cyclonic air flow over the area. Heat waves generally develop over Northwest India and spread gradually eastwards & southwards but not westwards (since the prevailing winds during the season are westerly to northwesterly). But on some occasions, the heat wave may also develop over any region in situ under favourable conditions.

18. Consider the following states about Aravalli Green Wall (AGW) Project

1. Uttar Pradesh
2. Haryana
3. Punjab
4. Rajasthan
5. Gujarat
6. Delhi

How many states are covered under the AGW project?

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: b (All the above except two)

Explanation: The Aravalli Green Wall Project is part of the Union Environment Ministry's vision to create green corridors across the country to combat land degradation and desertification. It is a major initiative to green the 5 km buffer area around the Aravalli Hill Range in four states at a function organized to celebrate the International Day of Forests at Tikli Village in Haryana. The project aims to green the 5 km buffer area around the Aravalli Hill Range in four states – Haryana, Rajasthan, Gujarat, and Delhi.

19. Consider the following ecological benefits arrive from the Cheetah reintroduction project

1. Decrease carbon sequestration
2. Improve water security

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

3. Restoring open forest and grassland ecosystems
4. Preserve soil moisture
5. Improve species genetic diversity
6. Enhance livelihood options for the local communities
7. Boost ecotourism

How many statements given above are correct?

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: a (All the above except one)

Explanation: The decision to bring in and reintroduce the African/Asian (a subspecies only) is to actively manipulate and restore the balance of open forest ecosystems and grassland ecosystems. This will help conserve biodiversity and enhance the ecosystem services like water security, carbon sequestration and soil moisture conservation, benefiting society. It kills small animals such as antelopes, small deer, pigs, hares, and birds for food and can help control the population of newborn herbivores. Reintroducing cheetahs in India will help relieve pressure on the species by creating additional habitat, which the cheetah desperately needs to survive. It will also help increase the species' genetic diversity. This effort also aligns with the Prime Minister's commitment to environmental protection and wildlife conservation. Furthermore, the efforts will enhance livelihood opportunities for the local community through ecodevelopment and ecotourism activities. The thing that can grow fastest in such an environment is grass, and grasslands tend to sequester carbon below ground. Thus cheetah reintroduction will improve the carbon sequestration.

20. Consider the following beaches in India

1. Shivrajpur beach in Gujarat
2. Ghogla beach in Diu
3. Padubidri beach in Karnataka
4. Kovalam beach in TamilNadu
5. Kadmat beach in Puducherry
6. Golden beach in Andhra Pradesh

How many of the above beaches are certificate as 'Blue Flag Beaches'?

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: b (All the above except two)

Explanation: The Blue Flag programme is run by the Copenhagen, Denmark-headquartered Foundation for Environmental Education (FEE), and a non-profit which, through its work, contributes to the Sustainable Development Goals (SDGs) of the United Nations. To qualify for this prestigious award, stringent environmental, educational, safety-related and access-related criteria must be met and maintained. The mission of Blue Flag is to promote sustainability in the tourism sector through environmental education, environmental protection and other sustainable development practices.

List of Blue Flag beaches in India

- Shivrajpur in Gujarat's Devbhumi Dwarka district
- Ghogla Beach in Diu
- Kasarkod (Uttara Kannada)
- Padubidri (Udupi) in Karnataka
- Kappad (Kozhikode) in Kerala
- Eden Beach in Puducherry
- Kovalam (Chennai) in Tamil Nadu
- Rushikonda (Visakhapatnam) in Andhra Pradesh
- Golden Beach in Puri, Odisha
- Radhanagar Swarajdeep in Andaman and Nicobar.
- Minicoy Thundi Beach Lakshadweep and
- Kadmat Beach in Lakshadweep

Note: Kadmat beach in Lakshadweep and Golden beach is in Odisha.

21. Consider the following legislations administered by National Green Tribunal

1. The Water (Prevention and Control of Pollution) Cess Act, 1977
2. Wildlife (Protection) Act: 1972
3. The Environment (Protection) Act, 1986
4. The Public Liability Insurance Act, 1991
5. The Biological Diversity Act, 2002

How many statements given above are correct?

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: a (All the above except one)

Explanation: The National Green Tribunal (NGT), established in 2010, as per the National Green Tribunal Act is a specialised judicial body equipped with expertise solely for the purpose of adjudicating environmental cases in the country. Any person seeking relief and compensation for environmental damage involving subjects in the legislations mentioned in Schedule I of the National Green Tribunal Act, 2010 may approach the Tribunal. The statutes that are administered by NGT include

- The Water (Prevention and Control of Pollution) Act, 1974
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Forest (Conservation) Act, 1980
- The Air (Prevention and Control of Pollution) Act, 1981
- The Environment (Protection) Act, 1986
- The Public Liability Insurance Act, 1991
- The Biological Diversity Act, 2002.

Two important acts - Wildlife (Protection) Act, 1972 and Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 have been kept out of NGT's jurisdiction.

22. Consider the following institutions associated with Global Mangrove Alliance (GMA)

1. United Nations Environment Programme
2. Conservation International
3. The Nature Conservancy
4. World Wide Fund for Nature

How many of the above are founding members of GMA?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Explanation: The founding members of the Global Mangrove Alliance are Conservation International, The Nature Conservancy, and World Wildlife Fund.

They came together to build a global community of stakeholders and leverage their expertise to advance mangrove conservation, management, and restoration efforts worldwide.

23. Consider the following statements about UN Forum on Forests

1. It is established by United Nations Economic and Social Council
2. It is a platform to discuss the UN Strategic Plan on Forests, with the objective of increasing forest area by 3% world wide

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: c (Both 1 and 2)

Statement 1 is correct: In October 2000, the Economic and Social Council of the United Nations (ECOSOC), in its Resolution 2000/35, established the United Nations Forum on Forests (UNFF), a subsidiary body with the main objective to promote the management, conservation, and sustainable development of all types of forests.

Statement 2 is correct: The eighteenth meeting of the United Nation's focal point on this important resource, the UN Forum on Forests (UNFF), will convene to discuss the implementation of the UN Strategic Plan for Forests 2017–2030 (UNSPF) and to review preparations for the midterm review in 2024 of the effectiveness of the International Arrangement on Forests (IAF).

24. Consider the following process that regulate the stability and resilience of Earth Systems

1. Climate change
2. Land-system changes
3. Biogeochemical flows
4. Stratospheric ozone depletion

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Explanation: Last year, for the first time, the Earth Commission quantified boundaries for all the nine processes that regulate the stability and resilience of the Earth system: climate change, biosphere integrity, land-system change, freshwater use, biogeochemical flows, ocean acidification, atmospheric aerosol pollution, stratospheric ozone depletion, and release of novel chemicals. Research showed that six of the nine planetary boundaries are being crossed.

25. Consider the following about Global Commons

1. High seas
2. Evergreen forests
3. Atmosphere
4. Arctic
5. Antarctica
6. Outer Space

How many of the above are part of Global Commons?

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: b (All the above except two)

Explanation: Global commons have been traditionally defined as those parts of the planet that fall outside national jurisdictions and to which all nations have access. International law identifies four global commons, namely the High Seas, the Atmosphere, the Antarctica and the Outer Space.

26. 'Extinction Rebellion' and 'Red Rebel Brigade' recently seen in news are?

- (a) Private Armed Groups
- (b) Extremist Organisations
- (c) Environment Protection Groups
- (d) International Human Rights Promotion Groups

Ans: c (Environment Protection Groups)

Explanation:

Extinction Rebellion: Extinction Rebellion (abbreviated as XR) is a UK-founded global environmental movement, with the stated aim of using nonviolent civil disobedience to compel government action to avoid tipping points in the climate system, biodiversity loss, and the risk of social and ecological collapse. Extinction Rebellion

was established in Stroud in May 2018 by Gail Bradbrook, Simon Bramwell, Roger Hallam, Stuart Basden, along with six other co-founders from the campaign group Rising Up.

Red Rebel Brigade: Red Rebel Brigade was devised by Doug Francisco and Justine Squire from Bristol's Invisible Circus for the Extinction Rebellion Spring uprising April 2019 in London. We are an international performance activist troupe dedicated to illuminating the global environmental crisis and supporting groups and organisations fighting to save humanity and all species from mass extinction.

27. Consider the following statements about National Biodiversity Authority

1. It is a statutory body established under Biological Diversity Act 2002
2. Prime Minister is ex-officio chairman of this body
3. It is mandatory to have State Biodiversity Board for every State and Union Territory
4. As per the Biological Diversity Act, 2002, the headquarter of National Biodiversity Board is located in Chennai

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: The National Biodiversity Authority (NBA) is a statutory body that was established by the Indian government under the provisions of the Biological Diversity Act, 2002. Its primary mandate is to regulate access to biological resources and associated knowledge, and to ensure that the benefits arising from such access are shared equitably with the providers of these resources. The NBA also advises the government on matters related to the conservation and sustainable use of India's biodiversity.

Statement 2 is incorrect: The National Biodiversity Authority shall consist of the following members, namely a Chairperson, who shall be an eminent person having adequate knowledge and experience in the conservation and sustainable use of biological

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

diversity and matters relating to equitable sharing of benefits, to be appointed by the Central Government; three ex officio members to be appointed by the Central Government, one representing the Ministry dealing with Tribal Affairs and two representing the Ministry dealing with Environment and Forests of whom one shall be the Additional Director General of Forests or the Director General of Forests; and seven ex officio members to be appointed by the Central Government. The chairperson of the NBA is not the Prime Minister, but a person with expertise in biodiversity conservation, appointed by the central government.

Statement 3 is incorrect: Section 22. Establishment of State Biodiversity Board: (1) With effect from such date as the State Government may, by notification in the Official Gazette, appoint in this behalf, there shall be established by that Government for the purposes of this Act, a Board for the State to be known as the (name of the State) Biodiversity Board. (2) Notwithstanding anything contained in this section, no State Biodiversity Board shall be constituted for a Union territory and in relation to a Union territory, the National Biodiversity Authority shall exercise the powers and perform the functions of a State Biodiversity Board for that Union territory:

Statement 4 is correct: Section 8 (3) of National Biodiversity Act: 2002 provided for the headquarter of National Biodiversity Authority.

[(3) The head office of the National Biodiversity Authority shall be at Chennai and the National Biodiversity Authority may, with the previous approval of the Central Government, establish offices at other places in India.]

28. Consider the following pairs about various operations conducted by Wildlife Crime Control Bureau (WCCB)

Operation	Purpose
Operation Save Kurma	To curb illegal trade in tortoise
Operation LESKNOW II	To curb illegal trade in Sea cucumber and Pangolin
Operation Wildnet	To curb wildlife trade over internet

Operation Softgold	To curb illegal trade in Tibetan Antelope
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How many pairs given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Pair 1 is correctly matched: Operation Save Kurma: Considering the commercial exploitation of the turtles and tortoises as well as the extent of involvement of illegal wildlife traders in the illegal trade of live specimens, WCCB envisaged a species-specific Operation code-named "OPERATION SAVE KURMA" to focus specifically on the major states involved in the poaching, transportation and illegal trade of live turtles and tortoises.

Pair 2 is correctly matched: Operation LESKNOW II: The Bureau coordinated a wildlife enforcement operation code named "Operation LESKNOW". The Operation was intended to drag attention of the enforcement agencies within the country to focus their attention towards the illegal wildlife trade in lesser known species. The operation started on 1st of August, 2017 and terminated on 31st August, 2017. The Enforcement agencies were requested to collect intelligence pertaining on the illegal trade in lesser known species and conduct enforcement operations apart from gathering information on modus operandi in poaching, concealment techniques, transporting and smuggling etc. They were also requested to collect information on criminals and networks involved in illegal trade of various lesser known species and bust the networks. After the operation it was also requested to share good practices followed in various states with the Bureau so as to share with other state authorities to improve the investigation and intelligence gathering skills of field officials and to generate awareness among the general mass towards the menace of wildlife crime and urge the support of the people towards demand reduction.

Pair 3 is correctly matched: Operation Wildnet: To encounter the menace of the illegal trade through e-commerce platform, WCCB organized and coordinated an enforcement operation named "Operation WILDNET" to drag the attention of the

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

enforcement agencies within the country to focus their attention on the ever increasing illegal wildlife trade over internet using Social Media Platforms such as Facebook, Twitter, Whatsapp, Wechat etc. apart from various online classified sites and trade portals, websites and Blog Spots. The operation started from 1st of May 2017 and continued till 30th June, 2017. During the “Operation Wildnet” illegal offers made on online e-commerce platforms were detected by WCCB by surfing the internet and the information was passed to field agencies for conducting operations. Based on the information the perpetrators were booked under relevant provisions of the wildlife protection act by various State agencies.

Pair 4 is correctly matched: Operation Softgold: It is to focus their attention on the illegal wildlife trade in Tibetan antelope (Shahtoosh) species which are generally neglected while doing enforcement activities- "Operation Soft Gold" was envisaged and conducted by WCCB.

29. Consider the following statements about objection raised by India over its low ranking in Environment Performance Index

1. Projected GHG emissions levels in 2050 indicator take emission data of only the last 10 years.
2. Weight of certain indicators has been reduced without reason.
3. The principle of equity is given more weightage.
4. No indicator takes renewable energy and energy efficiency into account
5. Water quality and water use efficiency are not taken into account.

How many statements given above are correct?

- (a) All the above except one
- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: a (All the above except one)

Explanation: The Environmental Performance Index (EPI), measured by Yale and Columbia universities, ranks India at the bottom among 180 countries. The Environment Ministry has issued a rebuttal saying the

indicators used in the assessment are based on "unfounded assumptions."

The Objections that India raised are

- The government has objected to calculations of greenhouse gas projections for 2050, which ties into countries' net zero goals. India has set a net zero target for 2070, unlike developed nations that have set 2050.
- Both forests and wetlands of the country are crucial carbon sinks that have not been factored in a while computing the projected GHG emissions trajectory up to 2050, given by EPI 2022.
- The government has objected to the low weightage of per-capita GHG emissions (2.6%). Further, No indicator talks about renewable energy, energy efficiency and process optimization.
- The principle of Equity is given very low weightage in the form of the indicators like GHG emission per capita and GHG Emission intensity trend.
- The indicators of Water quality, Water use efficiency, and Waste Generation per capita closely linked to Sustainable Consumption and Production are not included in the Index.
- Indicators such as agrobiodiversity, soil health, food loss and waste are not included, even though they are important for developing countries with large agrarian populations.
- The Index computes the extent of ecosystems but not their condition or productivity.

30. Consider the following statements about the goals set out during the COP15 to Convention of Biological Diversity (CBD)

1. Reduce to near zero the loss of areas of high biodiversity importance and high ecological integrity.
2. Halving global food waste.
3. Raising international financial flows from developed to developing countries to at least US\$ 100 billion per year.
4. Effective conservation and management of at least 30 percent of the world's land, coastal areas and oceans.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Explanation: The GBF aims to address biodiversity loss, restore ecosystems and protect indigenous rights. The GBF also features 23 targets to achieve by 2030, including:

- Effective conservation and management of at least 30 percent of the world's land, coastal areas and oceans. Currently, 17 percent of land and 8 percent of marine areas are under protection.
- Restoration of 30 percent of terrestrial and marine ecosystems
- Reduce to near zero the loss of areas of high biodiversity importance and high ecological integrity
- Halving global food waste
- Phasing out or reforming subsidies that harm biodiversity by at least \$500 billion per year while scaling up positive incentives for biodiversity conservation and sustainable use
- Mobilizing at least \$200 billion per year from public and private sources for biodiversity-related funding
- Raising international financial flows from developed to developing countries to at least **US\$ 30 billion per year, not US\$ 100 billion** per year.
- Requiring transnational companies and financial institutions to monitor, assess, and transparently disclose risks and impacts on biodiversity through their operations, portfolios, supply and value chains.

31. Consider the following pairs about disease and associated metal pollutant

Metal	Associated disease
Nitrate	Black lung disease
Blue baby syndrome	Arsenic
Black foot disease	Lead
Itai Itai disease	Cadmium

How many pairs given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: a (Only one)

Pair 1 is incorrectly matched: Black Lung Disease: Coal workers' pneumoconiosis (CWP), commonly known as "black lung disease," occurs when coal dust is inhaled. Over time, continued exposure to the coal dust causes lung scarring, impairing your ability to breathe. Considered an occupational lung disease, it is most common among coal miners. Other forms of pneumoconioses can be caused by inhaling dust containing Aluminum, Antimony, Barium, Graphite, Iron, Kaolin, Mica, and Talc. There is also a form called mixed-dust pneumoconiosis.

Pair 2 is incorrectly matched: Blue baby syndrome: Blue baby Syndrome is caused by using nitrate-contaminated drinking water to prepare infant formula. It is a well-known risk factor for infant methemoglobinemia resulting in a decrease in oxygen-carrying capacity in the hemoglobin of the infants. Affected infants develop a peculiar blue-gray skin colour and may become irritable or lethargic, depending on the severity of their condition. The condition can progress rapidly to cause coma and death if not recognized and treated appropriately. Nitrate pollution is linked to the use of synthetic nitrogen fertilizers like urea. Higher the application, the greater the contamination of drinking water in wells adjoining fields.

Pair 3 is incorrectly matched: Blackfoot disease: Blackfoot disease is an endemic peripheral vascular disease found among the inhabitants of a limited area on the southwest coast of Taiwan. Artesian well water with a high concentration of arsenic has been used for over eighty years. Black foot disease, which is endemic to South Taiwan, is a unique peripheral arterial disease characterized by severe systemic arteriosclerosis, dry gangrene, and spontaneous amputations of affected extremities at end stages.

Pair 4 is correctly matched: Itai Itai disease: Itai-itai disease is caused by cadmium (Cd) exposure, produced due to human activities related to industrialization, and this condition was first

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

recognized in Japan in the 1960s. Itai-itai disease is characterized by osteomalacia with severe bone pain and is associated with renal tubular dysfunction. Cadmium is considered a cancer-causing agent. Itai-itai disease mainly affects women in rice farming areas irrigated by the contaminated Jinzu River in Toyama, Japan

32. Consider the following statements about Great Hornbill

1. It was listed as 'Endangered' on the IUCN Red List of Threatened Species.
2. It is declared as state bird of Arunachal Pradesh and Kerala

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: b (Only 2)

Statement 1 is incorrect: The great Hornbill has a wide distribution and can be found in China, India, Nepal, Bhutan, Bangladesh, Myanmar, Thailand, Laos, Vietnam, Cambodia, Malaysia, and Indonesia. The large majority of the population is found in India. According to the IUCN Red List, the Great Hornbill population is approximately 20,000-49,999 individuals, roughly equating to 13,000-27,000 mature individuals. This species is classified as Vulnerable (VU), and its numbers are decreasing today.

Statement 2 is correct: Kerala and Arunachal Pradesh has declared Great Hornbill as State bird.

33. Which of the following best describes the term 'Micro Forests'

- (a) Small-scale forests are grown in urban areas to promote biodiversity.
- (b) Traditional forests with minimal tree coverage
- (c) Artificial forests created through genetic engineering.
- (d) Miniature trees grown in bonsai gardens

Ans: a (Small-Scale forests are grown in urban areas to promote biodiversity)

Explanation: A micro forest is a dense, tiny forest with high biodiversity. The technique is a form of Afforestation or planting a forest where there wasn't one before. This is different than reforestation, which restores an existing forest. Microforests are planted densely and become hotspots for insects and small animals. Forest patches improve health, cool cities more effectively than ornamental vegetation in urban areas, and remove pollutants. Urban forests also have other benefits, including creating a buffer against disasters like tsunamis or hurricanes.

34. Which of the following statement best describe the term "Terminator Zone"?

- (a) They are the border region between the light and dark halves of an exoplanet.
- (b) It refers to the area of the earth between the Tropic of Cancer and the Tropic of Capricorn.
- (c) It is the not-too-hot, not-too-cold region around a star where liquid water can exist
- (d) It is a layer of water that stretches around the globe.

Ans: a (They are the border regions between the light and dark halves of an exoplanet)

Explanation: Some planets have a permanent day side and a permanent night side, akin to how the Moon, from the vantage of Earth, always shows the same side despite its rotations and revolutions. The 'terminator' is the dividing line between the 'day' and 'night' sides of the planet, and terminator zones are the regions that could exist in that sweet spot between too hot and too cold.

35. Consider the following statements about Global Shield Initiative

1. It is joint initiative of V20 (Vulnerable 20) and G7 group of countries
2. It is a funding mechanism that provides funding to countries suffering climate disasters.
3. India is a founding member of this initiative
4. IMF has launched the Global Shield Financing Facility to help developing countries to overcome climate risks

How many statements given above are correct?

- (a) Only one

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 and 2 are correct: The Vulnerable 20 Group of Finance Ministers (V20) of 58 climate-vulnerable economies and the Group of Seven (G7) officially launched the Global Shield against Climate Risks, an initiative for financial support designed to be quickly deployed in times of climate disasters. It aims to rapidly provide pre-arranged insurance and disaster protection funding after events such as floods, droughts and hurricanes hit.

Statement 3 is incorrect: The first recipients of Global Shield packages called Pathfinder countries include Bangladesh, Costa Rica, Fiji, Ghana, Pakistan, the Philippines and Senegal. Initial contributions for the Global Shield initiative include around EUR 170 million from Germany and more than EUR 40 million from other countries. India is not a member of the initiative.

Statement 4 is incorrect: The World Bank Group has announced a Global Shield Financing Facility to help developing countries access more financing for recovery from natural disasters and climate shocks. The Global Shield Financing Facility will channel grants to developing countries through World Bank projects or projects prepared by other participating partners, including UN agencies and multilateral development banks.

36. Consider the following statements about International Whaling Commission (IWC)

1. It is a specialised UN agency, established under the 1946 International Convention for the Regulation of Whaling
2. It prescribes the open and closed seasons and areas for whaling
3. Japan is the only country withdrawn from its membership

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: c (2 and 3 only)

Statement 1 is incorrect: The International Whaling Commission (IWC) is a specialised regional fishery management organisation, established under the terms of the 1946 International Convention for the Regulation of Whaling (ICRW) to "provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry".

Statement 2 is correct: As the decision-making body of the convention, the IWC reviews and revises measures laid down in the "Schedule to the Convention", which govern the conduct of whaling throughout the world. These measures include: confer complete protection of certain species; designate specific areas as whale sanctuaries; set limits on the numbers and size of whales which may be taken; prescribe open and closed seasons and areas for whaling; and prohibit the capture of suckling calves and female whales accompanied by calves. The Commission also mandates the compilation of catch reports and other statistical and biological records.

Statement 3 is correct: Through the "Florianópolis Declaration" of 2018, members of the organization concluded that the purpose of the IWC is the conservation of whales and that they would now safeguard the marine mammals in perpetuity and would allow the recovery of all whale populations to pre-industrial whaling levels. In response, Japan announced on 26 December 2018, that since the IWC failed its duty to promote sustainable hunting, which is one of its stated goals, Japan is withdrawing its membership and will resume commercial hunting in its territorial waters and exclusive economic zone from July 2019, but will cease whaling activities in the Southern Hemisphere.

37. In which of the following biotic interactions at least one of the species get benefited?

1. Mutualism
2. Commensalism
3. Amensalism
4. Parasitism
5. Predation
6. Competition

How many of the statements given above are correct?

- (a) All the above except one

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

- (b) All the above except two
- (c) All the above except three
- (d) All the above except four

Ans: b (All the above except two)

Explanation: Mutualism: Both species benefit. For example: in pollination mutualisms, the pollinator gets food (pollen, nectar), and the plant has its pollen transferred to other flowers for cross-fertilization (reproduction).

Commensalism: One species benefits and the other is unaffected. For example: cow dung provides food and shelter to dung beetles. The beetles do not affect the cows.

Competition: both species are harmed by the interaction. For example: if two species eat the same food, and there isn't enough for both, both may have access to less food than they would if alone. They both suffer a shortage of food

Amensalism: One species is harmed, and the other is unaffected. Example: A large tree shades a small plant, retarding the growth of the small plant. The small plant has no effect on the large tree.

Predation and Parasitism: One species benefits and the other is harmed. Example: Predation—Lion(predator) eating a deer(pre); Parasitism: tick gains benefit by sucking blood; the host is harmed by losing blood.

Neutralism: There is no net benefit or harm to either species. Perhaps in some interspecific interactions, the costs and benefits experienced by each partner are exactly the same so that they sum to zero. It is not clear how often this happens in nature. Neutralism is also sometimes described as the relationship between two species inhabiting the same space and using the same resources, but that has no effect on each other. In this case, one could argue that they aren't interacting at all.

Biotic Interaction			
S.No.	Type	Species 1	Species 2
1.	Mutualism	(+)	(+)
2.	Commensalism	(+)	(o)
3.	Amensalism	(-)	(o)
4.	Competition	(-)	(-)
5.	Predation	(+)	(-)
6.	Parasitism	(+)	(-)
(+)			
(-) Benefited (-) Harmed			
(o) Neither Benefited nor harmed.			

38. 'Mission Sahbhagita' recently seen in news is associated with?

- (a) Wetland protection
- (b) Plastic free coastal areas
- (c) Solid waste management
- (d) Coastal protection

Ans: a (Wetland protection)

Explanation: The Ministry of Environment, Forest and Climate Change (MoEFCC) launched Mission Sahbhagita in 2022 with a mission of a healthy and effectively managed network of 75 wetlands of national and international significance which support water and food security; buffer from floods, droughts, cyclones and other extreme events; employment generation; conservation of species of local, national and international significance; climate change mitigation and adaptation actions; and recognition, conservation and celebration of cultural heritage. As part of the mission, the ministry also launched the 'Save Wetland Campaign' on Feb 4, 2023 on the occasion of World Wetland Day 2023.

39. Consider the following statements about Sky Glow

1. Unlike other pollutants like noise levels in the oceans, artificial light levels are poorly quantified.
2. The experience of a person viewing and pondering the sky above in evening hours can degrade only with a substantial increase in night brightness.

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: a (Only 1)

Statement 1 is correct: Sky glow is an increase in the night sky's apparent brightness that can reduce visibility for astronomical observation. Until recently, understanding of typical levels and patterns of skyglow has been extremely poor despite its global presence and potential environmental risk. Unlike noise pollution in the oceans or on land, artificial light levels are poorly quantified.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Statement 2 is incorrect: Light pollution is no longer merely an annoyance for astronomers. The artificial brightening of the night sky is profoundly altering a fundamental human experience – the opportunity for each person to view and ponder the sky above in the evening hours. **Even small increases in night sky brightness** degrade this experience, according to researchers.

40. Consider the following statements

1. The aquatic plant production is low in oligotrophic lakes and high in eutrophic lakes.
2. The aquatic plant nutrient flux is low in an oligotrophic lake and high in a eutrophic lake.

Which of the statements given above is/are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: b (Only 2)

Statement 1 is incorrect: On the basis of their nutrient content, lakes are categorized as Oligotrophic (very low nutrients), Mesotrophic (moderate nutrients) and Eutrophic (highly nutrient rich). Vast majority of lakes in India are either eutrophic or mesotrophic because of the nutrients derived from their surroundings or organic wastes entering them. Plant production in Oligotrophic lakes is low wherein in Eutrophic lakes it is completely absent.

Statement 2 is correct: The term "aquatic nutrient flux" describes the flow of nutrients through aquatic ecosystems, including nitrogen, phosphorus, and carbon. Although nutrient flux can be impacted by human activities like agriculture, urbanisation, and wastewater treatment, it can also happen naturally. Nutrient flux can happen in aquatic habitats in a number of different ways. For instance, nutrients may enter an environment by precipitation or runoff, or they may be transferred from nearby terrestrial ecosystems into aquatic ones. The aquatic plant nutrient flux is low in an oligotrophic lake and high in a eutrophic lake.

41. Consider the following statements about the reasons for stubble burning

1. Increased mechanisation

2. Less time between the cropping seasons
3. Long periods required for composting
4. Control of pests and weeds

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: Stubble burning is identified as a major reason for the Delhi air pollution. In addition to causing exposure to extremely high levels of Particulate Matter concentration to people in the immediate vicinity, it is also a major regional source of pollution, contributing between 12 and 60 per cent of PM concentrations. : Increased mechanisation means that straws become unsuitable to be used as fodder. This is because the way the straw is cut makes it unsuitable for cattle consumption.

Statement 2 is correct: After paddy is harvested in mid and late October, the fields are left with a stubble of stalks about two feet high. Because the sowing cycle for wheat begins in late October, farmers have very little time to prepare their fields – so, they typically set fire to the stubble, and then clear the residue.

Statement 3 is correct: Composting is a technique by which organic manure and fertilizers are made. This takes longer time and hence there is space requirement to compost. Hence, composting is not favoured. Also there is decline in popularity of organic manures & movement towards synthetic fertilizer.

Statement 4 is incorrect: Burning of crop residue causes damage to other micro-organisms present in the upper layer of the soil as well as its organic quality. Due to the loss of 'friendly' pests, the wrath of 'enemy' pests has increased and as a result, crops are more prone to disease. The solubility capacity of the upper layers of soil have also been reduced.

42. Consider the following statements about Biofloc Technology

1. Biofloc technology is the use of bacteria or algae or protozoa along with organic matter to improve the water quality

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

2. Biofloc technology is widely used in shrimp and fish farms
3. This technology absorbs the inorganic nitrogenous compounds from the polluted water
4. This technology reduces the operating cost of aqua culture significantly

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: Biofloc technology (BT) is defined as ‘the use of aggregates of bacteria, algae, or protozoa, held together in a matrix along with particulate organic matter for the purpose of improving water quality, waste treatment and disease prevention in intensive aquaculture systems’.

Statement 2 is correct: Candidate species must be resistant to environmental changes, tolerate high stocking density, adapt to changes in dissolved oxygen, and take microbial protein as food. BFT is used in large-scale shrimp and finfish farms, mainly in Asia.

Statement 3 is correct: It absorbs inorganic nitrogenous compounds from the polluted water and improves water quality. With biofloc fish farming, the extra feed and the excreta released by fishes is acted upon and turned into the microbial feed.

Statement 4 is correct: As excreta released by fishes is acted upon and turned into a microbial feed which is again used as feed for fishes. At the same time, all kinds of wastes are removed, preventing water from being polluted. This reduces the requirement of frequent water changes and reduces the need of additional fish feed as well. Bring down the operating costs significantly.

43. Consider the following statements about the stability of biological community

1. Greater biodiversity in ecosystem, species and individuals can promote the stability
2. Species with high genetic diversity, tolerant to diseases and climate change promotes stability

3. Stability of biological community is high in tropical areas
4. Stable community should not show much variation in its productivity from year to year

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1&2 are correct: Greater biodiversity in ecosystems, species, and individuals leads to greater stability. For example, species with high genetic diversity and many populations that are adapted to a wide variety of conditions are more likely to be able to weather disturbances, disease, and climate change.

Statement 3 is correct: Diversity is concentrated in certain areas and is highest in the tropics, in a band around the equator, declining progressively toward the polar regions. Specific places with high overall diversity or high levels of endemism arrays of species found are often called hotspots. As there is direct correlation between the species diversity and stability, the areas between the tropics have more stability

Statement 4 is correct: A biological community is said to be stable if the productivity of the community remains fairly stable from year to year. This would ensure steady flow of food and energy amongst the different populations in the community and there will be less chances of diversity loss.

44. Consider the following statements about the types of species and their examples

Species type	Example
Indicator species	Gangetic River Dolphin
Flagship species	Bengal Tiger
Foundation species	Arthropods
Keystone Species	Sea Otter

How many of the pairs given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Pair 1 is correctly matched: An indicator species is an organism whose presence, absence or abundance reflects the specific environment conditions. They can signal a change in biological conditions of a particular ecosystem and thus may be used as proxy to diagnose the health of an ecosystem. Ex: Plants, Lichens and Gangetic River Dolphin

Pair 2 is correctly matched: Flagship species are species that captures the imagination of the public and induce people to support conservation action. Ex: Bengal Tiger, Gaint Panda and Asian Elephant

Pair 3 is incorrectly matched: Foundation species play a major role in creating and maintaining a habitat that supports other species. Ex: Corals. However Arthropods placed under the secondary carnivores and not the foundation species

Pair 4 is correctly matched: Keystone species are not so abundant in a ecosystem yet exerts strong control on community structure by nature of its ecological role. Ex: Sea otter, African Elephant and Beavers etc.

45. Consider the following statements about the impact of invasive alien species on forests

1. They can bring new pests and diseases which are detrimental to native species
2. They bring changes in predation, competition and food webs in the ecosystem
3. Invasive species can negatively impact the carbon sequestration process
4. Earthworm, considered as invasive species can promote the agriculture productivity

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: The most direct economic impact of invasive species on the forest sector is related to the loss or reduced efficiency of production. Invasive species, in particular insect pests and diseases, can damage trees in all stages of development and affect the ability of both natural and planted forests to meet their management objectives.

Statement 2 is correct: Invasive species can influence species diversity, richness, composition and abundance. At the species level, direct effects of invasive species occur through processes such as the predation of, competition with, and pathogen and parasite transmission to individual organisms, eventually leading to population declines and species extinctions.

Statement 3 is incorrect: Alien plants can also increase the biomass of a recipient ecosystem, thus being beneficial to global carbon sequestration. Additionally, many alien species increase attributes that are relevant to societal values and human well-being.

Statement 4 is correct: Earthworms are invasive—and likely hurting insects—in much of North America. Often considered as gardener's best friend. As one example of a non-native species with underappreciated benefits is earthworm. While they can negatively change forest ecosystems, earthworms can also augment organic agriculture: Some research has shown that when earthworms are present, there can be a 25% increase in agricultural productivity. The resulting decrease in food cost and increased ability to feed people is a direct economic benefit.

46. The 'Dieback disease' recently seen in news mainly affects which of the following species?

- (a) Mango trees
- (b) Neem trees
- (c) Rice
- (d) Wheat

Ans: b (Neem trees)

Explanation: The dieback disease was first reported in the country during the 1990s near Dehradun in Uttarakhand, while it was first noticed in Telangana in 2019. The dieback disease is mainly caused by the fungi *Phomopsis azadirachtae*. The dieback disease affects leaves, twigs and the inflorescence of neem trees of all ages and it causes almost 100% loss of fruit production in severely infected trees.

47. Which of the following species can be affected by Canine distemper virus (CDV)?

1. Dogs
2. Foxes

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

3. Tigers

4. Cattle

How many statements given above are correct?

(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans: c (Only three)

Explanation: Canine distemper virus (CDV) is a viral disease that affects a wide variety of mammal families, including domestic and wild species of dogs, coyotes, foxes, pandas, wolves, ferrets, skunks, raccoons, and felines, as well as pinnipeds, some primates, and a variety of other species. CDV does not affect humans. Felidae is the family of mammals in the order Carnivora colloquially referred to as cats. A member of this family is also called a felid. The term "cat" refers both to felids in general and specifically to the domestic cat.

48. Consider the following statements about Montreux Record

1. It is list of wetlands where changes in ecological character have become reversible

2. Only 2 sites from India has been included under this list

3. Greece has highest number of sites under this list

Which of the statements given above is/are correct?

(a) 1 and 2 only

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

Ans: c (2 and 3 only)

Statement 1 is incorrect: The Montreux Record is a register of wetland sites on the List of Ramsar wetlands of international importance where changes in ecological character have occurred, are occurring, or are likely to occur as a result of technological developments, pollution or other human interference. It is a voluntary mechanism to highlight specific wetlands of international importance that are facing immediate challenges. It is maintained as part of the List of Ramsar wetlands of international importance. It is established in 1990 during the CoP-4 in 1990 hold at Montreux, Switzerland

Statement 2 is correct: The Montreux Record was maintained as part of the Ramsar List. Currently, 48 sites were listed in the Montreux Record. Indian sites in the like Keoladeo National Park-Rajasthan, Loktak Lake – Manipur are included in Montreux Record.

Statement 3 is correct: Greece has 7 sites under this list followed by Iran having 6 sites

49. Consider the following statements about Globally Important Agriculture Heritage Systems

1. It is a initiative of United Nations Environment Programme

2. They are characterised by aesthetic beauty agricultural biodiversity, resilient ecosystems and a valuable cultural heritage

3. Pampore Saffron Heritage, Jammu and Kashmir is listed under this system

4. They are facing threats due to climate change and invasive species

How many statements given above are correct?

(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans: c (Only three)

Statement 1 is incorrect: The concept of Globally Important Agricultural Heritage Systems (GIAHS) is distinct from, and more complex than, a conventional heritage site or protected area/landscape. Since 2005, Food and Agriculture Organisation (FAO) has designated 62 systems in 22 countries as agricultural heritage sites, and as of June 2021, 15 new proposals from 9 different countries were received.

Statement 2 is correct: They are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and a valuable cultural heritage.

Statement 3 is correct: From India 3 Agriculture systems have been accorded this recognition. They are

✓ Koraput Traditional Agriculture: Odisha

✓ Kuttanad below sea level farming system: Kerala

✓ Pampore Saffron Heritage, Jammu and Kashmir

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Statement 4 is correct: The Globally Important Agricultural Heritage Systems are threatened by many factors including climate change, invasive alien species and increased competition for natural resources. They are also dealing with migration due to low economic viability, which has resulted in traditional farming practices being abandoned and endemic species and breeds being lost.

50. Consider the following statements about the International Union for Conservation of Nature (IUCN)

1. It is one of the specialized agency of United Nations formed as International Union for Protection of Nature in 1948
2. It maintain 9 red list categories of whom 3 are placed under threatened categories
3. Species with more than 90% population size reduction over the last 10 years are included under critically endangered categories
4. IUCN red list also includes the IUCN Green Status of Species

How many statements given above are correct?

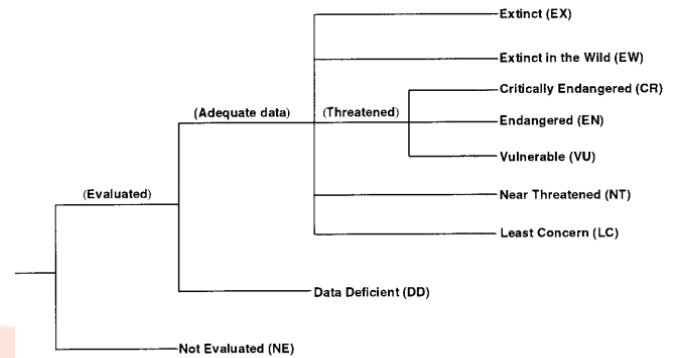
- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is incorrect: IUCN has observer and consultative status at the United Nations, and plays a role in the implementation of several international conventions on nature conservation and biodiversity. It was involved in establishing the World Wide Fund for Nature and the World Conservation Monitoring Centre. In the past, IUCN has been criticized for placing the interests of nature over those of indigenous peoples. In recent years, its closer relations with the business sector have caused controversy. IUCN was established in 1948. It was initially called the International Union for the Protection of Nature (1948–1956) and has also been formerly known as the World Conservation Union (1990–2008).

Statement 2 is correct: Species are classified into one of nine Red List Categories: Extinct, Extinct in the Wild, Critically Endangered, Endangered,

Vulnerable, Near Threatened, Least Concern, Data Deficient and Not Evaluated. Vulnerable, Endangered and Critically Endangered species are considered to be threatened with extinction.



Statement 3 is correct: An observed, estimated, inferred or suspected population size reduction of $\geq 90\%$ over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible and facing extreme high risk of extinction in the wild are placed under critically endangered category

Statement 4 is correct: The IUCN Red List includes the IUCN Green Status of Species, which assesses the recovery of species' populations and measures led to their conservation success. There are eight Green Status Categories: Extinct in the Wild, Critically Depleted, Largely Depleted, Moderately Depleted, Slightly Depleted, Fully Recovered, Non-Depleted and Indeterminate. A Green Status assessment looks at how conservation actions have affected the current Red List status, what we might expect if conservation actions were halted and how a species' status might be improved in future with conservation action. This is reflected in a set of conservation metrics.

51. Consider the following statements about Hope Spots

1. They are ecologically unique areas of the ocean designated for conservation by the IUCN
2. They are chosen for their contribution to biodiversity, carbon sink and important habitat
3. The objective is to raise public support and bring at least 20% of ocean under protected category by 2020

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

4. India had 5 sites under Hope Spot category
How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is incorrect: Hope Spots are ecologically unique areas of the ocean designated for protection under a global conservation campaign overseen by Mission Blue, a non-profit organization founded by Sylvia Earle with her 2009 TED prize wish.

Statement 2 is correct: They are chosen for their contributions to biodiversity, the carbon sink, and important habitat. Hope Spot status is intended to alleviate the pressures human resource extraction places on the ocean by making the site higher priority to become an MPA, where resource extraction, like fishing and drilling, may be forbidden under law.

Statement 3 is correct: The goal of the Hope Spot campaign is raise public support, gain the attention of leaders and policy makers, and ultimately create enough Hope Spots to protect 20% of the ocean by 2020.

Statement 4 is incorrect: Currently India is a home to 2 hope spots they are Andaman Islands and Lakshadweep islands.

52. If a pH of a water body increases from 5 to 9 then which of the following organisms can survive under such circumstances?

- (a) Bacteria
- (b) Fungi
- (c) Both Bacteria and Fungi
- (d) Protozoa

Ans: b (Fungi)

Explanation: The influence of soil pH on the fungal community has been less explored than effects of soil pH on the bacterial community. We found that the composition of the fungal community was related to soil pH, but the influence was far weaker than for the bacterial community. This may be related, in part, to the ability of the applied method to document the phylogenetic differences between the fungal communities across this gradient. However, these

results do agree with physiological studies of bacterial and fungal pure cultures, indicating that these microbial groups differ in their responses to pH. Fungal species typically have a wide pH optimum, often covering 5–9 pH units without significant inhibition of their growth

Reference:

<https://www.nature.com/articles/ismej201058#:~:text=Fungal%20species%20typically%20have%20a,%20al.%2C%202009>.

All microbes have evolved to grow within a particular range of external pH. Acidophiles are defined approximately as organisms growing optimally within the pH range 0.5–5, neutralophiles within pH 5–9, and alkaliphiles within pH 9–12.

53. Consider the following statements about the Black Carbon

1. The natural sources of Black Carbon includes volcanoes, wildfires and belches from ruminant animals
2. Black carbon can reduce the concentration/formation of ground level ozone
3. Black carbon can reduce the surface albedo of snow covered bodies
4. They facilitate the transport toxic compounds into bloodstream

How many of the statements give above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: The natural sources of atmospheric black carbon, such as out gassing from the ocean, decomposing vegetation and other biomass, venting volcanoes, naturally occurring wildfires, and even belches from ruminant animals.

Statement 2 is correct: Black Carbon decreases surface ozone concentration by reducing photolysis rates because they reflects the incoming solar radiations back into space. Thus Black Carbon cores reduced photolysis rates and resulted in a decrease of ozone concentration by 5–8 % at ground level

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Statement 3 is correct: Black carbon can also accelerate ice-melt when they settle on snow. The bright snow surfaces reflect a high amount of solar energy (Albedo) back into space. But black carbon absorbs substantial fraction of this energy and re-emit it as heat. The Arctic and the Himalayas are therefore vulnerable. Black carbon on glacial snow is a concern as it alters the melt cycle of glaciers in regions that rely on glacial melt to balance water supply through seasons. These impacts are highly regional depending on the local profile and trend of pollution and transport of pollution. There is now considerable focus on the Arctic and alpine glacier regions and the Himalayan glaciers.

Statement 4 is correct: Black carbon is a component of fine particulate matter (PM_{2.5}) air pollution, the leading environmental cause of poor health and premature deaths. These particles are many times smaller than a grain of table salt, can penetrate deep into the lungs, and facilitate the transport of toxic compounds into the bloodstream.

54. Which of the following pollutants are known as ‘Super Pollutants’

1. Carbon dioxide
2. Methane
3. Black Carbon
4. Hydrofluorocarbons

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Explanation: Short-lived climate pollutants/Super Pollutants — methane, black carbon and hydrofluorocarbons (HFCs), which are also sometimes known as “super pollutants” — remain in the atmosphere for less time than carbon dioxide but have a potent impact on near-term global warming. For example, methane has more than 80 times the warming power of CO₂ in its first 20 years in the atmosphere. And about 45% of today’s net global warming is driven by methane emissions from human activities. Moreover, methane is also a precursor for

another powerful driver of climate change: tropospheric (ground-level) ozone.

55. Consider the following statements about Climate and Clean Air Collision (CCAC)

1. It is an initiative of United Nations Environment Programme along with G7 countries
2. The major objective of this collision is to rapid reduction in short lived climate pollutants to protect human health, agriculture and environment
3. Sustainable Development Goal: 3 and 13 can be achieved through this collision
4. December 7 is celebrated as International Day for Clean Air for blue skies

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is incorrect: The Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) was launched by the United Nations Environment Programme (UNEP) and six countries—Bangladesh, Canada, Ghana, Mexico, Sweden, and the United States—on 16 February 2012.

Statement 2 is correct: The CCAC aims to catalyze rapid reductions in short-lived climate pollutants to protect human health, agriculture and the environment. Reducing methane and black carbon could also prevent major crop losses. Present day global relative yield losses due to tropospheric ozone exposure range between 7-12 percent for wheat, 6-16 percent for soybean, 3-4 percent for rice, and 3-5 percent for maize.

Statement 3 is correct: Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

Goal 13: Take urgent action to combat climate change and its impacts

Statement 4 is incorrect: The International Day of Clean Air for blue skies is commemorated annually

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

on 7th September in recognition of the fact that clean air is important for the health and day-to-day lives of people, while air pollution is the single greatest environmental risk to human health and one of the main avoidable causes of death and disease globally.

56. Consider the following statements about Ozone Hole

1. Chlorine and Bromine are major Ozone depleting substances
2. Volcanic eruptions can have impact on ozone concentration in Stratosphere
3. Halons are one of the major Bromine sources
4. Solar storms can further destroy ozone and expand the ozone hole

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: When chlorine and bromine atoms come into contact with ozone in the stratosphere, they destroy ozone molecules. One chlorine atom can destroy over 100,000 ozone molecules before it is removed from the stratosphere. Ozone can be destroyed more quickly than it is naturally created. Some compounds release chlorine or bromine when they are exposed to intense UV light in the stratosphere. These compounds contribute to ozone depletion, and are called ozone-depleting substances (ODS). ODS that release chlorine include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), carbon tetrachloride, and methyl chloroform.

Statement 2 is correct: Some natural processes, such as large volcanic eruptions, can have an indirect effect on ozone levels. For example, Mt. Pinatubo's 1991 eruption did not increase stratospheric chlorine concentrations, but it did produce large amounts of tiny particles called aerosols (different from consumer products also known as aerosols). These aerosols increase chlorine's effectiveness at destroying ozone. The aerosols in the stratosphere create a surface on which CFC-based chlorine can

destroy ozone. However, the effect from volcanoes is short-lived.

Statement 3 is correct: Ozone Depleting Substances (ODS) that release bromine include halons and methyl bromide. Although ODS are emitted at the Earth's surface, they are eventually carried into the stratosphere in a process that can take as long as two to five years.

Halon, chemical compound formerly used in fire fighting. A Halon may be any of a group of organohalogen compounds containing bromine and fluorine and one or two carbons. The effectiveness of halons in extinguishing fires arises from their action in interrupting chain reactions that propagate the combustion process.

Statement 4 is correct: University in Virginia recognized a rare opportunity to gather further proof that solar storms destroy ozone. They already knew that when protons bombard the upper atmosphere, they break up molecules of gases like nitrogen and water vapor. Once freed, those products readily react with ozone molecules and reduce the ozone layer.

57. Consider the following statements about Hydrofluorocarbons (HFC)

1. HFC have ozone depletion potential of Zero
2. HFC are chemically stable and non-reactive but highly flammable
3. They are actively promoting Positive Radiative Forcing effect which is contributing to Global warming
4. Kigali amendment to Montreal Protocol called for phase down of HFCs

How many of the above statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: With the introduction of the Montreal Protocol, which phased out the use of chemicals such as halons and chlorofluorocarbons (CFCs) that contribute to the depletion of Earth's ozone layer. However, while HFCs have an ozone depletion potential of zero, they are potent

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

greenhouse gases, and thus their manufacture and use became increasingly regulated in the 21st century.

Statement 2 is incorrect: In general, HFCs are relatively nonflammable, chemically stable, and nonreactive. Many are colourless, odourless gases, but some—such as HFC-365mfc are liquids at room temperature. As refrigerants, HFCs are used in a wide variety of cooling systems, from refrigerators and freezers to automotive air-conditioning units.

Statement 3 is correct: Within the troposphere, the carbon-fluorine bonds in HFCs are highly effective at trapping solar radiation (specifically, infrared radiation) and redirecting that radiant energy toward Earth's surface. This so-called positive radiative forcing effect contributes to global warming.

Statement 4 is incorrect: On 1 January 2019 the Kigali Amendment to the Montreal Protocol came into force. Under the Kigali Amendment countries promised to reduce the use of hydrofluorocarbons (HFCs) by more than 80% over the next 30 years. Kigali amendment called for reduction not for complete phase down of production and usage.

Reference:

<https://www.britannica.com/science/hydrofluorocarbon>
[on](#)

58. Consider the following statements about Lead

1. Lead is corrosion resistant, soft metal with a low melting point
2. High concentration of lead in soil impacting plant growth and nutrient cycling
3. Lead has the ability to enter brain, liver, bones and blood streams

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: d (1, 2 and 3)

Statement 1 is correct: The ductility, ease of welding, low melting point, high density, and capacity to absorb gamma and X-radiation are all properties that add to the elemental application of lead. For elemental silver and gold, molten lead is an excellent solvent and collector.

Statement 2 is correct: Excess lead in the soil can inhibit normal plant function, leading to stunted growth and chlorosis. High concentrations of lead can kill symbiotic microorganisms in the soil, impacting plant growth and nutrient cycling.

Statement 3 is correct: Lead is a highly toxic metal. If ingested, even in tiny amounts, it can cause lead poisoning. The lead molecules can enter organs, affect the CNS, and accumulate in the bones. Children are especially at risk for lead poisoning; they are more likely to ingest lead, and it can cause irreversible developmental delays and intellectual disabilities.

59. What is meant by 'Homeostasis' in an organism?

- (a) Maintaining internal stability while adjusting to changing external conditions
- (b) Changing to internal stability while adjusting to changing external conditions
- (c) Changing to internal stability while adjusting to changing weather conditions
- (d) Lowering metabolic rate as per the changes in the external conditions

Ans: a (Maintaining internal stability while adjusting to changing external conditions)

Explanation: Homeostasis is defined as a self-regulating process by which a living organism can maintain internal stability while adjusting to changing external conditions. Homeostasis is not static and unvarying; it is a dynamic process that can change internal conditions as required to survive external challenges.

60. Consider the following chemicals used in fire crackers which has been banned by Supreme Court of India

1. Lead
2. Antimony
3. Sodium
4. Sulphur

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Explanation: In July 2016 the SC ordered that no firecrackers shall contain antimony, lithium, mercury, arsenic and lead.

Lithium provides Red colour, Mercury provides white colour, Lead is used to ignite fire antimony used for glitter effect and Arsenic to get additional colour to flame

Currently, guidelines exist for four types of explosive firecrackers — atom bombs, Chinese crackers, garland crackers and maroons. The guidelines for these were drawn by PESO in 2008 after the Supreme Court ordered it to regulate their composition. According to these guidelines, the sulphur, nitrate & aluminium power contents must not exceed 20%, 57%, & 24% respectively.

61. Consider the following statements about the Global Biofuels Alliance (GBA)

1. India, USA and Brazil were the founding members of this GBA
2. Sugarcane, Corn and Soybean were the major sources of biofuels
3. Brazil is consumes more ethanol blended fuel in the world

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1,2 and 3

Ans: a (1 and 2 only)

Statement 1 is correct: The three founding members, India, the U.S. and Brazil, were joined by Argentina, Canada, Italy and South Africa, who are also G-20 member countries.

Statement 2 is correct: The former is derived from crops grown specifically to produce biofuels such as sugarcane, corn, or soybean, and the latter is from agricultural waste, used cooking oil and processed animal residues like fats. The former is colloquially referred to as 1G ethanol, or first-generation biofuel, and the latter as 2G, that is second-generation. This distinction has now come into sharp focus as climate change accelerates, with fears of threat to food security and increased loss of forests and biodiversity due to greater land required for farming. Estimates suggest that well over half of all vegetated land is

under cultivation today, and that agriculture is one of the world's largest methane emitters. The GBA has emphasised that its focus would be to develop 2G ethanol.

Statement 3 is incorrect: The United States produces and consumes more ethanol fuel than any other country in the world.

62. Consider the following statements about the Loss and Damage Fund adopted during the COP28

1. COP27, formally agreed to setup a 'Loss and Damage fund' no later than COP28
2. Article 8 of Paris agreements has a legal basis for setting of this fund
3. It is mandated the developed countries to provide finance to loss and damage fund
4. World bank will be a permanent host of this fund

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Statement 1 is correct: At the COP27 climate summit, all countries agreed to set up a fund to pay for loss and damage. This came after a 30-year fight for such a fund led by small island states and developing countries.

After much back and forth between developed countries and the G77 and China – a major group of developing countries representing six out of every seven people in the world – a text was produced close to the end of the summit that “decided” to establish a new loss-and-damage fund.

Original Text after COP27:

7. *Decide* to establish new funding arrangements for assisting developing countries that are particularly vulnerable to the adverse effects of climate change, in responding to loss and damage, including with a focus on addressing loss and damage by providing and assisting in mobilizing new and additional resources, and that these new arrangements complement and include sources, funds, processes and initiatives under and outside the Convention and the Paris Agreement;

Statement 2 is correct: The issue is recognised in Article 8 of the Paris Agreement, which says parties “recognise the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change”. However, the

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Paris text did not commit countries – developed or otherwise – to providing funds for loss and damage.

Statement 3 is incorrect: In addition, the recommended text “urges” developed countries to “continue to provide support”, while other countries would be subject to a weaker exhortation “enourag[ing]” them to do the same “on a voluntary basis”. (This is the element that the US raised its last-minute objection to as the meeting came to a close.)

Official Text: Urge Developed Country parties, to continue to provide support and encourage other parties to provide, or continue to provide support on a voluntary basis for activities to address loss and damage.

Statement 4 is incorrect: In the end, the committee agreed to a text that would establish the World Bank as an interim host of the fund for four years. It included conditions such as allowing communities to access small grants and providing access to countries that are not World Bank members.

Additional Information:

One major issue blocking progress was the location of the loss-and-damage fund. The US and the EU wanted to see the fund hosted by the US-based World Bank, a proposal that G77 and China members strongly opposed.

They argued that World Bank finance is based not on grants but on loans, which are not desirable for debt-burdened countries in the global south. They also said the bank is not set up to allow fast, direct access of the kind required when dealing with climate disasters. Developing-country transitional committee members made a submission in September calling for “at least” \$100bn a year in loss-and-damage funding by 2030. They cited a UN-commissioned report by the Independent High-Level Expert Group on Climate Finance, which says “recent events suggest [costs] could be as high as \$150-300bn by 2030 to cope with immediate impacts and for subsequent reconstruction”.

For more information:

<https://www.carbonbrief.org/qa-the-fight-over-the-loss-and-damage-fund-for-climate-change/>

63. Consider the following statements about the Green India Mission (GIM)

1. The objective of this mission is to increase forest cover on 5 million hectares and create livelihood to around 3 million people through forest based activities
2. It is being implemented by Ministry of Environment, Forest and Climate Change
3. Activities under this mission are in convergence with Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Compensatory Afforestation Fund Management and Planning Authority (CAMPA)
4. The financial distribution under this scheme is 75:25 for all states

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Statement 1 is correct: The Green India Mission is aimed at protecting, restoring and enhancing India's green cover in response to the climate change. The mission has a cumulative target of increasing forest cover on 5 million hectares of land while improving the forest cover on additional 5 million hectares. The mission also has a target of providing livelihood to 3 million people through the forest based activities and enhancing the provisioning capacity of the Indian forests along with their carbon sequestration capacity.

Statement 2 is correct: This mission is being implemented by Ministry of Environment, Forest and Climate Change

Statement 3 is correct: Activities under Green India Mission are implemented under the convergence with Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Compensatory Afforestation Fund Management and Planning Authority (CAMPA) and National Afforestation Program (NAP).

Statement 4 is incorrect: The sharing pattern for plan outlay for centre and state would be 90:10 for the North Eastern States and 75:25 for the rest of the states respectively.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

64. Consider the following statements about the Great Green Wall of Africa and its alignment

1. Benin
2. Egypt
3. South Sudan
4. Ethiopia

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Explanation: It is a project adopted by the African Union in 2007, initially conceived as a way to combat desertification in the Sahel region and hold back expansion of the Sahara desert, by planting a wall of trees stretching across the entire Sahel from Djibouti, Djibouti to Dakar, Senegal. The original dimensions of the "wall" were to be 15 km (9 mi) wide and 7,775 km (4,831 mi) long, but the program expanded to encompass nations in both northern and western Africa. The concept evolved into promoting water harvesting techniques, greenery protection and improving indigenous land use techniques, aimed at creating a mosaic of green and productive landscapes across North Africa.

The Initiative brings together more than 20 countries, including Algeria, Burkina Faso, Benin, Chad, Cape Verde, Djibouti, Egypt, Ethiopia, Libya, Mali, Mauritania, Niger, Nigeria, Senegal, Somalia, Sudan, The Gambia and Tunisia.

65. Consider the following pairs about the Coastal Regulation Zones (CRZ)

Zone	Activities permitted
CRZ-1	Defence and Atomic Energy projects
CRZ-2	Thermal Power Plants
CRZ-3	Large Housing Projects
CRZ-4	Discharging treated effluents, hazardous substances and construction of memorials

How many pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: c (Only three)

Pair 1 is correctly matched: For instance, as per the 2011 notification CRZ-1 includes the most ecologically sensitive areas like mangroves, coral reefs and sand dunes, and intertidal zones. It was off-limits for tourism activities and infrastructure development, except for defence, strategic and rare public utility projects. The latest notification further categorises CRZ-1. It allows "eco-tourism activities such as mangrove walks, tree huts, nature trails, etc" in eco-sensitive areas, demarcated as CRZ-IA. Sea links, salt harvesting and desalination plants and roads on stilts are also allowed in CRZ-IA. The controversial land reclamation, in which new land is created from oceans or lake beds and is known to have strong impacts on coastal ecology, has been allowed in intertidal or CRZ-IB areas, for ports and sea links.

Pair 2 is incorrectly matched: In CRZ-II, a substantially built-up area, project developers can now increase the floor area ratio or floor space index, and build resorts and other tourism facilities. A large part of South Mumbai falls in this category.

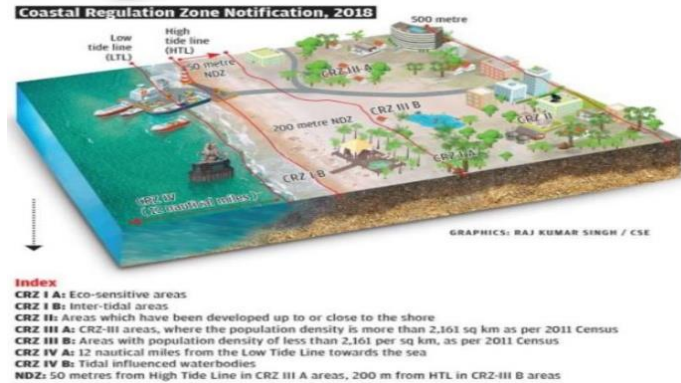
Pair 3 is correctly matched: Under earlier notifications, hotels and beach resorts were also allowed in CRZ-III, or relatively undisturbed areas that do not fall under CRZ-I or II. But their construction was prohibited in no development zone (NDZ) of CRZ-III, which extends landwards up to 200 m from HTL. The latest notification drastically shrinks NDZ to 50 m from HTL in densely populated areas (where population exceeds 2,161 per sq km as per the 2011 Census). This technically allows resorts, hotels and tourism facilities to be built right up to HTL. "Providing housing facilities just 50 m from the coastline would expose the inhabitants to severe weather events, that too without any buffer."

Pair 4 is correctly matched: CRZ-IV, which includes the shallow belt of coastal waters extending up to 12 nautical miles, is not only a crucial fishing zone for small fishers but also bears the maximum brunt of waste from offshore activities, such as oil exploration, mining and shipping. The 2011 notification had thus laid importance on regulation of pollution from such offshore activities. Instead of strengthening the regulation, the 2018 notification allows land reclamation for setting up ports, harbours

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

and roads; facilities for discharging treated effluents; transfer of hazardous substances; and construction of memorials or monuments.



66. Consider the following statements about Sharm el-Sheikh joint work on Agriculture and Food Security (SSJW)

1. Koronivia joint work on Agriculture was a precursor to SSJW
2. It is the only UNFCCC work stream to address the Agriculture and Food Security

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: c (Both 1 and 2)

Statement 1 is correct: SSJW is the successor to the Koronivia joint work for agriculture, which was established at COP23 in Bonn, in 2017.

Statement 2 is correct: The Sharm el-Sheikh joint work on implementation of climate action on agriculture and food security (SSJW), agreed at COP27 last year, is the only formal UNFCCC workstream to address agriculture and food systems.

The goal of the SSJW negotiations at COP28 was to establish a roadmap for the joint work. There were three main elements to this: to agree on a set of topics for the three mandated workshops to be held under the joint work; to establish the online portal for submissions under the workshops; and to determine how the work itself should be carried out and synthesised.

Under the SSJW, as with Koronivia before it, a series of workshops brings together a wide range of voices

on a particular topic, with each workshop resulting in a synthesis report.

67. 'Article 6' Paris agreement deal with the?

- (a) Carbon Trading Mechanism
- (b) Methane reduction from Agriculture
- (c) Adoption of renewable energy
- (d) About Nationally Determined Contributions

Ans: a (Carbon Trading Mechanism)

Explanation: Article 6 of the Paris Agreement allows countries to voluntarily cooperate with each other to achieve emission reduction targets set out in their NDCs. This means that, under Article 6, a country (or countries) will be able to transfer carbon credits earned from the reduction of GHG emissions to help one or more countries meet climate targets. Within Article 6, Article 6.2 creates the basis for trading in GHG emission reductions (or "mitigation outcomes") across countries. Article 6.4 is expected to be similar to the Clean Development Mechanism of the Kyoto Protocol. It establishes a mechanism for trading GHG emission reductions between countries under the supervision of the Conference of Parties – the decision-making body of the UN Framework Convention on Climate Change. Article 6.8 recognizes non-market approaches to promote mitigation and adaptation. It introduces cooperation through finance, technology transfer, and capacity building, where no trading of emission reductions is involved.

68. Consider the following statements about Clean Development Mechanism (CDM)

1. Developed countries can use CDM unlimitedly to achieve their emission reduction goals completely
2. Adaptation fund is financed with the proceeds of Clean Development Mechanism
3. CDM is one of the flexible mechanism introduced to enable developed countries to meet their emission reduction targets
4. All countries are members of CDM

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

(d) All four

Ans: b (Only two)

Statement 1 is incorrect: To prevent industrialised countries from making unlimited use of CDM, the framework has a provision that use of CDM be supplemental to domestic actions to reduce emissions.

Statement 2 is correct: The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from clean development mechanism (CDM) project activities and receive funds from other sources.

Statement 3 is correct: The Clean Development Mechanism (CDM) is a United Nations-run carbon offset scheme allowing countries to fund greenhouse gas emissions-reducing projects in other countries and claim the saved emissions as part of their own efforts to meet international emissions targets. It is one of the three Flexible Mechanisms defined in the Kyoto Protocol (1997). The CDM, defined in Article 12 of the Protocol, was intended to meet two objectives:

- To assist non-Annex I countries (predominantly developing nations) achieve sustainable development and reduce their carbon footprints; and
- To assist Annex I countries (predominantly industrialized nations) in achieving compliance with their emissions reduction commitments (greenhouse gas emission caps).

Statement 4 is incorrect: Because several countries with high emissions, including the United States and China, either were not signatories of the Kyoto Protocol or were not required by it to reduce their emissions, most of the market for CDMs came from European countries. This, together with the recessions brought on by the global financial crisis and the European debt crisis, resulted in very low demand for carbon offsets, causing the value of CERs to plummet.

69. Consider the following statements about ‘The Work Programme on Just Transition Pathways’

1. It is established during the COP28, Dubai
2. The objective of this programme is access, design and scaling up pathways to achieve the goals of the Paris agreement

Which of the statements given above are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: b (Only 2)

Statement 1 is incorrect: Launched within the Sharm el-Sheikh implementation plan i.e during the COP27, the just transition work programme (JTWP) held its first high-level ministerial round table at COP28, preparing the work programmes’s activities for the next five years.

Statement 2 is correct: The work programme on just transition pathways, which was established at COP27 last year, is meant to assess, design and scale up pathways to achieve the goals of the Paris Agreement in a way that is just and equitable for all, and leaves no one behind.

70. Consider the following statements about ‘Action for Climate Empowerment’ programme

1. It is launched during the COP28, Dubai
2. The main objective of this programme is to encourage people to engage in climate action through education, training and global cooperation
3. This programme has been integrated with Nationally Determined Contributions of countries

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: c (2 and 3 only)

Statement 1 is incorrect: Action for Climate Empowerment was launched during COP26, Glasgow, UK.

Statement 2 is correct: Action for Climate Empowerment (ACE) aims to encourage people to engage in climate action in different ways – through education, training and global cooperation, alongside

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

public awareness, participation and access to information. During the COP27, Sharm-el-Sheikh, countries had agreed upon 4 year action plan. This plan focuses on immediate action through short term, clear cut and time bound activities.

Statement 3 is correct: During the COP28, countries have released a status report, this contained information from countries and stakeholders on Action for Climate Empowerment and how they have been integrated with Nationally Determined Contributions (NDC).

71. Consider the following statements about global pledge on 'Renewables and energy efficiency' taken during COP28

1. One of the objective of this pledge is to triple renewable installed capacity to atleast 11 terawatts by 2030
2. Double the rate of energy efficiency roughly from 2% to 4% per year by end of 2030
3. India is a founding member and promoted this pledge

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: a (1 and 2 only)

Statement 1 is correct: EU president Ursula von der Leyen along with US and UAE launched the global pledge on renewables and energy efficiency, together with the COP28 presidency and 118 countries as part of the World Action Summit at COP28. (As of 11 December, the number of governments to endorse the target had grown to 130.)

The initiative sets a global target to triple installed renewable energy capacity to at least 11 terawatts (TW) by 2030.

Statement 2 is correct: Additionally, it sets a target to double the rate of global energy-efficiency improvements, from roughly 2% to 4% per year, by the end of the decade.

Statement 3 is incorrect: Both China and India were notably absent from the initiative, despite backing a tripling of global renewable energy capacity by 2030 at the G20 summit in Delhi in September.

Additional Information: Beyond renewable, a declaration to triple nuclear energy was endorsed by 22 national governments on 1 December, including the US, France, UAE and the UK.

72. Consider the following statements about International Renewable Energy Agency (IRENA)

1. It is first international organisation to focus exclusively on renewable energy
2. It was first proposed and mentioned in 1980 Brandt Report on international development
3. In order to become a member of IRENA, a country must be a member of United Nations
4. Brazil is the only BRICS country not ratified the IRENA

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: The International Renewable Energy Agency (IRENA) is an intergovernmental organization mandated to facilitate cooperation, advance knowledge, and promote the adoption and sustainable use of renewable energy. It is the first international organisation to focus exclusively on renewable energy, addressing needs in both industrialised and developing countries. It was founded in 2009 and its statute entered into force on 8 July 2010. The agency is headquartered in Masdar City, Abu Dhabi.

Statement 2 is correct: The first suggestions for an international renewable agency is based on the 1980 Brandt Report activities. NGOs and industry lobbying groups like Eurosolar, the World Council for Renewable Energy (WCRE) and the World Wind Energy Association have promoted IRENA since several decades.

Statement 3 is correct: The statute to gain IRENA membership requires that a state be a member of the United Nations and to regional intergovernmental economic-integration organizations. States that gain membership to IRENA must uphold the organizations statute to the best of its abilities. On 9 January 2019, Canada became IRENA's 160th member. As of July

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

2022, 168 states and the European Union are members of IRENA, and a further 17 are in the process of accession.

Statement 4 is correct: Brazil is the only BRICS country who had signed the treaty but not ratified it. Other who had not ratified the treaty includes Libya, Democratic Republic of Congo and Tanzania

73. Consider the following countries who are founding members of ‘Alliance of Champions for Food System Transformation’.

1. Brazil
2. USA
3. Sierra Leone
4. Israel

How many of the above statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: b (Only two)

Explanation: COP28’s thematic food day, 10 December, saw the launch of the Alliance of Champions for Food Systems Transformation, akin to the Beyond Oil and Gas Alliance. Co-chairs Brazil, Norway and Sierra Leone were joined by Cambodia and Rwanda as the founding members of the alliance. The five governments that make up the alliance have committed to “reorienting policies, practices and investment priorities to deliver better food systems outcomes for people, nature and climate”.

74. Which country launched ‘Tropical Forests Forever’ initiative?

- (a) India
- (b) Brazil
- (c) UAE
- (d) USA

Ans: b (Brazil)

Explanation: Brazil, which will host COP30 as the “tropical forests COP” in 2025, turned heads by announcing a new “tropical forests forever” fund proposal on 1 December.

Launched by environment minister Marina Silva and finance minister Fernando Haddad, the proposal aims

to provide 80 tropical countries with finance to help maintain trees, with annual payments based on hectares conserved or restored. The newswire added that Brazil hopes to raise \$250bn for the fund from sovereign wealth funds and other investors, including the oil industry.

75. Consider the following statements about Global Cooling Pledge

1. It is launched during the COP28 by UAE
2. All members were committed to reduce the global cooling related emissions across all sectors by at least 68% by 2050 based on 2022 levels
3. Hydrofluorocarbons have higher potential to absorb infrared radiations thereby leading to greenhouse effect on Earth
4. India is a founding member of this group

How many statements given above are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Ans: d (All four)

Statement 1 is correct: Sixty-three countries, including the US, Canada, and Kenya, signed up to the world’s first-ever pledge to drastically cut cooling emissions at the ongoing COP28 climate summit on Tuesday (November 6).

Statement 2 is correct: The Global Cooling Pledge commits the countries to reduce their cooling emissions by at least 68% by 2050 and outlines several strategies to tackle them.

These kinds of emissions now account for 7% of global greenhouse gas emissions and are expected to triple by 2050. The situation is set to get worse as rising global temperatures will lead to a large-scale cooling demand — the use of more ACs and refrigerators would cause more cooling emissions.

Statement 3 is correct: CFCs were largely replaced by two groups of chemicals, hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs), but they presented a new problem. Although HFCs and HCFCs don’t damage the ozone layer, they are powerful greenhouse gases — both of them can absorb infrared radiation, trapping heat inside the

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

atmosphere rather than letting it escape back into space, generating a greenhouse effect that warms Earth. Notably, CFCs are also potent global warming gases.

Statement 4 is correct: India and China, two of the world's key economies and carbon emitters with a combined population of over 2.8 billion, are key to the success of the cooling pledge. New Delhi is not willing to undertake targets above those committed to in 1992 under the multilateral Montreal Protocol to regulate production and consumption of ozone-depleting chemicals and hydrofluorocarbons used in refrigerators, air conditioners and insulating foams.

76. Consider the following statements

1. Vaikom was a temple town in the princely state of Travancore
2. Vaikom, with its revered Vishnu temple, was chosen as the location for the very first satyagraha
3. Vaikom Satyagraha was the first among temple entry movements in India
4. 1923 session of the INC was held in Kakinada

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: A

All except statement two are correct.

The year 2024 marks the centenary of the Vaikom Satyagraha.

About Vaikom Satyagraha

Background: Vaikom was a temple town in the princely state of Travancore. The low-caste Hindus were not allowed to enter into the temples.

The issue of temple entry was first raised by Ezhava leader T K Madhavan in a 1917 editorial in his paper Deshabhimani.

In the 1923 session of the INC in Kakinada, a resolution was passed by the Kerala Provincial Congress Committee to take up anti-untouchability as a key issue.

Vaikom, with its revered **Shiva temple**, was chosen as the location for the very first satyagraha.

Vaikom Satyagraha was the first among temple entry movements in India

It lasted for 604 days (20 months) from March 30, 1924 to November 23, 1925

77. Consider the following about the Association for Democratic Reforms

1. It is an apolitical and non-partisan non-profit organization
2. It was established in 1999 by a group of professors from the Indian Institute of Management (IIM) Ahmedabad
3. It focuses on corruption and criminalization in the political process

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

The Association for Democratic Reforms (ADR):

– It is an apolitical and non-partisan non-profit organisation in India that was established in 1999 by a group of professors from the Indian Institute of Management (IIM) Ahmedabad.

– It focuses on corruption and criminalization in the political process, empowerment of the electorate through greater dissemination of information relating to the candidates and the parties etc.

Objectives:

– To improve governance and strengthen democracy through continuous work in the area of Electoral and Political Reforms.

Significances:

– It has published numerous reports on the criminal backgrounds, financial details, and other relevant information of candidates contesting in various elections.

A. These reports have played a crucial role in promoting transparency and accountability in Indian politics.

78. Consider the following statements

Festival	Month
Bohag Bihu	April
Magh Bihu	October

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Kati Bihu	January
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How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: A

About the Bihu

Bihu is the essence of Assam and is celebrated across the state with a tremendous zeal and enthusiasm.

There are three Bihu festivals namely

‘Bohag Bihu’ is celebrated in the month of ‘Bohag’ (Baisakh, the middle of April): It is also called the Rongali Bihu and is a festival of merriment and heralds the Assamese New Year and the onset of spring.

‘Magh Bihu’ is celebrated in the month of ‘Magh’ (the middle of January): It is also called Bhogali Bihu, which is quintessentially the festival of food.

It marks the end of the harvesting season. The eve of the Magh Bihu is called the Uruka.

‘Kati Bihu’ is celebrated in the month of ‘Kati’ (Kartik, the middle of October) :

It is also called Kongali Bihu unlike the other Bihu’s, is not a flamboyant festival and the festivities are graver in nature. An earthen lamp is lit near the Tulsi plant which is termed as the ‘Tulsi Bheti’.

79. Which of the following is related to a syndrome reported by US officials

- (a) Nigeria Syndrome
- (b) Egyptian Syndrome
- (c) Havana Syndrome
- (d) Vennie Syndrome

Ans: C

Havana syndrome refers to a set of mental health symptoms that are said to be experienced by United States intelligence and embassy officials in various countries.

Generally, the word ‘syndrome’ simply means a set of symptoms.

Origin and Symptoms : It was first reported in 2016 when U.S. diplomats in Cuba’s capital (Havana) reported falling ill and hearing piercing sounds at night, sparking speculation of an attack by a foreign entity using an unspecified sonar weapon.

Other symptoms including bloody noses, headaches and vision problems were later reported by embassy staff in China and Europe.

80. ‘Callisto’ is in news, is a moon of?

- (a) Jupiter
- (b) Saturn
- (c) Uranus
- (d) Mercury

Ans: A

Researchers have discovered strong evidence indicating the presence of ozone on Jupiter’s moon Callisto, shedding light on the complex chemical processes taking place on icy celestial bodies in the Solar System.

About the Study

The Study outlines the chemical evolution of “SO₂ astrochemical ice”, which is ice primarily composed of sulphur dioxide (SO₂) in the presence of ultraviolet irradiation.

They analyzed the data of the UV absorption spectra of the irradiated ice samples and were able to identify a distinct signature indicating the formation of ozone.

The Callisto’s surface is kind of stable. This stability could be vital to preserve any subsurface ocean or potential habitats beneath the icy crust.

81. Consider the following about the ART Initiative

1. It is the treatment of people infected with human immunodeficiency virus (HIV)
2. Twenty years of Free Antiretroviral Therapy (ART) initiative have been completed recently
3. In 2021, India adopted a policy of rapid ART initiation

Which of the above statements are correct?

- (a) One only
- (b) Two Only
- (c) Both 1 and 3
- (d) All of the above

Ans: D

Twenty years of Free Antiretroviral Therapy (ART) initiative have been completed recently.

About Antiretroviral Therapy (ART) initiative

It was on April 1, 2004, for Persons living with HIV (PLHIV).

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

It is the treatment of people infected with human immunodeficiency virus (HIV) using anti-HIV drugs. The standard treatment consists of a combination of drugs (often called “highly active antiretroviral therapy” or HAART) that suppress HIV replication. Rationale behind the initiative: At the emergence of HIV/AIDS in the early 1980s, the disease was considered a death sentence and was met with a lot of fear, stigma and discrimination.

Access to many medicines including the first antiretroviral drug, AZT (zidovudine), remained limited for most of the world’s population except in some high-income countries. Impact: In 2023, the prevalence of HIV in 15-49 years has come down to 0.20 (confidence interval 0.17%-0.25%) and the burden of disease in terms of estimated PLHIV has been coming down to 2.4 million.

India’s share in PLHIV globally had come down to 6.3% (from around 10% two decades ago).

The annual new HIV infections in India have declined by 48% against the global average of 31% (the baseline year of 2010).

82. Consider the following about VVPAT

1. Introduced for the first time in India in the 2014 Lok Sabha elections
2. It is basically a ballot-less vote verification system connected with the EVM.
3. The slip contains the name and symbol of the party they have voted for.

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

Introduced for the first time in India in the 2014 Lok Sabha elections, VVPAT or the Voter Verifiable Paper Audit Trail is basically a ballot-less vote verification system connected with the EVM.

The VVPAT generates a paper slip to be viewed by the voter and allows him/her to verify whether the vote was cast correctly on the EVM.

The slip contains the name and symbol of the party they have voted for.

The machine also has a transparent window for the voter to see the printed slip. Eventually, the slip goes inside a sealed box of the machine.

83. Consider the following about the Harappan Civilization

1. The Harappan civilization is identified as a Bronze-age civilization
2. Every house was equipped with a staircase, a kitchen and several rooms.
3. The Harappans wore ornaments made of gold, silver, ivory, shell, clay, semi-precious stones and others.
4. The Harappans produced intricate pottery, including the famous red pottery with black painted motifs.
5. They cultivated crops such as wheat, barley, peas, and cotton.

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) All except three only
- (d) All of the above

Ans: D

The Harappan civilization is believed to be one of the oldest world civilizations together with Egypt and Mesopotamia.

It was developed along the river Indus and for that reason it is also known as the Indus Valley Civilization.

The Harappan civilization is identified as a Bronze-age civilization because many objects have been found that are made up of copper based alloys.

Major Features of Civilization

Urban Planning: Their towns were well planned and they had brick houses which were situated along the roads.

Every house was equipped with a staircase, a kitchen and several rooms.

Their courtyards had wells, bathrooms and they had proper drainage systems.

Ornaments: The Harappans wore ornaments made of gold, silver, ivory, shell, clay, semi-precious stones and others.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

Trade and Commerce: The civilization had extensive trade networks, reaching as far as Mesopotamia, Afghanistan, and the Arabian Peninsula.

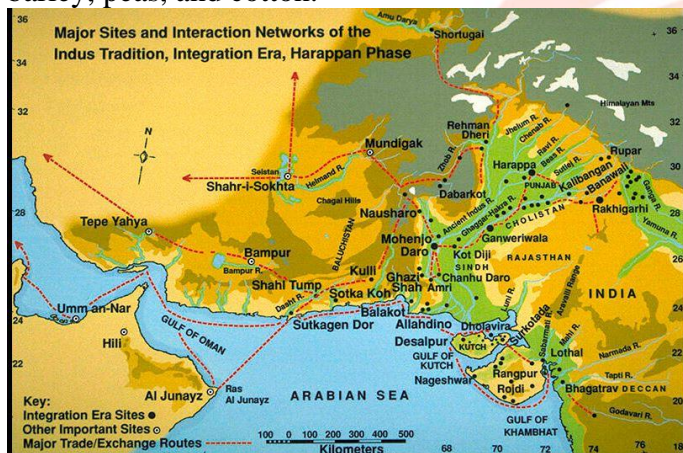
Religion and Iconography: Harappan artifacts depict various symbols and motifs believed to be related to religious beliefs.

These include figures such as the “Priest King” and images of animals like bulls, suggesting possible reverence for certain animals.

Craftsmanship and Artistry: The Harappans produced intricate pottery, including the famous red pottery with black painted motifs.

They also created jewelry, sculptures, and seals made of steatite, terracotta, and other materials.

Agriculture: They cultivated crops such as wheat, barley, peas, and cotton.



Site	Present Day
Harappa	Punjab, Pakistan
Mohenjo-Daro	Sindh, Pakistan
Dholavira	Kutch district of Gujarat,
Kalibangan	Rajasthan
Lothal	Gujarat
Rakhigarhi	Haryana
Chanhudaro	Sindh, Pakistan
Ganweriwala	Punjab, Pakistan
Sutkagendor	Baluchistan Province, Pakistan
Alamgirpur	Uttar Pradesh

84. Consider the following related to ASER 2023

- More than half of rural students aged 14 to 18 years struggled with basic mathematics
- Only 5.6% are taking vocational training or related courses.

3. As they grew older, the rate of dropouts increased.

4. Scheduled Castes are still the most disadvantaged.

How many of the above statements are correct?

- All except one only
- All except two only
- Only one
- All of the above

Ans: A

Gaps in India's Education System

The Learning Gap: The Annual Status of Education Report (ASER) 2023 revealed that more than half of rural students aged 14 to 18 years struggled with basic mathematics, a skill they should have mastered in Classes 3 and 4.

About 25% in this age group could not read a Class 2 level text in their vernacular.

As they grew older, the rate of dropouts increased.

Enrollment Rates: Overall, 86.8% of 14-18-year-olds are enrolled in an educational institution.

However, there are notable differences visible by age, with 3.9% of 14-year-olds and 32.6% of 18-year-olds not enrolled.

Vocational Training: Only 5.6% are taking vocational training or related courses.

It is more prevalent among college-level students (16.2%).

Most youth are taking short duration courses of six months or less.

Basic Abilities: About 25% of the youth cannot read a Class II level text fluently in their regional language.

Over half struggle with division problems (3-digit by 1-digit), with only 43.3% of 14-18-year-olds able to solve such problems correctly.

Digital Awareness and Skills: Close to 90% of all youth have a smartphone in the household, and 43.7% of males have their own smartphone compared to 19.8% of females.

Males generally outperform females in digital tasks, and performance on digital tasks improves with education level and basic reading proficiency.

Socio-Economic Disparities: The hierarchy between social groups persists; Scheduled Tribes are still the most disadvantaged.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

The education arrangements in India are not founded on the resident-driven standard. Rather, these seem to have been forced on them.

85. Consider the following related to efforts of the government in education

Initiative	Purpose
Ek Bharat Shreshtha Bharat	enhance the understanding and bonding between states
MANODARPAN	provide psychosocial support to students, teachers, and families
Saakshar Bharat	promote and strengthen adult education
PM e-VIDYA	part of Atma Nirbhar Bharat Abhiyan

How many of the above statements are correct?

- All except one only
- All except two only
- Only one
- All of the above

Ans: D

Major Government Initiatives

Ek Bharat Shreshtha Bharat: It aims to enhance the understanding and bonding between states, thereby strengthening the unity and integrity of India.

PM e-VIDYA: It was launched as part of Atma Nirbhar Bharat Abhiyan, which unifies all efforts related to digital/online/on-air education to enable multi-mode access to education.

MANODARPAN: An initiative covering a wide range of activities to provide psychosocial support to students, teachers, and families for Mental Health and Emotional Wellbeing during the COVID outbreak and beyond.

Centrally Sponsored Scheme on Teacher Education: It aims to create a sound institutional infrastructure for pre-service and in-service training of elementary & secondary school teachers and for provision of academic resource support to elementary and secondary schools.

Scheme for Infrastructure Development of Private Aided/Unaided Minority Institutes (IDMI): It provides financial assistance to minority institutions to augment their infrastructure.

Strengthening for providing quality Education in Madrassas (SPQEM): It aims to encourage traditional institutions like Madrassas and Maktabas by giving financial assistance to introduce science, mathematics, social studies, Hindi and English in their curriculum.

Adult Education – Saakshar Bharat: It aims to further promote and strengthen adult education, especially of women, by extending educational options to those adults who have lost the opportunity of access to formal education and crossed the standard age for receiving such education.

Central Sector Interest Subsidy Scheme, 2009 on Model Education Loan Scheme of IBA: It provides full interest subsidy during the period of moratorium on loans taken by students from economically weaker sections for pursuing any of the approved courses of studies in technical and professional streams from recognized institutions in India.

86. Consider the following related to ILO

- It is a specialized agency of the United Nations
- India is a founder member of the ILO
- It was established in 1919 by the Treaty of Versailles
- It received Nobel Peace Prize in 1969

How many of the above statements are correct?

- All except one only
- All except two only
- Only one
- All of the above

Ans: D

International Labour Organisation (ILO)

– It is a specialised agency of the United Nations.
 – It was established in 1919 by the Treaty of Versailles as an affiliated agency of the League of Nations, and became the first affiliated specialized agency of the United Nations in 1946.

– Headquarter: Geneva, Switzerland.

– India is a founder member of the ILO.

– Aim: To promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.

a. It is the only tripartite UN Agency that brings together governments, employers and workers of 187

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

member States, to set labour standards, develop policies and devise programmes promoting decent work for all women and men.

– Recognition:

a. Nobel Peace Prize (1969): For improving peace among classes, pursuing decent work and justice for workers, and for providing technical assistance to other developing nations.

– Flagship Reports of ILO:

a. Global Wage Report;

b. World Employment and Social Outlook (WESO);

c. World Social Protection Report;

d. World of Work Report

87. Consider the following about Monetary Policy Committee

1. The Monetary Policy Committee or the MPC is a 6 member committee
2. The first such MPC was constituted in 2016.
3. The MPC determines the policy repo rate required to achieve the inflation target.
4. The MPC is required to meet at least four times in a year.
5. Each member of the MPC has one vote
6. Each Member of the MPC writes a statement specifying the reasons for voting in favour of, or against

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

About RBI Monetary Policy Committee

The Monetary Policy Committee or the MPC is a 6 member committee that is led by the RBI governor.

The first such MPC was constituted in 2016.

The MPC determines the policy repo rate required to achieve the inflation target.

The MPC is required to meet at least four times in a year. The quorum for the meeting of the MPC is four members.

Each member of the MPC has one vote, and in the event of an equality of votes, the Governor has a second or casting vote.

Each Member of the Monetary Policy Committee writes a statement specifying the reasons for voting in favour of, or against the proposed resolution.

88. Consider the following related to AUKUS

1. AUKUS is a trilateral defence and security partnership between Australia, the UK and the US
2. Established in 2021 to bolster deterrence and defense capabilities in the Indo-Pacific.
3. Pillar I - development of Nuclear Armed nuclear-powered submarines for Australian Navy
4. Pillar 2 focuses on cooperation in Six advanced military capability areas in Indo-Pacific

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: B

What is AUKUS?

AUKUS is a trilateral defence and security partnership between Australia, the United Kingdom and the United States.

It was established in 2021 to bolster their allied deterrence and defense capabilities in the Indo-Pacific.

The trilateral partnership has two pillars.

Pillar I revolves around the acquisition and development of conventionally armed nuclear-powered submarines for the Royal Australian Navy; and Pillar 2 focuses on cooperation in eight advanced military capability areas: artificial intelligence (AI), quantum technologies, innovation, information sharing, and cyber, undersea, hypersonic and counter-hypersonic and electronic warfare domains.

89. Consider the following about the ‘Satpula Dam’ which was in news recently

1. It was built in 1340 by Mohammad Bin Tughlaq
2. The Satpula dam was built using Delhi quartz, a stone found in the Aravallis

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

3. It provided a reliable source of water for irrigation

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

Recently, the Satpula dam was in news due to its unique character of reliable source of water and acting as a defence against possible intruders in mediaeval times.

About the Satpula:

Satpula, a magnificent Tughlaq-era dam, is a historical marvel nestled in the heart of Delhi.

It was built in 1340 by Mohammad Bin Tughlaq, served two purposes:

Providing a reliable source of water for irrigation, and;

Acting as a defence against possible intruders.

The dam finds mention in Sir Sayyid Ahmad Khan's Asar-us-Sanadid (The Remnant Signs of Ancient Heroes) — considered among the first books describing Delhi's numerous monuments in vivid detail.

The Satpula dam was built using Delhi quartz, a stone found in the Aravallis, and is a testament to the superior masonry and architectural skills that marked the Tughlaq era.

90. Consider the following about the WTO

- 1. WTO was founded in 1995
- 2. WTO is run by its 164 members
- 3. Ministerial Conference is the WTO's top decision-making body
- 4. All members of the WTO are involved in the Ministerial Conference

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

World Trade Organization (WTO)

– WTO is the international organization that deals with the rules of trade between countries.

– History: WTO was founded in 1995. It is the successor to the General Agreement on Tariffs and Trade (GATT) established in the wake of the Second World War.

– Headquarters: Geneva, Switzerland

– Member: The WTO is run by its 164 members.

– Mandate: Its aim is to promote free trade, which is done through trade agreements that are discussed and signed by the member states.

a. The WTO also provides a forum for countries to negotiate trade rules and settle economic disputes between them.

WTO's Ministerial Conference

– The Ministerial Conference is the WTO's top decision-making body. It usually meets every two years.

– All members of the WTO are involved in the Ministerial Conference, and they can take decisions on all matters covered under any multilateral trade agreements.

91. Consider the following related to Dr B R Ambedkar

- 1. He played a significant role in the formation of the Reserve Bank of India
- 2. He was first Minister of Law and Justice of independent India
- 3. He founded Bahishkrit Hitkarini Sabha
- 4. In 1936, he formed the Independent Labour Party
- 5. In 1951, he resigned his ministership, expressing his differences on the Kashmir issue
- 6. In 1955, he published his book titled Thoughts on Linguistic States.

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

About Bhim Rao Ambedkar

He was an Indian jurist, economist, politician and social reformer.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

He was first Minister of Law and Justice of independent India and is considered as the chief architect of the Constitution of India.

Early Life: He was born in a low-caste Mahar family on 14th April, 1891 to Subedar Ramji Maloji Sakpal.

Education: He got his early education in Bombay and he completed his graduation at Elphinstone College, Bombay, for which he was getting a scholarship from His Highness Sayajirao Gaikwad of Baroda.

In 1913 he was selected as a scholar to go to the U.S.A, for higher studies.

He got his M.A. and Ph.D. degrees from Columbia University in 1915 and 1916 respectively.

He acquired sound knowledge of Economics, Politics, Law, Philosophy and Sociology, in pursuing his studies; he had to face many social odds.

Works and Contributions : He contributed to India's Independence struggle and in its reforms post-independence.

He played a significant role in the formation of the Reserve Bank of India.

The Central bank was formed on the concept presented by Babasaheb to the Hilton Young Commission.

In 1924 he started an Association for the welfare of the depressed classes, with Sir Chimanlal Setalvad as the President and Dr. Ambedkar as the Chairman.

He founded Bahishkrit Hitkarini Sabha (Society for Welfare of the Ostracized) and led social movements such as Mahad Satyagraha in 1927 to demand justice and equal access to public resources for the historically oppressed castes of Indian society.

The Bahishkrit Bharat newspaper was started in 1927 to address the cause of the depressed classes in view of the new reform.

In 1936 he addressed the Bombay Presidency Mahar Conference and advocated the renunciation of Hinduism.

In 1936, he formed the Independent Labour Party to safeguard the interest of the depressed classes, which mostly formed the labour population.

In 1942, he was appointed to the Executive Council of the Governor General of India as a Labour member

In 1946, he was elected to the Constituent Assembly of India.

On 15 August 1947, he took oath as the first Law Minister of independent India.

Subsequently, he was elected Chairperson of the Drafting Committee of the Constituent Assembly, and steered the process of drafting of India's Constitution

In 1951, he resigned his ministership, expressing his differences on the Kashmir issue, India's Foreign Policy and Nehru's Policy towards the Hindu Code Bill.

He published his book, Who were Shudras?

In 1955, he published his book titled Thoughts on Linguistic States.

Legacy and Importance in present scenario

He was perhaps India's most radical thinker who transformed the social and political landscape in the struggle against British Colonialism, by making the downtrodden politically aware of their own situation. Ambedkar famously said to Dalits something that bears immense importance even today – "Educate, Agitate, and Organise"..

He dedicated the rest of his life for equality, brotherhood and humanity.

He has left behind thought provoking writings and speeches bearing interdisciplinary perspectives, with insightful analysis of socio political situations which evoke intellectual reasons and emotions.

His writings have a profound sense of justice manifested in emancipation of marginalised masses.

Today, the Indian Economy and Indian Society are facing many economic and social problems. Dr. Ambedkar's thoughts and actions may guide us for the solution of these problems.

92. Consider the following related to Soil Acidification

1. It is a process where the soil pH increases over time
2. It is accelerated by intense agricultural activity
3. Over 30% of cultivable land is said to carry acidic soil
4. Soil acidification creates an environment ripe for depletion of soil inorganic carbon

How many of the above statements are correct?

- (a) All except one only

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: A

About the Soil Acidification

It is a process where the soil pH decreases over time, primarily due to the removal of base cations (Calcium, Magnesium, Potassium, and Sodium) from the soil and their replacement with acid-forming Hydrogen and Aluminium ions.

It is accelerated by intense agricultural activity and that can affect both the surface soil and subsoil.

In India: Over 30% of cultivable land is said to carry acidic soil, impacting plant growth in India, affecting about 48 million hectares (mha) out of 142 mha of arable land.

Acidic soils in India are widespread in the humid southwestern, northeastern and Himalayan regions.

The northeastern region, in particular, has recorded acidity in approximately 95% of the soils.

Soil acidification creates an environment ripe for depletion of soil inorganic carbon (SIC), which is important for soil health, ecosystem services, among others.

93. Consider the following about Naxalism in India

1. States of Chhattisgarh, Jharkhand, Orissa and Bihar are considered severely affected.
2. States of West Bengal, Maharashtra and Andhra Pradesh are considered partially affected.
3. States of UP and MP are considered slightly affected
4. They are attempting incursions into Assam and Arunachal Pradesh

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

Presence of Maoists in India

The States of Chhattisgarh, Jharkhand, Orissa and Bihar are considered severely affected.

The States of West Bengal, Maharashtra and Andhra Pradesh are considered partially affected. The States of UP and MP are considered slightly affected.

The CPI(Maoist) are making forays into Southern States of Kerala, Karnataka and Tamil Nadu and planning to link up the Western Ghats to the Eastern Ghats through these states.

They are attempting incursions into Assam and Arunachal Pradesh, which has serious long-term strategic implications.

94. Consider the following

Caves	Location
Ellora Caves	caves are located in Maharashtra and are renowned for their exquisite Buddhist rock-cut cave monuments.
Ajanta caves	situated in Maharashtra and are a remarkable fusion of Buddhist, Hindu, and Jain monuments.
The Kailash Temple	carved from a single rock and dedicated to Lord Shiva
Krishna Mandapam	located on the Coromandel Coast of the Bay of Bengal
Varaha Cave Temple	coastal town of Mahabalipuram in Tamil Nadu
Elephanta Caves	The site is located in Elephanta Island, Maharashtra. It features a collection of rock-cut temples dedicated to Lord Shiva.

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: B

Architecturally significant caves in India

– Ellora Caves: They are situated in Maharashtra and are a remarkable fusion of Buddhist, Hindu, and Jain monuments.

a. The site includes 34 caves, carved out of solid rock between the 6th and 10th centuries CE.

b. The Kailash Temple, carved from a single rock and dedicated to Lord Shiva, attracts visitors from all over the world.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

– Ajanta caves: the caves are located in Maharashtra and are renowned for their exquisite Buddhist rock-cut cave monuments.

a. These caves date back to the 2nd century BCE.

– Krishna Mandapam: It is located on the Coromandel Coast of the Bay of Bengal, in the Kancheepuram district, Tamil Nadu.

a. The rock-cut cave temple is dedicated to Lord Krishna and depicts scenes from Hindu mythology, including Lord Krishna lifting the Govardhan Hill.

– Varaha Cave Temple: In the coastal town of Mahabalipuram in Tamil Nadu stands the Varaha Cave Temple, a UNESCO-listed monument carved out of a single rock in the 7th century CE.

a. It was made by the Pallava rulers, depicting various forms of Lord Vishnu, including his avatar or incarnation as Varaha (boar) to save Goddess Earth.

– Elephanta Caves: The site is located in Elephanta Island, Maharashtra. It features a collection of rock-cut temples dedicated to Lord Shiva.

a. These caves, dating back to the 5th century CE.

b. The most notable among the network of caves is the Trimurti, a massive three-headed statue representing the aspects of Shiva.

95. Consider the following related to IMF

1. The IMF was established in 1944 in the aftermath of the Great Depression of the 1930s.

2. The organization is currently composed of 190 member countries.

3. Each member has representation on the IMF's executive board

4. IMF has been a lender of last resort to governments since inception

How many of the above statements are correct?

(a) All except one only

(b) All except two only

(c) Only one

(d) All of the above

Ans: A

International Monetary Fund (IMF)

– The IMF was established in 1944 in the aftermath of the Great Depression of the 1930s.

– The organization is currently composed of 190 member countries.

a. Each member has representation on the IMF's executive board in proportion to its financial importance.

– The primary goal of the IMF back then was to bring about international economic coordination to prevent competing currency devaluation by countries trying to promote their own exports.

– Eventually, the IMF evolved to be a lender of last resort to governments of countries that had to deal with severe currency crises.

96. Consider the following related to IRDA

1. IRDA was constituted in 1999 as an autonomous body

2. Constituted on the recommendation of Malhotra Committee

3. The Authority has the power to frame regulations under Section 114A of the Insurance Act, 1938.

4. IRDAI is under the jurisdiction of the Ministry of Finance

How many of the above statements are correct?

(a) All except one only

(b) All except two only

(c) Only one

(d) All of the above

Ans: D

Insurance Regulatory and Development Authority of India (IRDAI)

IRDA was constituted in 1999 as an autonomous body after the recommendations of the Malhotra Committee report to regulate and develop the insurance industry.

It was incorporated as a statutory body on April 19, 2000.

The Authority has the power to frame regulations under Section 114A of the Insurance Act, 1938.

Objective: The main objective of the IRDA is to protect the interests of the policyholder and regulate the insurance industry.

IRDAI is under the jurisdiction of the Ministry of Finance, Government of India.

It has framed regulations ranging from registration of companies for carrying on insurance business to protection of policyholders' interests.

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

97. Consider the following related to the recent SIPRI Report

1. The world military expenditure rose by 6.8% in real terms
2. The five biggest spenders in 2023 were the United States, China, Russia, India and Saudi Arabia
3. India's military spending in 2023 was up by 4.2% from 2022 and by 44% from 2014.
4. SIPRI was founded in 1966 by the Swedish parliament
5. It is a government funded initiative

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

About SIPRI

– It was founded in 1966 by the Swedish parliament as an independent research institute to conduct research on issues related to international peace and security, including arms control, disarmament, and conflict resolution.

– It is funded by a combination of government grants, private donations, and project-based funding.

– SIPRI's flagship publication is the SIPRI Yearbook, which provides comprehensive data and analysis on global military expenditure, arms transfers, and other relevant security issues.

– It produces other reports, briefs, and databases on various topics related to conflict, arms control, and peacebuilding.

– It maintains an extensive database of military expenditure, arms transfers, and other relevant data, which is freely available on its website.

– SIPRI is based in Stockholm, Sweden, but has a global reach and influence, with its research and analysis informing policy decisions and public debates in many countries.

98. Consider the following

1. Pink hydrogen is generated through the electrolysis of water
2. Pink hydrogen uses electricity generated by nuclear power

3. In India, the Atomic Energy Act, 1962, restricts private ownership of nuclear plants

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

About the Pink Hydrogen

Hydrogen, a versatile energy carrier, has been gaining attention as a key player in the transition to a sustainable energy future.

While green hydrogen, produced using renewable energy, another variant, known as pink hydrogen, is emerging as a promising alternative.

Pink hydrogen is generated through the electrolysis of water, similar to green hydrogen. However, the key difference lies in the source of electricity used for the process.

Pink hydrogen uses electricity generated by nuclear power.

It makes pink hydrogen a potential game-changer in the energy sector, as it can enable large-scale hydrogen production without emitting greenhouse gases.

99. Consider the following related to IPR

IPR Type	Right
Industrial design	It constitutes the ornamental or aesthetic aspect of an article
Geographical indication	Signs used on goods that have a specific geographical origin
Copyright	is an exclusive right granted for an invention, which is a product or a process
Patent	It is a legal term used to describe the rights that creators have over their literary and artistic works.

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: B

What is Intellectual Property?

PRELIMS MISSION TEST-22 (11-05-2024)

EXPLANATION

– Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

– IP is protected in law by patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create.

– By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish.

Types of intellectual property

– Patent: A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem.

– Copyright: It is a legal term used to describe the rights that creators have over their literary and artistic works.

– Trademark: It is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises.

– Industrial design: It constitutes the ornamental or aesthetic aspect of an article.

– Geographical indications and appellations of origin are signs used on goods that have a specific geographical origin and possess qualities, a reputation or characteristics that are essentially attributable to that place of origin.

– Trade secrets are IP rights on confidential information which may be sold or licensed.

100. Consider the following related to SCO

1. The official languages of the SCO are Russian and Chinese
2. It is a permanent intergovernmental international organization
3. Currently, the SCO countries includes: 9 Member States
4. The Organization has 2 standing bodies

How many of the above statements are correct?

- (a) All except one only
- (b) All except two only
- (c) Only one
- (d) All of the above

Ans: D

About Shanghai Cooperation Organization(SCO)

It is a permanent intergovernmental international organization established on June 15, 2001 in Shanghai (PRC) by the Republic of Kazakhstan, the People's Republic of China, the Kyrgyz Republic, the Russian Federation, the Republic of Tajikistan and the Republic of Uzbekistan.

Its predecessor was the mechanism of the Shanghai Five.

Composition : Currently, the SCO countries includes: 9 Member States — the Republic of India, the Islamic Republic of Iran, the Republic of Kazakhstan, the People's Republic of China, the Kyrgyz Republic, the Islamic Republic of Pakistan, the Russian Federation, the Republic of Tajikistan, the Republic of Uzbekistan.

The official languages of the SCO are Russian and Chinese.

The Organization has 2 standing bodies — the Secretariat in Beijing and the Executive Committee of the Regional Anti-Terrorist Structure (RATS) in Tashkent.

The goals of the SCO are:

To strengthen mutual trust, friendship and good-neighbourliness between the Member States;

To encourage the effective cooperation between the Member States in such spheres as politics, trade, economy, science and technology, culture, education, energy, transport, tourism, environmental protection, etc;

To jointly ensure and maintain peace, security and stability in the region; and

To promote a new democratic, fair and rational international political and economic international order.