



*Drishti IAS Presents...*



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## ENVIRONMENT & ECOLOGY

*(March 2022 – March 2023)*



Detailed  
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1. Ans: A

Exp:

- It is a global treaty to protect human health and the environment from **Persistent Organic Pollutants (POPs)**. POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms, and are toxic to humans and wildlife. **Hence, statement 1 is correct.**
- **Its objectives are:**
  - ◆ Support the transition to safer alternatives.
  - ◆ Target additional POPs for action.
  - ◆ Clean up old stockpiles and equipment containing POPs.
  - ◆ Work together for a POPs-free future. **Hence, statement 2 is correct.**
- **India ratified the Stockholm Convention in 2006** as per Article 25(4), which enabled it to keep itself in a default "opt-out" position such that amendments in various Annexes of the convention cannot be enforced on it unless an instrument of ratification/ acceptance/ approval or accession is explicitly deposited with UN depositary. **Hence, statement 3 is not correct.**

2. Ans: B

Exp:

- **Meteorological Drought:** It is based on the **degree of dryness or rainfall deficit and the length of the dry period.**
  - ◆ **Hence, statement 1 is not correct.**
- **Hydrological Drought:** It is based on the **impact of rainfall deficits on the water supply** such as stream flow, reservoir and lake levels, and ground water table decline.
- **Socioeconomic Drought:** It considers the **impact of drought conditions** (meteorological, agricultural, or hydrological drought) on **supply and demand of some economic goods such as fruits, vegetables, grains and meat.**
  - ◆ **Hence, statement 2 is correct.**
- **Hence, option B is correct.**

3. Ans: B

Exp:

- A **Ramsar site is a wetland of international importance** under the Ramsar Convention, which is also known as the '**Convention on Wetlands**'.
  - ◆ It is an intergovernmental environmental treaty established by **United Nations Educational, Scientific and Cultural Organization (UNESCO)** in 1971.

◆ States	- Number of Ramsar Sites:
◆ Tamil Nadu	: 14
◆ Jammu and Kashmir	: 6
◆ Gujarat	: 4
◆ Assam	: 1

○ **Therefore, correct sequence: 1-3-2-4**

- **Hence, option B is correct.**

4. Ans: C

Exp:

- **India has set the target to reduce country's total projected carbon emission by 1 billion tonnes by 2030. Hence, statement 1 is correct.**
- India would achieve **net-zero carbon emissions by 2070** and not by 2060. **Hence, Statement 2 is not correct.**
- The national goal to **reduce the carbon intensity of the nation's economy by less than 45% by 2030. Hence, statement 3 is not correct.**

5. Ans: B

Exp:

- Pangong Lake is located in the **Union Territory of Ladakh and not in Uttarakhand. Hence, statement 1 is not correct.**
- It is situated at a **height of almost 4,350m** and is the **world's highest saltwater lake. Hence, statement 2 is correct.**
- Extending to almost 160km, one-third of Pangong Lake lies in India, and the other two-thirds in China and not Nepal. **Hence, statement 3 is not correct.**

6. Ans: D

Exp:

- **Cloudbursts are short-duration, intense rainfall events over a small area.**
- It is a weather phenomenon with unexpected precipitation exceeding **100mm/h** over a geographical region of approximately **20-30 square km.**

Because of the **high relative humidity and high cloud cover, as well as the low temperature and slow winds, a large volume of clouds may condensate** at a very quick rate, resulting in a **cloudburst.**

7. Ans: C

Exp:

- The **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act** commonly referred to as **The Forest Rights Act (FRA), 2006** recognizes the **rights of the forest dwelling tribal communities** and other **traditional forest dwellers** to

**forest resources**, on which these communities were dependent for a variety of needs, including **livelihood, habitation** and other **socio-cultural needs**.

- These rights allow the community to formulate rules for forest use by itself and others and thereby discharge its responsibilities under **Section 5 of the FRA**. Hence, **statement 1 is correct**.
- These rights give the authority to the **Gram Sabha** to adopt local traditional practices of forest conservation and management within the community forest resource boundary. Hence, **statement 2 is correct**.

8. Ans: D

Exp:

- Wind turbines first emerged more than a century ago.
  - ◆ Following the invention of the electric generator in the 1830s, engineers started attempting to harness wind energy to produce electricity.
  - ◆ **Wind power generation took place in the United Kingdom and the United States in 1887 and 1888, but modern wind power is considered to have been first developed in Denmark.**
  - ◆ Hence, **statement 1 is not correct**.
- Wind energy today typically comes in two different “types”: **onshore wind farms** which are large installations of wind turbines located on land, and **offshore wind farms** which are installations located in bodies of water.
  - ◆ **Offshore wind energy refers to the deployment of wind farms inside the water bodies.** They utilise the sea winds to generate electricity. These wind farms either use fixed-foundation turbines or floating wind turbines.
  - ◆ Hence, **statement 2 is not correct**.
- Hence, **option D is correct**.

9. Ans: C

Exp:

- **La Nina means the Little Girl in Spanish.** It is also sometimes called El Viejo, anti-El Nino, or simply “a cold event.”
  - ◆ La Nina events represent **periods of below-average sea surface temperatures across the east-central Equatorial Pacific.**
  - ◆ Hence, **statement 1 is not correct**.
- El Nino is a climate pattern that describes the unusual warming of surface waters in the eastern tropical Pacific Ocean.
  - ◆ It is the “warm phase” of a larger phenomenon called the El Nino-Southern Oscillation (ENSO).
  - ◆ Hence, **statement 2 is not correct**.

- El Nino also impacts **ocean temperatures, the speed and strength of ocean currents, the health of coastal fisheries, and local weather from Australia to South America and beyond.**

◆ Hence, **statement 3 is correct**.

- Hence, **option C is correct**.

10. Ans: C

Exp:

- The **UNFCCC**, signed in **1992** at the **United Nations Conference on Environment and Development** also known as the **Earth Summit**, the **Rio Summit** or the **Rio Conference**. Hence, **statement 1 is correct**.
- **The secretariat** was established in **1992** when countries adopted the **UNFCCC**. The original secretariat was in **Geneva**. Since **1996**, the secretariat has been located in **Bonn, Germany**.
- The Convention establishes two permanent subsidiary bodies (SBs), namely the **Subsidiary Body for Scientific and Technological Advice (SBSTA)**, by **Article 9**, and the **Subsidiary Body for Implementation (SBI)**, by **Article 10**. Hence, **statement 2 is correct**.
- The primary function of this body is to advise the **Conference of Parties**.

11. Ans: C

Exp:

- **Black rhinos** are the smaller of the two **African Rhino species**.
- Protection Status of Black Rhino:
  - ◆ **CITES: Appendix I.**
  - ◆ **IUCN Red List: Critically Endangered.** Hence, **statement 1 is correct**.
- Scientific Name of the Black Rhino is **Diceros bicornis**.
- **Black rhinos** may be found in **semi-desert savannah, woodlands, forests, and wetlands**. Hence **statement 2 is correct**.
- They are characterized by having **two horns**, and occasionally a **third, small posterior horn**.

12. Ans: D

Exp:

- The **Heatwave** is considered when the **maximum temperature** of a station reaches at least **40°C** for **Plains** and at least **30°C** for **Hilly regions**. Hence, **statement 1 is not correct**.
- If the **normal maximum temperature of a station is less than or equal to 40°C**, then an increase of **5°C to 6°C** from the **normal temperature** is considered to be **heat wave condition**.



- Recognizing **heat waves** as a major disaster is long due. India still has a long way to go in building public awareness, particularly on how individuals and local communities can take care of themselves. **Hence, statement 2 is not correct.**
  - ◆ Declaring **heat waves as a natural disaster** would help the state and district administration prepare a heatwave action plan at the regional level.

13. Ans: D

Exp:

महिला विकास ऋण योजना के माध्यम से भूमि विकास बैंक कृषि भूमि की सुरक्षा के बिना, 2 व्यक्तियों की गारंटी के माध्यम से गैर-कृषि उद्देश्यों और डेयरी व्यवसाय के लिए ₹50,000 का ऋण प्रदान करके महिलाओं के लिए आय के स्रोत बना रहे हैं। वर्ष 2020-21 में, इस योजना के तहत 385 महिलाओं को ₹10.72 करोड़ का कुल ऋण वितरित किया गया है।

- All the above-mentioned national parks are located in Odisha; **Hence, all the statements are correct.**

14. Ans: A

Exp:

- Ocean Thermal Energy Conversion (OTEC) is a process for producing energy by harnessing the temperature differences (thermal gradients) between ocean surface waters and deep ocean waters.
  - ◆ Oceans are huge heat reservoirs as they cover almost 70% of Earth's surface.
- Researchers focus on two types of OTEC technologies-
  - ◆ Closed cycle method - where a working fluid (ammonia) is pumped through a heat exchanger for evaporation and the steam runs a turbine.
    - The vapour is turned back to fluid (condensation) by the cold water found at the depths of the ocean where it returns to the heat exchanger.
  - ◆ Open cycle method - where the warm surface water is pressurized in a vacuum chamber and converted to steam which runs the turbine. The steam is then condensed using cold ocean water from lower depths.

#### ● Historical perspective:

- ◆ India initially had planned to set up an OTEC plant way back in 1980, off the Tamil Nadu coast. However, with the foreign vendor closing down its operation, it had to be abandoned.

#### ● India's OTEC Potential:

- ◆ As India is geographically well-placed to generate ocean thermal energy, with around 2000 kms of coast length along the South Indian coast, where a temperature difference of above 20°C is available throughout the year.
- ◆ The total OTEC potential around India is estimated as 180,000 MW, considering 40% of gross power for parasitic losses.

#### ● Working of the OTEC plant:

- ◆ As the energy from the sun heats the surface water of the ocean. In tropical regions, surface water can be much warmer than deep water.
- ◆ This temperature difference can be used to produce electricity and desalinate ocean water.
- ◆ Ocean Thermal Energy Conversion (OTEC) systems **use a temperature difference (of at least 77°F) to power a turbine to produce electricity. Hence, statement 1 is correct.**
- ◆ Warm surface water is pumped through an evaporator containing a working fluid. The vaporized fluid drives a turbine/generator.
- ◆ Then the vaporized fluid is turned back to a liquid in a condenser cooled with cold ocean water pumped from deeper into the ocean.
- ◆ OTEC systems **use seawater as the working fluid** and can use condensed water to produce desalinated water. **Hence, statement 2 is correct.**

#### ● Significance:

- ◆ Two of the biggest advantages of OTEC are that it produces clean environmentally friendly renewable energy and, unlike solar plants which can't work at night and wind turbines which only work when it's windy, **OTEC can produce energy at all times. Hence, statement 3 is not correct.**

15. Ans: C

Exp:

- The **Convention on Biological Diversity (CBD)**, a **legally binding** treaty to **conserve biodiversity**, has been in force **since 1993. Hence, statement 1 is correct.**
  - ◆ It has 3 main objectives:
    - The conservation of biological diversity.
    - The sustainable use of the components of biological diversity.

- The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

- The **CBD Secretariat** is based in **Montreal, Canada** and it operates under the **United Nations Environment Program**. Hence, **statement 2 is correct**.
- A supplementary agreement to the Convention known as the **Cartagena Protocol on Biosafety** was adopted in 2000.

16. Ans: C

Exp:

- India's contribution is **45.8%** total of mangrove cover in **South Asia**.
- **Sundarbans** in **West Bengal** are the **largest mangrove forest regions** in the **world**. It is listed as a UNESCO World Heritage Site. Hence, **statement 1 is correct**.
- **Mangroves** also serve as **storm buffers** by reducing **wind and wave action** in shallow **shoreline areas**.
- Underground tissue of any plant needs oxygen for respiration. But in a mangrove environment, the oxygen in soil is limited or nil.
  - ◆ Mangroves produce special roots called pneumatophores for the purpose of breathing. Hence, **statement 2 is correct**.

17. Ans: C

Exp:

- **Lion**
  - ◆ **About:**
    - Scientific Name: *Panthera leo*
    - The lion is divided into two subspecies: the African lion (*Panthera leo leo*) and the Asiatic lion (*Panthera leo persica*).
    - **Asiatic lions are slightly smaller than African lions**. Hence, **statement 1 is not correct**.
    - The most striking morphological character, which is always seen in Asiatic lions, and rarely in African lions, is a longitudinal fold of skin running along its belly.
- **Role in the Animal Kingdom:**
  - ◆ Lions hold an indispensable place in the ecosystem, they are an apex predator of their habitat, responsible for checking the population of grazers, thus helping in maintaining the ecological balance.
  - ◆ Lions also contribute to keeping the population of their prey healthy and resilient as they target the weakest members of the herd. Thus, indirectly helping in disease control in the prey population.

● **Threats:**

- ◆ Poaching, genetic inbreeding arising from a single population inhabiting one place, diseases such as plague, canine distemper or a natural disaster.

● **Protection Status:**

- ◆ IUCN Red List: Vulnerable
- ◆ Asiatic Lion - Endangered. Hence, **statement 2 is not correct**.
- ◆ CITES: Appendix I for populations of India, all other populations are included in Appendix II.
- ◆ Wildlife (Protection) Act 1972: Schedule I

● **Status in India:**

- ◆ India is home to the majestic **Asiatic Lion**, who inhabit the protected territory of **Sasan-Gir National Park (Gujarat)**. It is the **only natural habitat** of world popular Asiatic Lions. Hence, **statement 3 is correct**.
- ◆ According to the data from 2020, there are 674 lions in India, which were 523 in 2015.

18. Ans: A

Exp:

- Srivilliputhur Elephant Reserve : Tamil Nadu.
- Wayanad Elephant Reserve : Kerala.
- Agasthyamalai Elephant Reserve : Tamil Nadu.
- Anamudi Elephant Reserve : Kerala.
- Hence, **option A is correct**.

19. Ans: B

Exp:

- **Air Quality and Health in Cities report** analysed pollution and global health effects for more than 7,000 cities around the world between 2010 and 2019.
- The study ranked cities on the basis of two major air pollutants found — fine Particulate Matter (PM<sub>2.5</sub>) and Nitrogen Dioxide (NO<sub>2</sub>).
- **India-Specific Findings:**
  - ◆ PM 2.5 Levels: **Delhi and Kolkata are ranked first and second in the list of top 10 most polluted cities** when PM 2.5 levels were compared. Hence, **statement 1 is not correct**.
  - ◆ NO<sub>2</sub> Levels: **No Indian city appeared** in the list of **top 10 or even top 20** polluted cities when NO<sub>2</sub> levels were compared. Hence, **statement 2 is correct**.
    - Average NO<sub>2</sub> levels for Delhi, Kolkata and Mumbai, according to the report, ranged from 20-30 µg/m<sup>3</sup>.



- ◆ Death Burden: Delhi came in 6<sup>th</sup>, with 106 deaths per 100,000 and Kolkata at 8<sup>th</sup> with 99 deaths associated with a PM 2.5-related illness.

20. Ans: C

Exp:

- Recently, the **United Nations organised the Intergovernmental Conference** to draft the first-ever treaty on the **Ocean's Biological Diversity** to conserve **marine diversity in the High Seas**.
- Countries **can protect or exploit waters under 200 nautical miles (370 kilometres) to their shorelines**, but **everything outside these 'exclusive economic zones' is considered international waters: the high seas**.
  - ◆ Hence, **statement 1 is correct**.
- They are also prime territory for the **discovery of valuable mineral deposits, potent pharmaceuticals and oil and gas reserves**.
  - ◆ Hence, **statement 2 is correct**.
- Hence, **option C is correct**.

21. Ans: C

Exp:

- The **Asiatic Lion** is also known as the **Persian Lion** or **Indian Lion**.
- It is a **Panthera Leo Leo subspecies** found only in India.
- Its historical habitats were **West Asia** and the **Middle East**, where it became extinct.
- **Gir National Park** is the only place where **Asiatic Lions** can be seen. Hence, **statement 1 is correct**.
- The **International Union for Conservation of Nature Red List**, often known as the **IUCN Red List or Red Data Book**, was established in **1964** and is the world's most thorough record of the global conservation status of biological species.
- **Asiatic Lion** is listed as **Endangered** by the **IUCN**. Hence, **statement 2 is not correct**.
- The most serious threat to the **Asiatic Lion** population is **habitat loss**. Hence, **statement 3 is correct**.

22. Ans: C

Exp:

- CAM is a cyclic reaction occurring in the dark phase of photosynthesis in the plants of **Crassulaceae**.
- It is a **CO<sub>2</sub> fixation process** wherein the first product is **malic acid**.
  - ◆ Hence, **statement 1 is correct**.
- It is the third alternate pathway of Calvin cycle, occurring in **mesophyll cells**.

- CAM plants are usually **succulents (any plant with thick fleshy tissues adapted to water storage)** and they grow under extremely **xeric (containing little moisture; very dry) conditions**. In these plants, the leaves are succulent or fleshy.

◆ Hence, **statement 2 is correct**.

23. Ans: B

Exp:

- Coral reefs have been necessary to sustain life in the oceans. These reefs not only provide sanctuary to a vast ecosystem but also protect the coastlines from eroding.
- **Coral reefs are formed when the freely moving larvae of corals attach themselves to sedimentary rocks or hard surfaces near the coastlines**. This process is undertaken with the help of several other processes like sedimentation, compaction, cementation and solidification of the skeletons of coral polyps.
  - ◆ Hence, **statement 1 is correct**.
- **The slight salt in ocean waters is extremely important for the development of coral polyps**. The polyps extract calcium from the waters to protect their skeletons. Hence, mild salinity is a necessity for coral reefs to flourish.
  - ◆ Hence, **statement 2 is not correct**.
- Hence, **option B is correct**.

24. Ans: D

Exp:

- The **Sustainable Development Goals (SDGs)**, also known as the **Global Goals**, were adopted by the **United Nations** in 2015 as a **universal call to action to end poverty, protect the planet**, and ensure that by 2030 **all people enjoy peace and prosperity**.
- It is a set of 17 SDGs that recognize that action in one area will affect outcomes in others and that development must balance social, economic, and environmental sustainability.
- **No Poverty - SDG-1**
  - ◆ **End poverty everywhere, in all its forms**
- **Zero Hunger - SDG-2**
  - ◆ **End hunger, achieve food security and improved nutrition, and promote sustainable agriculture**
- **Good Health and Well-being- SDG-3**
  - ◆ **Ensure healthy lives and promote well-being for all at all ages**
- **Quality Education - SDG-4**
  - ◆ **Ensure inclusive and equitable quality education and promote learning opportunities for all**

- Gender Equality - SDG-5
  - ◆ Achieve gender equality and empower all women and girls
- Clean Water and Sanitation - SDG-6
  - ◆ Ensure availability and sustainable management of water and sanitation for all
- Affordable And Clean Energy - SDG-7
  - ◆ Ensure access to affordable, reliable, sustainable, and modern energy for all
- Decent Work and Economic Growth - SDG-8
  - ◆ Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
- Industry, Innovation, And Infrastructure - SDG-9
  - ◆ Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
- Reduced Inequalities - SDG-10
  - ◆ Reduce inequality within and among countries
- Sustainable Cities and Communities - SDG-11
  - ◆ Make cities and human settlements inclusive, safe, resilient, and sustainable
- Responsible Consumption and Production - SDG-12
  - ◆ Ensure sustainable consumption and production patterns
- Climate Action - SDG-13
  - ◆ Take urgent action to combat climate change and its impacts
- Life Below Water - SDG-14
  - ◆ Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
- Life On Land - SDG-15
  - ◆ Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Peace, Justice, And Strong Institutions- SDG-16
  - ◆ Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.
- Partnerships For the Goals - SDG-17
  - ◆ Strengthen the means of implementation and revitalize the global partnership for sustainable development.
- Hence, all the 4 pairs are correct.

25. Ans: C

Exp:

- India has enhanced its **climate change targets for 2030**.
  - ◆ India is now committing itself to at least **45%** reduction in **emissions intensity of GDP (emissions per unit of GDP)** from **2005 levels**.
  - ◆ The target before was a **33% - 35%** reduction.
- At the **UNFCCC COP26 in Glasgow**, India advocated for five aspects for climate change, termed "**Panchamrit.**" Hence, **statement 1 is correct**
- **India promises that by 2030**, at least half of installed energy generation capacity will be based on non-fossil fuel sources by the virtue of enhanced climate change targets. Hence, **statement 2 is correct**.
  - ◆ This is an increase from the previous target of **40%**.

The updated **Nationally Determined Contributions (NDCs)** seek to enhance India's contributions towards the achievement of the strengthening of global response to the threat of **climate change**, as agreed under the **Paris Agreement**.

26. Ans: D

Exp:

**Constitutional Provisions for Wildlife:**

- The 42<sup>nd</sup> Amendment Act, 1976, Forests and Protection of Wild Animals and Birds was transferred from State to Concurrent List.
  - ◆ Hence, **statement 1 is correct**.
- **Article 51 A (g)** of the Constitution states that it **shall be the fundamental duty of every citizen** to protect and improve the natural environment including forests and Wildlife.
  - ◆ Hence, **statement 2 is correct**.

27. Ans: D

Exp:

- **Ocean and Coasts** provide a natural way of reducing the impact of greenhouse gasses on our atmosphere, through **sequestration** of this carbon.
- **Blue carbon** is the **removal of carbon dioxide** from the atmosphere by the **world's oceanic and coastal ecosystems**, primarily by **algae, seagrasses, macroalgae, mangroves, salt marshes**, and other plants in coastal wetlands. Hence, **statement 1 is not correct**.
  - ◆ **Blue Carbon** refers to **carbon sinks** held by **coastal, aquatic, and marine vegetation, marine organisms, and sediments**.
- **Blue Carbon** is a **natural climate solution** for mitigating and reversing the consequences of **Climate Change** and **Global Warming**. Hence, **statement 2 is not correct**.



28. Ans: A

Exp:

- The tiger is the largest cat species and a member of the genus Panthera.
  - ◆ Scientific Name: Panthera tigris
  - ◆ Indian Sub Species: Panthera tigris tigris.
- Traditionally eight subspecies of tigers have been recognized, out of which **three are extinct**.
  - ◆ Bengal Tigers: Indian Subcontinent
  - ◆ **Caspian tiger: Turkey through central and west Asia (extinct).**
  - ◆ Amur tiger: Amur Rivers region of Russia and China, and North Korea
  - ◆ **Javan tiger: Java, Indonesia (extinct).**
  - ◆ South China tiger: South central China.
  - ◆ **Bali tiger: Bali, Indonesia (extinct).**
  - ◆ Sumatran tiger: Sumatra, Indonesia.
  - ◆ Indo-Chinese tiger: Continental south-east Asia.
- **Hence, statement 2 is correct.**
- Threats:
  - ◆ Habitat destruction, habitat fragmentation and poaching.
- Protection Status:
  - ◆ Indian Wildlife (Protection) Act, 1972: Schedule I
  - ◆ International Union for Conservation of Nature (IUCN) Red List: **Endangered. Hence, statement 1 is correct.**
  - ◆ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Appendix I.
- Tiger Reserves in India
  - ◆ Total Number: 53.
  - ◆ Largest: **Nagarjunsagar Srisailem Tiger Reserve, Andhra Pradesh. Hence, statement 3 is not correct.**
  - ◆ Smallest: Bor tiger reserve in Maharashtra
- 29<sup>th</sup> July is observed as International Tiger Day (ITD) to promote the conservation of the striped cat as well as to advocate a global system for protecting its natural habitats.
  - ◆ ITD was established in 2010 at St Petersburg Tiger Summit in Russia in order to raise awareness about the decline of wild tiger numbers, leaving them on the brink of extinction, and to encourage the work of Tiger Conservation.
  - ◆ The Manas Tiger Reserve in Assam has 2.4 tigresses for every tiger, the annual wildlife monitoring results of the trans-boundary wildlife preserve has revealed.

29. Ans: C

Exp:

- It's the **largest freshwater lake in Northeast India**, the pristine Loktak Lake is one of the most popular tourist attractions in Manipur and not in Mizoram, **Hence, statement 1 is correct.**
- **Loktak lake was initially designated as a wetland of international importance under the Ramsar Convention in 1990.**
  - ◆ Later it was also listed under the **Montreux Record** in 1993, **Hence, statement 2 is not correct.**
- The lake houses the **only floating national park in the world, the Keibul Lamjao National Park, Hence, statement 3 is correct.**

30. Ans: B

Exp:

Sustainable Development Goals:

- The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.
- At its heart are the **17 Sustainable Development Goals (SDGs)**, which are an urgent call for action by all countries - developed and developing - in a global partnership.
- The Goals are:



- **Only Pair 1 and Pair 2 are correctly matched. Therefore, option B is correct.**

31. Ans: B

Exp:

- The **Agasthyamala Biosphere Reserve, located in the Western Ghats** in the country's south, has peaks that rise 1,868 metres above sea level. **Hence, statement 1 is not correct.**
- The site, which is mostly a tropical forest, is home to various species of higher plants, including those which are endemic in nature.



- It is also a **unique genetic reservoir for cultivated plants, particularly cardamom, jamune, nutmeg, pepper, and plantain. Hence, statement 2 is correct.**
- The site contains three wildlife sanctuaries, **Shendurney, Peppara, and Neyyar**, as well as the Kalakad Mundanthurai Tiger reserve. **Hence, statement 3 is correct.**

32. Ans: D

Exp:

#### Plastic Waste Management Rules, 2016

- In rural areas responsibility for implementation of these rules is given to Gram Panchayat.
- **First, the responsibility of waste generators is being introduced i.e., Extended Producer Responsibility (EPR).**
- **Earlier, EPR was left to the discretion of the local bodies. Firstly, the producers** (i.e., persons engaged in manufacture, or import of carry bags, multi-layered packaging and sheets or like and the persons using these for packaging or wrapping their products) **and brand owners have been made responsible for collecting waste generated from their products.** They have to approach local bodies for formulation of plan/system for the plastic waste management within the prescribed. **Hence statement 1 is correct.**

#### Plastic Waste Management (Amendment) Rules 2018

- The amended Rules also **prescribe a central registration system for the registration of the producer/importer/brand owner.** The Rules also lay down that any mechanism for the registration should be automated and should take into account ease of doing business for producers, recyclers and manufacturers.

#### Plastic Waste Management Amendment Rules, 2021

- For effective implementation of Extended Producer Responsibility, the Guidelines for Extended Producer Responsibility being brought out have been given legal force through Plastic Waste Management Amendment Rules, 2021. **Hence statement 2 is correct.**

33. Ans: D

Exp:

- **CAQM is a statutory body formed under the Commission for Air Quality Management in National Capital Region and Adjoining Areas, Act 2021. Hence Statement 1 is not correct.**
- Earlier, the commission was formed through the promulgation of the **Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance, 2021.**

- **Commission for Air Quality Management in National Capital Region and Adjoining Areas, Act 2021** dissolved the **Environment Pollution Prevention and Control Authority (EPCA)** established in the NCR in 1998. **Hence, statement 2 is not correct.**

34. Ans: D

Exp:

- Green pit viper is a **hemotoxic venomous snake. Hence, statement 1 is not correct.**
- The antivenom available in India cannot counter the venom of the green pit viper.
- The antivenom is derived from the "Big Four" snakes in India namely Russell's viper, Common Krait, Indian Cobra and Saw-scaled viper.
- A hemotoxic venom prevents blood in the body from clotting resulting in internal bleeding. **Hence, statement 2 is not correct.**
- Snakes that inject neurotoxic venom impact animal's nervous systems causing muscle paralysis, damage to the brain, and loss of consciousness.
- Neurotoxins are substances that attack the central nervous system. They prevent muscles from functioning, resulting in asphyxia.

35. Ans: C

Exp:

- It was adopted at the Third **United Nations World Conference on Disaster Risk Reduction**, held in Sendai, Miyagi, Japan.
- The present Framework applies to the risk of **small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters** caused by **natural or man-made hazards**, as well as related **environmental, technological and biological hazards** and risks. **Hence, statement 1 is correct.**
- It was adopted by the **United Nations General Assembly** during the **2015 Third UN World Conference on Disaster Risk Reduction (WCDRR).** **Hence, statement 2 is correct.**
- It is the successor instrument of the **Hyogo Framework for Action (HFA) 2005-2015: Building Nations' and Communities' Resilience to Disasters.**

36. Ans: A

Exp:

- Snow leopards act as an indicator of the health of the mountain ecosystem in which they live, due to their position as the top predator in the food web.
- **In India, their geographical range encompasses:**
  - ◆ Western Himalayas: Jammu and Kashmir & Ladakh (**Hemis National Park**), Himachal Pradesh (**Great Himalayan National Park**)



- ◆ Eastern Himalayas: Uttarakhand (**Gangotri National Park**), Sikkim and Arunachal Pradesh.
- ◆ **Snow leopards cannot be found in Gorumara National Park** which is located in **West Bengal**.

● Hence, option A is correct.

37. Ans: C

Exp:

- Monarch Butterfly is a sub-species of the Danaus plexippus butterfly that travels around 4,000 kilometres across America.
- It's the most recognizable butterfly species that are essential pollinators and further provides various ecosystem services such as maintaining the global food web. Hence, statement 1 is correct.
- They follow a unique lifestyle as **they breed on only one particular plant, The Milkweeds**. Hence, statement 2 is correct.
- A smaller population of the species is also **found in countries like Australia, Hawaii, and India**. Hence, statement 3 is not correct.

38. Ans: C

Exp:

- **Around 89% of ground water extracted** is used in the **irrigation sector**, making it the highest category user in the country. Hence, statement 1 is correct.
  - ◆ This is followed by ground water for domestic use which is 9% of the extracted groundwater.
- **Water being a state subject**, initiatives on water management including water conservation and water harvesting and making available adequate drinkable water to citizens in the Country is primarily States' responsibility. Hence, statement 2 is not correct.
- The activities related to the regulation of ground water development in the country are being looked after by the **Central Ground Water Authority (CGWA), constituted under the Environmental (Protection) Act**. Hence, statement 3 is correct.

39. Ans: D

Exp:

- India has added five more Ramsar sites, or wetlands of international importance, bringing the number of such sites to 54.
- 'Convention on Wetlands' is an intergovernmental environmental treaty established by UNESCO in 1971, and named after the city of Ramsar in Iran, where the convention was signed that year. Hence, statement 1 is correct.
- Sundarbans in West Bengal is the largest Ramsar site in India. Hence, statement 2 is correct.

- India's Ramsar wetlands are spread over 11,000 sq km — around 10% of the total wetland area in the country — across 18 States.

◆ No other South Asian country has as many sites though this has much to do with India's geographical breadth and tropical diversity.

◆ Hence, statement 3 is correct.

40. Ans: C

Exp:

- In order to fund mitigation and adaptation measures that will address climate change, local, national, or transnational financing that is derived from public, private, and alternative sources of financing is referred to as "climate finance." Hence, statement 1 is correct.
- The **UNFCCC, Kyoto Protocol, and the Paris Agreement** call for financial assistance from Parties with more financial resources (Developed Countries) to those that are less endowed and more vulnerable (Developing Countries).
- This financial assistance is provided through the principle of "**Common but Differentiated Responsibility and Respective Capabilities**" (CBDR). Hence, statement 2 is correct.
- As the climate emergency intensifies, the public and private sectors need to unite to address the increasing threat of climate change to limit a global temperature rise to no more than a 1.5-degree Celsius increase.

41. Ans: D

Exp:

**Environmental Impact Assessment Notification 2006**

- Environment Impact Assessment in India is statutorily backed **by the Environment Protection Act, 1986** which contains various provisions on EIA methodology and process. Hence, statement 3 is correct.
- Decentralization of Project Clearances: **It classified the developmental projects in two categories:**
- **Category A (national level appraisal):** projects are appraised by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC). Hence, statement 2 is not correct.
- **Category B (state level appraisal):** State Level Environment Impact Assessment Authority (SEIAA) and State Level Expert Appraisal Committee (SEAC) provide clearance to the Category B projects. Hence, statement 1 is correct.
- Introduction of Different Stages: The Amendment introduced four stages into EIA Cycle; Screening, Scoping, Public hearing and Appraisal.



- ◆ Category A projects require mandatory environmental clearance and thus they do not have to undergo the screening process.
- ◆ Category B projects undergo a screening process and are further classified into B1 (Mandatorily requiring EIA) and B2 (Not requiring EIA).
- Projects with Mandatory Clearance: Projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units are mandated to get environment clearance.

42. Ans: D

Exp:

#### Forest Fire Incidents in India

- There has been a **ten-fold increase in forest fires in the past two decades**, and more than 62% of Indian states are prone to high-intensity forest fires. **Hence, statement 1 is correct.**
- **Andhra Pradesh, Assam, Chhattisgarh, Odisha and Maharashtra** are the **most prone to high-intensity forest fire events** caused by rapid change in climate. **Hence, statement 3 is correct.**
- **Mizoram** has had the **highest number of forest fire incidences** in the last two decades, with more than 95% of its districts being forest fire hotspots. **Hence, statement 2 is correct.**
- Districts that were earlier flood prone have now become drought prone due to a "swapping trend" as a result of climatic changes.
- More than 75 % of Indian districts are extreme climate event hotspots, and more than 30 % of districts are extreme forest fire hotspots.
- Initiatives Taken:
  - ◆ The National Action Plan for Forest Fires (NAPFF), was started in 2018 with the goal of reducing forest fires by informing, enabling, and empowering forest fringe communities and incentivizing them to collaborate with state forest departments.
  - ◆ The Forest Fire Prevention and Management Scheme (FPM) is the only government-sponsored programme dedicated to assisting states in dealing with forest fires.

43. Ans: C

Exp:

- Wildlife (Protection) Act, 1972 was enacted for the protection of plants and animal species.
- It extends to the whole of India **except the State of Jammu and Kashmir**. **Hence, statement 1 is not correct.**

- The WPA act provides for the constitution of bodies to be established under this act such as the **National and State Board for Wildlife, Central Zoo Authority and National Tiger Conservation Authority**. **Hence, statement 2 is correct.**
- **The state governments** are also entitled to appoint Wildlife Wardens in each district. **Hence, statement 3 is correct.**

44. Ans: C

Exp:

- There are only two different panda species in the world, the Giant Pandas and the Red Pandas.
- **Red Pandas are also the state animal of Sikkim**. **Hence, statement 1 is correct.**
- Red Pandas are shy, solitary and arboreal animals and considered an indicator species for ecological change.
- India is home to both the (sub) species:
  - ◆ Himalayan red panda (*Ailurus fulgens*)
  - ◆ Chinese red panda (*Ailurus styani*)
- Siang river in Arunachal Pradesh splits the two phylogenetic species.
- It is found in the forests of India, Nepal, Bhutan and the northern mountains of Myanmar and southern China.
- Protection Status:
  - ◆ **Red Pandas: IUCN Red List: Endangered**. **Hence, statement 2 is not correct.**
  - ◆ **CITES: Appendix I**. **Hence, statement 3 is correct.**
  - ◆ Wildlife Protection Act 1972: Schedule I.

45. Ans: C

Exp:

- The Western Ghats, also **known as the Sahyadri Hills**, are well known for their rich and unique assemblage of flora and fauna.
- It is recognized as a **UNESCO World Heritage Site**. **Hence, statement 3 is correct.**
- The mountains of the Western Ghats are **Block Mountains** formed due to the down warping of a part of land into the Arabian Sea. **Hence, statement 2 is correct.**
- The **peak of Anamudi in Kerala is the highest peak** in the Western Ghats, as well as the highest peak in India outside the Himalayas. **Hence, statement 1 is not correct.**

46. Ans: B

Exp:

- **Chenkurinji** (*Gluta travancorica*), is a **plant species endemic to the Agasthyamala Biosphere Reserve**.



- ◆ This Anacardiaceae family tree was once abundant in the hills on the southern parts of Aryankavu Pass, but its presence has been rapidly declining over the years.
- ◆ It's used to lower blood pressure and treat arthritis.
- ◆ It's a native species of South India.
- Recently 'Save Chenkurinji', a campaign has been launched to protect it from climate change.
  - ◆ It aims to plant thousands of saplings as part of the campaign in the ghat sectors of the Kollam and Pathanamthitta districts.
- Hence, option B is correct.

47. Ans: D

Exp:

- The Environment (Protection) Act, (EPA) 1986, establishes the framework for studying, planning, and implementing long-term requirements of environmental safety and laying down a system of speedy and adequate response to situations threatening the environment.'
- The EPA Act was enacted under Article 253 of the Indian Constitution which provides for the enactment of legislation for giving effect to international agreements. Hence, statement 1 is correct.
  - ◆ Article 48A of the Constitution specifies that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.
  - ◆ Article 51A further provides that every citizen shall protect the environment.
- The Central government as per the Act has the power to direct:
  - ◆ The closure, prohibition or regulation of any industry, operation or process. Hence, statement 2 is correct.
  - ◆ The stoppage or regulation of the supply of electricity or water or any other service.
- Non-compliance or Contravention to any of the provisions of the Act is considered as an offence. Hence, statement 3 is correct.

48. Ans: C

Exp:

- CDRI is a global partnership of national governments, United Nations agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and academic and research institutions.
- It aims to increase the resilience of infrastructure systems to climate and disaster risks, thereby ensuring sustainable development.

- It was launched in 2019, at the United Nations Climate Action Summit in New York. Hence, statement 1 is correct.

- It is the Government of India's second major global initiative after the International Solar Alliance, and it demonstrates India's leadership in climate change and disaster resilience issues. Hence, statement 2 is not correct.

● Members:

- ◆ Since its inception, 31 countries, 6 international organisations and 2 private sector organisations have joined CDRI as members.
  - 6 International Organisations: Asian Development Bank (ADB), World Bank Group, United Nations Development Programme (UNDP), United Nations Office for Disaster Risk Reduction (UNDRR), European Union, European Investment Bank. Hence, statement 3 is correct.
  - 2 Private Sector Organisations: The Private Sector Alliance for Disaster Resilient Societies and Coalition for Climate Resilient Investment.

49. Ans: A

Exp:

● About Snow Leopards:

- ◆ Snow leopards are also known as "Ghost of Mountains". They act as an indicator of the health of the mountain ecosystem in which they live, due to their position as the top predator in the food web. Hence, statement 1 is not correct.
- ◆ They are listed as vulnerable on the International Union for Conservation of Nature's (IUCN) Red List. They are listed in appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Schedule-I of the Indian Wildlife Protection Act, 1972. Hence, statement 2 is not correct.
- ◆ They have a vast but fragmented distribution across the mountainous landscape of central Asia, which covers different parts of the Himalayas such as Ladakh, Himachal Pradesh, Uttarakhand, and Sikkim. Hence, statement 3 is correct.

50. Ans: A

Exp:

- About Ude Desh Ka Aam Naagrik (UDAN):
  - ◆ Ude Desh Ka Aam Naagrik (UDAN) was launched as a Regional Connectivity Scheme (RCS) under the Ministry of Civil Aviation in 2016.

- ◆ It was formulated based on the review of **The National Civil Aviation Policy (NCAP)-2016** and planned to remain in force for 10 years.
  - Under this Scheme, **Regional Connectivity Fund (RCF)** was created, which funds the **Viability Gap Funding (VGF)** requirements of the scheme through a levy on certain domestic flights.
  - VGF means a grant one-time or deferred, provided to support infrastructure projects that are economically justified but fall short of financial viability.

● **Objectives:**

- ◆ To develop the **regional aviation market**.
- ◆ To provide affordable, economically viable and profitable air travel on regional routes to the common man even in small towns.

● **Features:**

- ◆ The scheme envisages **providing connectivity to unserved and underserved airports** of the country through the revival of existing air-strips and airports.
- ◆ Under-served airports are those which **do not have more than one flight a day**, while **unserved airports are those where there are no operations**.

- Financial incentives from the Centre, state governments and airport operators are extended to selected airlines to **encourage operations from unserved and underserved airports** and keep airfares affordable. **Hence, option A is correct.**

51. Ans: A

Exp:

- Particulate Matter is the **term for a mixture of solid particles and liquid droplets found in the air**.
- Particulate Matter is also called as **Particle Pollution**.
  - ◆ **Hence, statement 1 is correct.**
- Some are emitted directly from a source, such as **construction sites, unpaved roads, fields, smokestacks or fires**.
  - ◆ **Most particles** form in the atmosphere as a result of **complex reactions of chemicals such as sulfur dioxide and nitrogen oxides**, which are pollutants emitted from power plants, industries and automobiles.
  - ◆ PM also includes **dust, dirt, soot, or smoke, are large or dark enough** to be seen with the naked eye.
  - ◆ **Hence, statement 2 is not correct.**
- **Hence, option A is correct.**

52. Ans: B

Exp:

- **Nagarjunasagar Srisaillam Tiger Reserve** is situated on **Nallamala Hills**. **Hence, statement 1 is not correct.**
- It was notified in the year of **1978** and came under the protection of **Project Tiger** in 1983.
- The **Krishna River** passes through **Nagarjunasagar Srisaillam Tiger Reserve**. **Hence, statement 2 is correct.**
- In 1992, it was retitled as **Rajiv Gandhi Wildlife Sanctuary**.

53. Ans: D

Exp:

**Western Ghats:**

- The Western Ghats, **also known as the Sahyadri Hills**, are well known for their rich and unique assemblage of flora and fauna. **Hence, statement 1 is correct.**
- Western Ghats **consists of a chain of mountains running parallel to India's Western Coast** and passing from the states of Kerala, Maharashtra, Goa, Gujarat, Tamil Nadu and Karnataka.
- The Western Ghats **is one of four global biodiversity hotspots in India**. **Hence, statement 2 is correct.**
  - ◆ The other three are the Himalayas, the Indo-Burma region and the Sundaland (includes the Nicobar Islands).
- It is recognized as a UNESCO World Heritage Site.
- The **Nilgiri Biosphere Reserve forms the largest contiguous protected area** in the Western Ghats. **Hence, statement 3 is correct.**

54. Ans: B

Exp:

- **Dredging** is the process of **removing sediment and debris** from the **bottom of bodies of water, such as rivers, harbours, and ports**. **Hence, statement 1 is not correct.**
- It is typically done using specialized equipment, such as **dredges, to excavate and remove** the material.
- The **dredging** process is also subject to the provisions of the **Environmental Impact Assessment (EIA) Notification, 1994**. **Hence, statement 2 is correct.**
- The **Environmental Impact Assessment (EIA) Notification, 1994** is a set of regulations issued by the **Ministry of Environment Forests and Climate Change** for the purpose of assessing the **potential environmental impact** of proposed development projects.





55. Ans: A

Exp:

- **Environment Impact Assessment** in India is **statutorily backed** by the **Environment Protection Act, 1986** which contains various provisions on **EIA methodology and process**. Hence, **statement 1 is correct**.
- The **EIA report** is prepared by the **project proponent**, and is evaluated by the **Expert Appraisal Committee (EAC)** of the **MoEFCC**
- **Public hearings** for **Environmental Impact Assessments (EIAs)** are typically **conducted after the EIA report** has been completed and is available for review. Hence, **statement 2 is not correct**.
- The exact timing of the hearing may vary depending on the specific project and the regulations in place in the area where the project is proposed.

56. Ans: B

Exp:

- **Indian star tortoises** are found across the Indian subcontinent, more specifically, in the **Central and Southern parts of India**, in **West Pakistan and in Sri Lanka**. Hence, **statement 1 is not correct**.
- It is typically found in **dry, open habitats such as scrub forests, grasslands, and rocky outcroppings**.
- The species is facing **twin challenges of a threat to its habitat** at one level and loss of its **genetic diversity** at the other.
- The IUCN status of the tortoise is **Vulnerable**. Hence, **statement 2 is correct**.

57. Ans: B

Exp:

- Binturong, (*Arctictis binturong*), also called bear cat or cat bear, catlike omnivore of the civet family (Viverridae), found in dense forests of Southeast Asia. Hence, **statement 2 is correct**.
  - ◆ Blyth's tragopan is the State bird of Nagaland. Hence, **statement 1 is not correct**.
- It has long shaggy hair, tufted ears, and a long, bushy, prehensile tail. The colour generally is black with a sprinkling of whitish hairs.
- The binturong is **principally nocturnal and crepuscular** (that is, active during twilight).
- It is found most often among the trees, using its prehensile tail as an aid in climbing. It feeds mainly on fruit, such as figs, but it also takes eggs and small animals.
- Presently, it is listed as vulnerable in the IUCN Red List. Hence, **statement 3 is not correct**.

58. Ans: A

Exp:

- **About:**
- It is a **citizen-science programme** supporting the conservation and management of **wetlands** and waterbirds worldwide. Hence, **statement 1 is correct**.
  - ◆ AWC is part of the global **International Waterbird Census (IWC)** coordinated by **Wetlands International**.
  - ◆ AWC **runs in parallel with other regional programmes of the IWC** in Africa, Europe, West Asia, the Neotropics and the Caribbean.
  - ◆ **AWC in India:**
  - ◆ It was **initiated in the Indian subcontinent in 1987** and since then has grown rapidly to cover major regions of Asia, from Afghanistan eastwards to Japan, Southeast Asia and Australasia.
  - ◆ In India, AWC is jointly coordinated by the **Bombay Natural History Society (BNHS)** and **Wetlands International**. Hence, **statement 2 is not correct**.

59. Ans: A

Exp:

- In line with **Montreal Protocol**, the plan emphasizes cutting those elements that deplete the **ozone layer**. Hence, **statement 1 is correct**.
- It seeks to recognize **"cooling and related areas"** as a thrust area of research under the National S&T Program.
- **Thermal cooling** through **refrigerators or air conditioners** will be done in a more **energy efficient manner**. Hence, **statement 2 is not correct**.
- The plan will possibly lead to the emergence of new technologies in the area of cooling.

60. Ans: C

Exp:

- The hornbills (Family Bucerotidae) are a family of birds found in **tropical and subtropical Africa and Asia**. Hence, **statement 1 is correct**.
- India is home to nine species of hornbills.
  - ◆ The northeastern region has the highest diversity of hornbill species within India.
  - ◆ They are the **cultural symbols of some ethnic communities in the northeast**, specifically the **Nyishi of Arunachal Pradesh**. Hence, **statement 2 is not correct**.
- Hornbills are **hunted for their casques - upper beak - and feathers** for adorning headgear. They are also **poached for their meat and medicinal value** of their body parts. Hence, **statement 3 is correct**.

- ◆ A conservation programme promoting the use of fibre-glass beaks for headgear instead of real hornbill casques has helped reduce some threat to it.
- ◆ **Illegal logging, i.e.,** cutting down tall trees where the hornbill birds' nest and feed has led to the destruction of its natural habitat.

61. Ans: A

Exp:

- **Status of Whale Shark:**
  - ◆ The Wild Life (Protection) Act, 1972: Schedule I
  - ◆ International Union for Conservation of Nature (IUCN) Red List: Endangered, **Hence, statement 1 is correct.**
  - ◆ IUCN Green Status Assessment: Largely Depleted
- Wildlife Trust of India (WTI) launched '**Save the Whale Shark Campaign**' along **Karnataka, Kerala and Lakshadweep in Mangalore.**
- The theme for **International Whale Shark Day** is "**The Future of Sharks: Guardians of Our Seas**" for the year 2022. **Hence, statement 2 is not correct.**

62. Ans: A

Exp:

- It was **launched by the Ministry of Environment, Forests and Climate Change (MoEFCC)** in January 2019.
- It is the **first-ever effort in the country to frame a national framework for air quality management** with a time-bound reduction target. **Hence, statement 1 is correct.**
- It seeks to cut the concentration of coarse (**particulate matter (PM) of diameter 10 micrometer or less, or PM10**) and fine particles (particulate matter of diameter 2.5 micrometer or less, or PM2.5) by at least 20% in the next five years, with 2017 as the base year for comparison. **Hence, statement 2 is not correct.**

63. Ans: D

Exp:

- A '**Soul of Steel**' challenge was launched in **Uttarakhand** on 14 January which aims to test one's high-altitude endurance.
  - ◆ The general area of the expedition would be the **Nanda Devi National Park.**
- The idea behind **Soul of Steel** is **pooling of skill sets** and creating a challenge that will unlock the human ability to **survive, stabilise and thrive in high altitude areas.**
- It is based on the lines of the '**Ironman triathlon**' long-distance triathlon challenge in Europe, which tests an individual's grit and endurance.
- **Therefore, option D is correct.**

64. Ans: C

Exp:

- Most cloud seeding operations use a compound called silver iodide (AgI) to aid in the formation of ice crystals or snowflakes. **Hence, statement 1 is correct.**
- Silver iodide exists naturally in the environment at low concentrations, and is not known to be harmful to humans or wildlife.
- Cloud seeding is used all around the world to increase winter snowfall and mountain snowpack. **Hence, statement 2 is correct.**
- Recently, UAE combined **water-attracting salt flares** with salt nanoparticles, a newer technology, into the clouds to stimulate and accelerate the condensation process and hopefully produce droplets big enough to then fall as rain.

65. Ans: A

Exp:

**Virovore**

Researchers have found the first known "**Virovore,**" or **organism that eats viruses.**

- The new findings may change our **understanding of the role viruses play in the food chain** at a microscopic level.
  - ◆ It has been identified as an **actual species of protist that feasts on viruses.**
- These virus-eating species of protists — which are their own kingdom on the tree of life and are not an animal, plant, or fungi — are now classified as **Virovores.**
- It is a species of **Halteria - microscopic ciliates** that populate freshwater worldwide.
- The microbe Halteria is a common genus of protist known to flit about as its hair-like cilia propel it through the water.
  - ◆ **Hence, option A is correct.**

66. Ans: B

Exp:

**Dugong** (*Dugong dugon*) also called 'Sea Cow' is one of the four surviving species in the Order Sirenia and it is the **only existing species of herbivorous mammal that lives exclusively in the sea** including in India. **Hence, statement 1 is correct.**

- Dugongs are an important part of the marine ecosystem and their depletion will have effects all the way up the food chain.
- Distribution and Habitat: They are found in over 30 countries and in India are seen in the **Gulf of Mannar, Gulf of Kutch, Palk Bay, and the Andaman and Nicobar Islands.** **Hence statement 2 is not correct.**



- Conservation Status:
- **IUCN Red List status: Vulnerable. Hence statement 3 is not correct.**
  - ◆ Wild (Life) Protection Act, 1972: Schedule I
  - ◆ CITES: Appendix I

67. Ans: A

Exp:

- **About:**
  - ◆ There are three subspecies of Asian elephant which are the Indian, Sumatran and Sri Lankan.
  - ◆ The Indian subspecies has the widest range and accounts for most of the remaining elephants on the continent.
    - The elephant herd is led by the oldest and largest female member (known as the matriarch). This herd includes the daughters of the matriarch and their offspring.
    - Elephants have the longest-known gestational (pregnancy) period of all mammals, lasting up to 680 days (22 months).
    - Females between 14 - 45 years may give birth to calves approximately every four years with the mean interbirth intervals increasing to five years by age 52 and six years by age 60.
  - ◆ **Protection Status:**
    - IUCN Red List: Endangered. **Hence, option A is correct.**
    - Wildlife (Protection) Act, 1972: Schedule I.
    - CITES: Appendix I

68. Ans: A

Exp:

- The **phytorid technology is developed by the Council of Scientific & Industrial Research (CSIR) National Environmental Engineering Research Institute (NEERI).**
  - ◆ It is being used increasingly for various types of biodegradable wastewater across India.
- The technology involves a constructed **wetland** exclusively designed for the treatment of **municipal, urban, agricultural and industrial wastewater.**
- The **Municipal Corporation of Tirupati (MCT), Andhra Pradesh** is set to take a significant step in water treatment by putting in place what is claimed to be the country's **largest liquid waste treatment plant to use phytorid technology.**
- **Therefore, option A is correct.**

69. Ans: A

Exp:

- The **Paris Climate Agreement is a non-binding agreement**, which means that countries are not legally required to take specific actions to reduce their greenhouse gas emissions.
  - ◆ However, **countries are required to submit nationally determined contributions** outlining the actions they will take to reduce their emissions, and they are encouraged to report regularly on their progress.
- It aims to **limit global warming to well below 2° Celsius**, and preferably limit it to 1.5° Celsius, compared to pre-industrial levels.
- Under the Agreement, **developed countries are required to provide financial assistance to developing countries** to help them transition to low-carbon economies and adapt to the impacts of climate change.
  - ◆ This financial assistance is known as **"climate finance."**
- **Hence, option A is correct.**

70. Ans: B

Exp:

- **Wayanad Wildlife Sanctuary (WWS)** is an integral part of the **Nilgiri Biosphere Reserve** located in Kerala.
- It shares its borders with the other protected areas of **Bandipur and Nagarhole Tiger Reserve** in the **North-East side** and **Mudumalai Tiger Reserve** of **Tamil Nadu** in the **south-eastern side.** **Hence, statement 1 is not correct.**
- **Kabini river** which is a tributary of **Cauvery River** flows through the **Wayanad Wildlife sanctuary.** **Hence, statement 2 is correct.**

71. Ans: D

Exp:

- Adopted in 1987, the **Montreal Protocol is a worldwide agreement to stop the production of substances causing ozone-depletion.**
  - ◆ **Kigali Amendment to the Protocol:** Parties to the **Montreal Protocol agreed to phase down production and consumption of Hydrofluorocarbons**, commonly known as HFCs. **Hence, statement 1 is not correct.**
- India is not a signatory to the **Gothenburg Protocol.** **Hence, statement 2 is not correct.**

72. Ans: D

Exp:

Site of Coastal Red Sand Dunes:

- **About:**
  - ◆ These are also known as 'Erra Matti Dibbalu'. It is one of the many sites of Visakhapatnam, which have **geological importance**. Hence, **statement 1 is correct**.
  - ◆ The site is located **along the coast and is about 20 km north-east of Visakhapatnam city** and about 4 km south-west of Bheemunipatnam.
  - ◆ This site was declared as a **geo-heritage site by the Geological Survey of India (GSI)** in 2014 and the Andhra Pradesh government has listed it under the category of 'protected sites' in 2016. Hence, **statement 2 is correct**.
- **Distribution:**
  - ◆ Such sand deposits are rare and have **been reported only from three places** in the tropical regions in south Asia such as **Teri Sands in Tamil Nadu, Erra Matti Dibbalu in Visakhapatnam and one more site in Sri Lanka**.
  - ◆ They do not occur in **equatorial regions or temperate regions** due to many scientific reasons. Hence, **statement 3 is correct**.

73. Ans: B

Exp:

- **Photochemical smog** is a type of air pollution that is formed when **sunlight reacts with nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the atmosphere**. Hence, **statement 1 is not correct**.
- Other pollutants that can be found in smog include **Carbon monoxide (CO), Sulfur dioxide (SO<sub>2</sub>) and Volatile organic compounds (VOCs)**.
- The main pollutants found in smog are **ground-level ozone, nitrogen oxides (NOx), and particulate matter (PM)**. Hence, **statement 2 is correct**.

74. Ans: B

Exp:

- **Shendurney Wildlife Sanctuary** is a protected area located in the **Western Ghats of India**. It is situated in the **Kollam district of the state of Kerala**. Hence, **statement 1 is not correct**.
- **White Tufted Royal Butterfly** protected under **Schedule 2 of the Wildlife Protection Act, 1972**.
- The **sanctuary** is also a part of the proposed **Agasthyamala Biosphere Reserve** and the proposed **Kollam-Shendurney Elephant Reserve**. Hence, **statement 2 is correct**.

75. Ans: D

Exp:

- Another common name for Indian skimmers is **Indian scissors bill**. Hence, **statement 1 is correct**.
- They are **more widespread in winter**. Hence, **statement 2 is not correct**.
- The Indian skimmer is found in the coastal estuaries of western and eastern India. Hence, **statement 3 is correct**.
- The species can be seen near the Chambal River in Central India, in some parts of Odisha and **Andhra Pradesh**.
- **Major Threats:**
  - ◆ Habitat degradation, excessive and widespread increases in disturbances near the rivers.
- **Protection Status:**
  - ◆ **IUCN Red List Status:** Endangered. Hence, **statement 4 is not correct**.
  - ◆ **CITES:** Not listed.

76. Ans: C

Exp:

World Wildlife Day:

- World Wildlife Day has been **celebrated every year on the 3<sup>rd</sup> of March since 2013**. Hence **statement 1 is correct**.
- The date chosen coincides with the day of the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** which was signed in 1973.
- The **UNGA (General Assembly) resolution also designated the CITES Secretariat** as the facilitator for the global observance of this special day for wildlife on the **UN (United Nations) calendar**.
- 2022 Theme: **Recovering key species for ecosystem restoration**. Hence **statement 2 is correct**.
  - ◆ This theme is chosen as a way to draw attention to the conservation status of some of the most critically endangered species of wild fauna and flora.

77. Ans: D

Exp:

- **Great Barrier Reef** is the world's most extensive and spectacular Coral Reef ecosystem composed of over 2,900 individual reefs and 900 islands.
  - ◆ The Great Barrier Reef **makes up about 10% of the world's coral reef ecosystems**. Hence, **statement 1 is correct**.



- ◆ The reef is located in the Coral Sea (North-East Coast), off the coast of Queensland, Australia.
- This reef structure is composed of and built by billions of **tiny organisms, known as coral polyps**. Hence, **statement 2 is correct**.
  - ◆ They are made up of genetically identical organisms called polyps, which are tiny, soft-bodied organisms. At their base is a hard, protective limestone skeleton called a calicle, which forms the structure of coral reefs.
  - ◆ These polyps have microscopic algae called zooxanthellae living within their tissues. The **corals and algae have a mutualistic (symbiotic) relationship**. Hence, **statement 3 is correct**.
- It was selected as a World Heritage Site in 1981.

78. Ans: C

Exp:

**Kaziranga National Park:**

- It is located in the State of Assam and is the single largest undisturbed and representative area in the Brahmaputra Valley floodplain.
- It was declared as a National Park in 1974.
  - ◆ It has been **declared a tiger reserve since 2007**. It has a total tiger reserve area of 1,030 sq km with a core area of 430 sq. km.
- It was **declared a UNESCO World Heritage Site** in 1985.
- It is **recognized as an Important Bird Area** by BirdLife International.
- It is **not a Ramsar site**. Deepor Beel is the only Ramsar site in Assam.

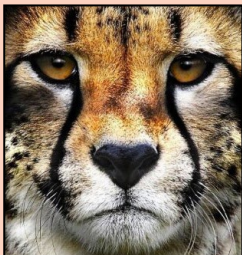
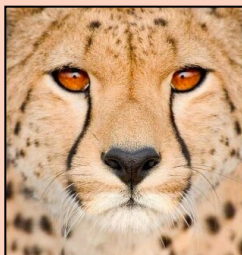
- It is the home of the world's most one-horned rhinos.
  - ◆ Pobitora Wildlife Sanctuary has the highest density of one-horned rhinos in the world and the second highest number of Rhinos in Assam after Kaziranga National Park.
- Hence, **option C is correct**.

79. Ans: B

Exp:

**International Cheetah Day:**

- Every year, **International Cheetah Day** is celebrated on **4<sup>th</sup> December since 2010**.
  - Dr. Laurie Marker designated the day as International Cheetah Day in remembrance of Khayam, a cheetah she raised from a cub at Wildlife Safari in Winston, Oregon.
  - The **cheetah is one of the oldest of the big cat species**, with ancestors that can be traced back more than five million years to the Miocene era.
  - The cheetah is also the **world's fastest land mammal that lives in Africa and Asia**.
  - A majority of the world's 7,000 cheetahs live in **South Africa, Namibia and Botswana**.
  - **Namibia has the world's largest population of cheetahs**. Hence, **statement 2 is correct**.
  - The cheetah is the only large carnivore that got **completely wiped out from India**, mainly due to **over-hunting and habitat loss**.
  - Eight Cheetahs have been recently **reintroduced in India from Namibia to Kuno National Park**.

Sr. No.	Parameter	African Cheetah	Asiatic Cheetah
1.	IUCN status	Vulnerable	Critically Endangered.
2.	CITES status	Appendix-I of the List.	Appendix-I of the List.
3.	Distribution	Around 6,500-7,000 African cheetahs present in the wild.	40-50 found only in Iran.
4.	Physical Characteristics	Bigger in size as compared to Asiatic Cheetah.	Smaller and paler than the African cheetah. Has more fur, a smaller head and a longer neck. Usually have red eyes and they have a more cat-like appearance.
5.	Image		

- Hence, **Statement 1 is not correct**.



80. Ans: D

Exp:

- Hemis National Park is located in the union territory of Ladakh and is the biggest national park in India and also has a good presence of Snow Leopard. **Hence, statement 1 is correct.**
- South Button Island National Park is located in the Andaman and Nicobar Islands. **Hence, statement 2 is not correct.**
- Mollem National Park is Situated in Western ghats in the Goa. Hence, statement 3 is correct.
- The Valmiki Tiger Reserve is located in the state of Bihar and is the only tiger reserve in Bihar, which forms the easternmost extent of the Himalayan Terai forests in India.
  - ◆ Situated in the Gangetic plains bio-geographic region, the vegetation of this Tiger Reserve is a combination of the Bhabar and Terai regions. **Hence, statement 4 is correct.**

81. Ans: C

Exp:

- The **Savannah ecosystem** is a tropical grassland with **warm temperatures year-round and with its highest seasonal rainfall in the summer.**
- The savanna is **characterized by grasses and small or dispersed trees that do not form a closed canopy, allowing sunlight to reach the ground.**
- The largest areas of savanna are found in Africa, South America, Australia, India, the Myanmar (Burma)–Thailand region in Asia, and Madagascar.
- **Hence, option C is correct.**

82. Ans: A

Exp:

- **About:**
  - ◆ It is **commonly known as Patwa**, is a perennial shrub with a restricted distribution that is endemic to Uttarakhand. **Hence, statement 1 is correct.**
- **Enlisting in IUCN:**
  - ◆ The study stated that the **species is listed as 'critically endangered'** based on its limited area of occupancy (less than 10 sq. km). **Hence, statement 2 is not correct.**
  - ◆ The species is threatened by deforestation, habitat fragmentation and forest fires.
- **Significance:**
  - ◆ The essential oil extracted from the leaves of the species possesses **strong antioxidants** and can be a **promising natural substitute for synthetic antioxidants in pharmaceutical industries.**

83. Ans: B

Exp:

- **Lion-tailed Macaque** is classified as **Endangered** under the **IUCN Red List. Hence, statement 1 is not correct.**
- **IUCN** divides species into **nine categories: Not Evaluated, Data Deficient, Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild and Extinct.**
- The **lion-tailed macaque, endemic to the evergreen forests of the Western Ghats in southern India. Hence, statement 2 is correct.**

84. Ans: C

Exp:

- The **Great Indian Bustard**, found mainly in the **Indian subcontinent**, is the **flagship grassland species** of India.
- **Conservation status:**
  - ◆ Listed in Schedule I of the Indian Wildlife (Protection) Act, 1972, **Hence, statement 1 is correct.**
  - ◆ Listed in Appendix I of CITES,
  - ◆ Listed as Critically Endangered on the IUCN Red List.
- **Grasslands of Kutch in Gujarat** which is home to the **second-largest bustard population** in India. **Hence, statement 2 is correct.**

85. Ans: B

Exp:

- **Flood Plain Zoning** has been recognized as an effective **non- structural measure** for flood management. **Hence, statement 1 is not correct.**
- The basic concept of flood plain zoning is to regulate land use in the flood plains to restrict the damage caused by floods. **Hence, statement 2 is correct.**
- It aims at **determining the locations and the extent of areas for developmental activities** in such a fashion that the damage is reduced to a minimum.
- It envisages laying down limitations on development of both the unprotected as well as protected areas.

86. Ans: C

Exp:

- World Heritage Site refers to any of various areas or objects inscribed on the UNESCO's World Heritage List. **Hence, statement 1 is correct.**
  - ◆ The sites are designated as having "outstanding universal value" under the Convention Concerning the Protection of the World Cultural and Natural Heritage 1972.



- There are three types of sites: Cultural, Natural, and Mixed.

- ◆ Cultural heritage sites include hundreds of historic buildings and town sites, important archaeological sites, and works of monumental sculpture or painting.

- ◆ Natural heritage sites are restricted to those natural areas that have excellent ecological and evolutionary processes, unique natural phenomena, habitats of rare or endangered species etc.

- ◆ Mixed heritage sites contain elements of both natural and cultural significance. Hence, statement 2 is not correct.

- India has 40 world heritage sites, including 32 cultural properties, 7 natural properties and 1 mixed site. The latest one included are Harappan city of Dholavira and Kakatiya Rudreshwara (Ramappa) Temple.

- ◆ Recently, three sites- Gujarat's Vadnagar town and the iconic Sun Temple at Modhera, and the Rock-cut Sculptures of Unakoti in Tripura have been added to the tentative list of United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites. Hence, statement 3 is correct.

87. Ans: C

Exp:

- Skyglow is the brightening of the night sky caused by artificial lighting, primarily from streetlights, buildings, and advertising billboards. Hence, statement 1 is correct.
- It is caused by the scattering of light in the atmosphere and can make it difficult to see stars and other celestial bodies at night.
- This light floods directly into the eyes of the Nocturnal (active at night) and also into the skies and misleads their path.
- 'Skyglow' is one of the components of light pollution. Light pollution is typically composed of three main components: skyglow, glare, and light trespass. Hence, statement 2 is correct.

88. Ans: B

Exp:

- According to the IUCN Red List of Threatened Species, the cheetah (*Acinonyx jubatus*) is considered Vulnerable. Hence, statement 1 is not correct.
- The global population of cheetahs is thought to be around 7,100 individuals, with the majority found in southern Africa.

- Their populations have been in decline due to habitat loss, poaching, and human-wildlife conflict.

- Conservation efforts are underway to try to protect the remaining populations and increase their numbers.

- The cheetah (*Acinonyx jubatus*), the world's fastest cat, has been included in CITES Appendix I since 1975. Hence, statement 2 is correct.

89. Ans: B

Exp:

- Rainforests of the ocean, also known as coral reefs, are ecosystems that are home to a diverse array of plant and animal life, similar to how rainforests on land are home to a wide variety of plant and animal species.

- Coral reefs are formed by colonies of small, hardy animals called coral polyps that build structures of calcium carbonate. These structures provide a home for countless other species, including fish, crustaceans, mollusks, and many types of algae. Zooplankton, phytoplankton, and algae are all important components of the ocean ecosystem, but they are not considered to be rainforests of the ocean. Hence, option B is correct.

90. Ans: C

Exp:

- The FSI uses a number of different criteria to define what constitutes a forest, including the density of tree canopy, The presence of undergrowth, and the height of the trees.

- In general, an area is considered to be forested if it has a tree canopy density of more than 10% and a minimum area of 1 hectare. Hence, statement 1 is correct.

- (Light Detection and Ranging) is a remote sensing technology that uses laser pulses to measure the distance between the sensor and the ground.

- It can be used to measure the forest canopy density by measuring the height of trees, which can then be used to estimate the canopy cover. Hence, statement 2 is correct.

91. Ans: B

Exp:

- Kelp forests are underwater ecosystems formed in shallow water by the dense growth of several different species. Hence, statement 1 is not correct.

- They thrive in cold, nutrient-rich waters. Hence, statement 2 is correct.

- They attach to the seafloor and eventually grow to the water's surface and rely on sunlight to generate food and energy, kelp forests are always coastal and require shallow, relatively clear water.



- They provide underwater habitats to hundreds of species of invertebrates, fishes, and other algae and have great ecological and economic value.

92. Ans: D

Exp:

- A **swallowtail butterfly** disappearing from its previously known ranges from **Myanmar** and **southern China** to **Vietnam** has been recorded for the first time in India.
- The butterfly is “**extremely rare**” **Noble’s Helen** (*Papilio noblei*), identified from three locations in the **Namdapha National Park** (Arunachal Pradesh).
- Noble’s Helen is also found in Thailand, Laos and Cambodia. **Hence, statement 1 is not correct.**
- These butterflies were recorded for the first time in India in the Namdapha National Park of Arunachal Pradesh. **Hence, statement 2 is not correct.**

93. Ans: B

Exp:

- *Senna Spectabilis* is an **exotic tree** and it was introduced as an **ornamental species** and for use as firewood from **South and Central America**. **Hence, statement 1 is not correct.**
- It has taken over between 800 and 1,200 hectares of the **buffer zones** of the **Mudumalai Tiger Reserve (MTR)**.
- **Mudumalai Tiger Reserve (MTR)** is located in the **Nilgiris District of Tamil Nadu state**, at the **tri-junction of three states**, viz, **Karnataka, Kerala and Tamil Nadu**. **Hence, statement 2 is correct.**

94. Ans: A

Exp:

- Water Hyacinth, though, **native to South Africa**, has naturalised itself in many other parts of the world. **Hence, statement 2 is not correct.**
- Water Hyacinth is a fast-growing aquatic plant that can quickly take over bodies of water, leading to negative impacts on the environment. **Hence, statement 1 is correct.**
- The plant can reduce the amount of oxygen in the water, making it difficult for fish and other aquatic life to survive.
- It can also block sunlight from reaching other aquatic plants, reducing their growth and survival.

95. Ans: B

Exp:

- Saltwater crocodiles are the largest of the 23 species of ‘extant’ or living crocodilians. This includes ‘true crocodiles’, alligators and caimans.

- The IUCN status of Saltwater crocodiles is Least Concern. **Hence, statement 1 is not correct.**

- Today, they are found in three locations in India — the Sundarbans, Bhitarkanika National Park and the Andaman and Nicobar Islands.

- It is one of the three crocodiles native to the Indian Subcontinent, along with the mugger crocodile (*Crocodylus palustris*) and the gharial (*Gavialis gangeticus*). **Hence, statement 3 is correct.**

- It is also found in Bangladesh, Malaysia, Indonesia, Brunei, the Philippines, Papua New Guinea, Australia and the Solomon Islands. Hence, statement 3 is correct.

- It used to be found in Vietnam and southern China, became extinct in these areas due to human activity. **Hence, statement 2 is not correct.**

96. Ans: B

Exp:

- Recently, Guwahati Wildlife Division of the Assam Forest Department conducted the 2<sup>nd</sup> Bird Species Count Exercise after February 2022 in **Deepor Beel Wetland**.

● **About:**

- ◆ It is one of the largest freshwater lakes in Assam and an Important Bird Area by Birdlife International. **Hence, statement 1 is not correct.**

- ◆ Deepor Beel has been designated as a Ramsar Site in November, 2002. **Hence, statement 2 is correct.**

- It is located towards the southwest of Guwahati city, Assam and is the erstwhile water channel of River Brahmaputra.

- The lake expands up to 30 sq. km in summer and reduces to about 10 sq. km in the winter.

- The Assam Forest Department manages the 4.1 sq km Deepor Beel Wildlife Sanctuary in the central part of the greater wetland named Deepor Beel.

97. Ans: B

Exp:

**Blackbucks:**

● **About:**

- ◆ The Blackbuck (*Antelope cervicapra*), or the **Indian Antelope**, is a species of antelope native to **India and Nepal**.

- It is **widespread in Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu, Odisha, and other areas throughout peninsular India**.

- ◆ It is considered as the **epitome of grassland**.

- ◆ The **blackbuck is a diurnal antelope** (active mainly during the day).

- **Recognition:**
  - ◆ It has been **declared as the State Animal of Punjab, Haryana, and Andhra Pradesh. Hence, statement 1 is not correct.**
- **Cultural Importance:**
  - ◆ It is a **symbol of purity for Hinduism** as its skin and horns are regarded as sacred objects. For **Buddhism, it is a symbol of good luck.**
- **Protection Status:**
  - ◆ **Wildlife Protection Act 1972:** Schedule I
  - ◆ **IUCN Status:** Least Concern
    - **Hence, statement 2 is correct.**
  - ◆ **CITES:** Appendix III
- **Threat:**
  - ◆ **Habitat Fragmentation, Deforestation, Natural Calamities, Illegal Hunting.**

98. Ans: B

Exp:

- **Change in Ocean Temperature:** The **phenomenon begins when there is a strong change (or gradient) in ocean temperatures.**
- In the process known as convection, the **gradient causes more warm air, heated by the ocean surface, to rise over the ocean surface.**
- As prevailing winds move the hot air east, the northern shifts of the jet stream trap the air and move it toward land, where it sinks, resulting in heat waves.
- **Change in Atmospheric Pressure:** Heat waves **begin when high pressure in the atmosphere moves in and pushes warm air toward the ground.** This effect is fueled by heat rising from the ocean, creating an amplification loop. **Hence, statement 1 is not correct.**
- The high-pressure system pressing down on the ground expands vertically, forcing other weather systems to change course.
- It even minimizes wind and cloud cover, making the air more stifling.
- This is also why a heat wave parks itself over an area for several days or longer.
- **Climate Change:** The **rising temperatures lead to hotter weather.** Heat waves have been a regular phenomenon on land.
- However, **global warming has caused them to be hotter** with a longer duration and an increased frequency.
- Scientists studying the **climate tend to agree that the heat waves occurring today are more likely to be a result of climate change** for which humans are responsible. **Hence, statement 2 is not correct.**

99. Ans: C

Exp:

- A **carbon credit** (also known as carbon offset) is a credit for **greenhouse emissions** reduced or removed from the atmosphere by an emission reduction project.
- A **carbon market** turns emission reductions and removals into tradable assets, thus creating incentives to **reduce emissions or improve energy efficiency. Hence, statement 1 is correct.**
- **Carbon markets** will play a key role in the drive towards **decarbonization, encouraging the reduction of emissions through various schemes** in the short term with an ultimate goal of achieving Net Zero in the long term.
- **Carbon credits** are based on the **“cap-and-trade”** model that was used to reduce sulfur pollution in the 1990s. **Hence, statement 2 is correct.**

100. Ans: C

Exp:

Rhinos:

- There are **five species of rhino – white and black rhinos in Africa, and the greater one-horned, Javan and Sumatran rhino species in Asia. Hence, statement 1 is not correct.**
  - ◆ **IUCN Red List Status:**
    - **Black Rhino:** Critically endangered. Smaller of the two African species. **Hence, statement 2 is correct.**
    - **White Rhino:** Near Threatened. Researchers have created an embryo of the northern white rhino by using In Vitro Fertilization (IVF) process.
    - **One-Horned Rhino:** Vulnerable
    - **Javan:** Critically Endangered
    - **Sumatran Rhino:** Critically Endangered. It has gone extinct in Malaysia.
- Only the **Great One-Horned Rhino is found in India.**
  - ◆ **Also known as Indian rhino, it is the largest of the rhino species. Hence, statement 3 is correct.**
- It is identified by a **single black horn and a grey-brown hide with skin folds.**
- They primarily graze, with a diet consisting almost entirely of grasses as well as leaves, branches of shrubs and trees, fruit, and aquatic plants.

101. Ans: C

Exp:

- **Climate Forcing Pathway** refers to a combination of measures taken to decrease the **emission of greenhouse**

gasses and address the effects of **global warming**. Hence, **statement 1 is correct**.

- **Artificial Neural Network (ANN)** can be used to develop models that predict the impacts of **climate change** on specific regions, such as changes in **precipitation patterns or sea level rise**.
- Scientists utilized an **artificial intelligence** method known as **Artificial Neural Networks (ANN)** to forecast the timeline for reaching the **1.5°C and 2°C** temperature increase limits. ANN is a form of machine learning that is inspired from the **structure and function of the human brain**. Hence, **statement 2 is correct**.

102. Ans: A

Exp:

- **Coronal Holes** are areas on the **sun's surface** where fast solar wind erupts into space. Hence, **statement 1 is correct**.
- In these regions, the **magnetic field** is open to **interplanetary space**, sending **solar material** out in a **high-speed stream of solar wind** i.e., **geomagnetic storm**.
- **Coronal holes** can last between a few **weeks to months** thus not a permanent formation. Hence, **statement 2 is not correct**.
- The holes are not a unique phenomenon, appearing throughout the sun's approximately 11-year solar cycle.

103. Ans: C

Exp:

- **Hydroponic systems** are a type of technology used in **urban farming** that allow plants to be grown **without soil**. Hence, **statement 1 is correct**.
- The plants are grown in a **nutrient-rich water solution**, which provides all the essential nutrients for growth.
- **Nutrient Film Technique (NFT)** is a type of **hydroponic system** in which a thin film of **nutrient-rich water** is continuously circulated past the **roots of the plants**, which are supported by a growth medium. Hence, **statement 2 is correct**.
- **NFT** is a simple and efficient system that is well suited to growing small, fast-growing plants such as **lettuce, herbs, and microgreens**.

104. Ans: C

Exp:

- **Magnetic particles** can interfere with the **migratory patterns of birds** by **disrupting their magnetic navigation system**. Birds have the ability to **sense the Earth's magnetic field** and use it as a guide to navigate during their migrations. Hence, **statement 1 is correct**.

- **Researchers at Lancaster University** in the **UK** found abundant magnetite nanoparticles in the brain tissue from **individuals**.
- This strongly magnetic mineral is toxic and has been implicated in the production of reactive oxygen species (**free radicals**) in the human brain, which are associated with **neurodegenerative diseases** including **Alzheimer's disease**. Hence, **statement 2 is correct**.

105. Ans: A

Exp:

- Indian Rhino, also known as the Great One-Horned Rhino, is the only rhino species which is found in India.
  - ◆ Hence, **statement 1 is correct**.
- It is the largest of the rhino species.
  - ◆ Hence, **statement 2 is correct**.
- It is identified by a single black horn and a grey-brown hide with skin folds.
- They primarily graze, with a diet consisting almost entirely of grasses as well as leaves, branches of shrubs and trees, fruit, and aquatic plants.

106. Ans: D

Exp:

- Amur falcons, the world's longest travelling raptors start travelling with the onset of winters.
  - ◆ These raptors breed in southeastern Siberia and northern China, and migrate in millions across India and then over the Indian Ocean to southern Africa before returning to Mongolia and Siberia. Hence, **statement 1 is correct**.
- They get their name from the Amur River which forms the border between Russia and China. Hence, **statement 2 is correct**.
- The birds are the least concern under the International Union for Conservation of Nature (IUCN) Red List, Hence, **statement 3 is correct**
- It is protected under the Wildlife Protection Act 1972 and included under its Schedule IV. Hence, **statement 4 is correct**.

107. Ans: D

Exp:

**World Wetlands Day (WWD):**

- The State Govts and UT administrations across India celebrated **World Wetlands Day (WWD)** at all **75 Ramsar sites** on **02<sup>nd</sup> Feb 2023**. Hence, **statement 1 is correct**.
- The **2023 theme** for World Wetlands Day is '**Wetland Restoration**' highlighting the urgent need to prioritise wetland restoration. Hence, **statement 2 is correct**.





- The Union Minister for Environment, Forest and Climate Change launched the 'Save Wetlands Campaign' structured on a "whole of society" approach for wetlands conservation.
- World Wetlands Day is celebrated all over the world to commemorate the signing of the Ramsar Convention on Wetlands of International Importance (1971).
- India has been a party to the Convention since 1982 and has so far declared 75 wetlands as Ramsar across 23 states/UTs. India has the largest network of Ramsar Sites in Asia. Hence, statement 3 is correct.

108. Ans: B

Exp:

- Phumid is found in the Loktak National Park not in Keoladeo national Park. Hence, statement 1 is not correct.
- Phumid is a unique floating island made up of vegetation, soil, and organic matter.
- Keoladeo National Park, located in the State of Rajasthan, is an important wintering ground of Palaearctic migratory waterfowl. Hence, statement 2 is correct.

109. Ans: D

Exp:

- E-20 Ethanol Fuel:
- About:
- The ethanol Blending programme has been a key focus area of the Government to achieve Atma Nirbharta in the field of energy.
- E20 is a blend of 20% ethanol with petrol. The Government aims to achieve a complete 20% blending of ethanol by 2025, and HPCL and other oil marketing companies are setting up 2G-3G ethanol plants that will facilitate the progress. Hence, statement 1 is not correct.
  - ◆ Ethanol acts as an octane booster, which can lead to improved engine performance and reduced engine knock. This is because ethanol has a high-octane rating and when blended with gasoline, it raises the overall octane rating of the fuel, which can result in improved performance and efficiency, particularly in engines with high compression ratios. Hence, statement 2 is not correct.

110. Ans: C

Exp:

- The black soldier fly is a fly (Diptera) of the Stratiomyidae family that is commonly found in many parts of the world. Hence, statement 1 is correct.

- They are a dull, whitish color. They feed on a variety of organic matter, from rejected food waste to manure.
- They also have high waste-to-biomass conversion efficiency. Hence, statement 2 is correct.
- This means, unlike hot-blooded mammals and birds, which use a lot of energy to keep themselves warm, insects are efficient converters of food into body mass.

111. Ans: C

Exp:

- Omorgus Khandesh Beetle is known as a keratin beetle and is classified as necrophagous. Hence, statement 1 is correct.
- This species belongs to the Trogidae family.
- When an insect is described as "necrophagous," it means that it feeds on dead and decaying animal flesh. Hence, statement 2 is correct.
- It is mainly associated with bird and mammal nests or burrows.

112. Ans: C

Exp:

- Gasoline, also known as petrol, is a flammable liquid fuel made from crude oil.
- Lead is added to gasoline to increase its octane rating, which is a measure of the fuel's ability to resist "knocking" or detonation in an engine. Hence, statement 1 is correct.
- When leaded gasoline is burned in an engine, it releases lead particles into the air.
- Gasoline, which is a mixture of hydrocarbons, such as alkanes, cycloalkanes, and aromatic compounds, also acts as a source of lead pollution. Hence, statement 2 is correct.

113. Ans: B

Exp:

- Pangolins are nocturnal mammals that dig burrows and feed on ants and termites, and play a vital role in ecosystem management, mostly in aerating and adding moisture to the soil.
- Pangolins are known for their unique appearance. They have scales made of keratin that cover their entire body.
- When threatened, they can roll into a ball to protect themselves.
- Pangolins are among the most trafficked wild mammals, globally, traded mostly in Asia, where their scales are considered to be medicinal and their meat a delicacy. Hence, option C is not correct.
- It is adaptable to a wide range of habitats including primary and secondary tropical forests, limestone and bamboo forests, grasslands and agricultural fields.

- All pangolin species are listed in **Convention on International Trade in Endangered Species (CITES) Appendix II**.

114. Ans: B

Exp:

- **About Rhododendron:**
  - ◆ Rhododendron is a **genus of flowering plants** that includes about 1,000 species, primarily native to the **temperate regions of Asia, North America, and Europe**, as well as to the tropical regions of **southeast Asia and northern Australia**. Hence, **statement 1 is not correct**.
  - ◆ They are known for their showy clusters of large, brightly coloured flowers, and many species are popular ornamental plants in gardens and parks. Hence, **statement 2 is correct**.
- Rhododendrons are evergreen or deciduous shrubs or small trees, with woody stems and broad, leathery leaves.
  - ◆ In India, Pink Rhododendron is the state flower of Himachal Pradesh, while the Rhododendron arboretum is the state flower of Nagaland and the official State Tree of Uttarakhand. Hence, **statement 3 is correct**.

115. Ans: A

Exp:

- The "BBNJ Treaty", also known as the "Treaty of the High Seas", is an international agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction within the framework of the UNCLOS. Hence, **statement 1 and 2 are correct**.
- BBNJ encompasses the high seas, beyond the exclusive economic zones or national waters of countries. According to the International Union for Conservation of Nature (IUCN), these areas account for "almost half of the Earth's surface".
- These areas are hardly regulated and also least understood or explored for its biodiversity - only 1% of these areas are under protection.
- Launched at the One Ocean Summit in February 2022, the High Ambition Coalition on Biodiversity Beyond National Jurisdiction brings together many delegations engaged in the BBNJ negotiations on a common and ambitious outcome at the highest political level. Hence, **statement 3 is not correct**.

116. Ans: A

Exp:

**National Mission for Clean Ganga (NMCG):**

- On August 12, 2011, the NMCG was listed as a society under the Societies Registration Act, 1860. Hence, **statement 1 is correct**.

- The objective of the NMCG is to reduce pollution and ensure rejuvenation of the Ganga river.

- ◆ This can be achieved by promoting intersectoral coordination for comprehensive planning & management and maintaining minimum ecological flow in the river, with the aim of ensuring water quality and environmentally sustainable development.

- The NMCG is implemented by the National Council for Rejuvenation, Protection and Management of River Ganga also known as the **National Ganga Council**.

- The Act envisages five tier structure at national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga as below:

- ◆ **National Ganga Council under chairmanship of Hon'ble Prime Minister of India**. Hence, **statement 2 is not correct**.

- ◆ Empowered Task Force (ETF) on river Ganga under chairmanship of Hon'ble Union Minister of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation).

- ◆ National Mission for Clean Ganga (NMCG).

- ◆ State Ganga Committees

- ◆ District Ganga Committees in every specified district abutting river Ganga and its tributaries in the states.

117. Ans: C

Exp:

- Dickinsonia is an extinct primitive animal that inhabited seabeds around Australia, China, Russia, Ukraine, in the Ediacaran period, 600-500 million years ago.

- It was classified as an animal after discovery of cholesterol molecules in the fossils.

- Hence, **option C is correct**.

118. Ans: D

Exp:

- Hummingbird, native to American continent, has approximately 350 species which are found in Iridescent colours.

- These birds are comparable to India's Sunbirds.

- Aztecs referred to them as Huitzilin or 'A ray of sun'. Hence, **option D is correct**.

119. Ans: D

Exp:

**Olive Ridley Turtles:**

- The Olive ridley turtles are the **smallest and most abundant of all sea turtles found in the world**. These



turtles are carnivores and get their name from their olive-coloured carapace. Hence, statement 1 is correct.

- They are **best known for their unique mass nesting called Arribada**, where thousands of females come together on the same beach to lay eggs. Hence, statement 2 is correct.
- They are **found in warm waters of the Pacific, Atlantic and Indian oceans**. Hence, statement 3 is correct.
- Olive Ridley Turtles are **included in Schedule 1 of the Wildlife Protection Act, 1972**, listed as **vulnerable in the IUCN Red List** and mentioned in **appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**.

120. Ans: B

Exp:

- Bio-CNG is a **renewable fuel obtained by purifying biogas**. In contrast to Compressed Natural Gas (CNG), a non-renewable source of energy. Biogas is produced when microbes break down organic matter like food, crop residue, waste water, etc. Hence, statement 1 is not correct.
- It is similar to natural gas in terms of its composition and properties and is a **cleaner alternative to fuels such as petrol and diesel**. Hence, statement 2 is correct.

121. Ans: B

Exp:

- The **World Meteorological Organization (WMO)** released the **provisional State of the Global Climate report, 2022**.
- The concentrations of three main greenhouse gasses, **carbon dioxide (CO<sub>2</sub>)**, **methane (CH<sub>4</sub>)** and **Nitrous oxide (NO<sub>2</sub>)**, were all at record highs in **2021**. Hence, statement 1 is not correct.
- The emissions of **methane**, which is **25 times** more potent than **carbon dioxide** in causing **global warming**, in fact, increased at the **fastest pace ever**.
- At the **climate change conference in Glasgow**, countries had pledged to cut **global methane emissions** by at least **30%** by the year **2030**. Hence, statement 2 is correct.

122. Ans: B

Exp:

- **Xenotransplantation** involves the transplantation of **nonhuman tissues or organs** into **human recipients**. Hence, statement 1 is not correct.
- **Genome editing (also called gene editing)** is a group of technologies that give scientists the ability to change an organism's **Deoxy-Ribonucleic Acid (DNA)**.

- In the recent heart transplant from **pig to human**, **gene-editing** was adopted to remove a sugar in its cells that's responsible for that hyper-fast organ rejection. Hence, statement 2 is correct.
- One of the **biggest obstacles** to transplantation is **organ rejection**.

123. Ans: D

Exp:

- A new species of **estuarine crab** has been discovered in the **Parangipettai mangroves** in the **Vellar River estuary** in the **Cuddalore district** of **Tamil Nadu**. Hence, statement 1 is not correct.
- The species **inhabits muddy banks of mangroves**, and the burrows were located near the **pneumatophores of Avicennia mangroves**.
- The new species is found across the **Indian Subcontinent** and the **eastern Indian Ocean**. Hence, statement 2 is not correct.

124. Ans: D

Exp:

**Carbon Credit:**

- A carbon credit (also known as carbon offset) is a **credit for greenhouse emissions reduced or removed** from the atmosphere by an emission reduction project, which can be used by governments, industry, or private individuals to **compensate for the emissions** they generate elsewhere. Hence, statement 1 is correct.
- Those that cannot easily reduce emissions can still operate, **at a higher financial cost**.
- Carbon credits are based on the **"cap-and-trade"** model that was used to reduce sulfur pollution in the 1990s. Hence, statement 2 is correct.
- One carbon credit is equal to **one metric ton of carbon dioxide**, or in some markets, **carbon dioxide equivalent gases (CO<sub>2</sub>-eq)**. Hence, statement 3 is correct.

125. Ans: A

Exp:

- Particulate Matter is the **term for a mixture of solid particles and liquid droplets found in the air**.
- Particulate Matter is also called as **Particle Pollution**.
  - ◆ Hence, statement 1 is correct.
- Some are emitted directly from a source, such as **construction sites, unpaved roads, fields, smokestacks or fires**.
  - ◆ **Most particles** form in the atmosphere as a result of **complex reactions of chemicals such as sulfur dioxide and nitrogen oxides**, which are pollutants emitted from power plants, industries and automobiles.

- ◆ PM also includes **dust, dirt, soot, or smoke, are large or dark enough** to be seen with the naked eye.

- ◆ Hence, **statement 2 is not correct.**

- Hence, **option A is correct.**

126. Ans: B

Exp:

- A nation must designate **at least one wetland** as a **Wetland of International Importance** when it ratifies the **Ramsar convention**. Hence, **statement 1 is not correct.**
- Wetlands are important because they provide various ecological services, such as filtering and cleaning of water and act like a buffer against floods. Hence, **statement 2 is correct.**
- **Wetlands** have a huge potential to **store carbon.**
- Declaring **Ramsar Sites** under the **Ramsar Convention** is one of the most effective ways to stop the worldwide loss of wetlands.

127. Ans: D

Exp:

**Paris Agreement:**

- The Paris Agreement is a global treaty wherein some 200 countries agreed to cooperate to **reduce Green House Gas (GHG) Emissions and rein in climate change.**
  - ◆ It seeks to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industry levels. Hence, **statement 1 is correct.**
- The Paris Agreement works on a **5-year cycle** of increasingly ambitious climate action carried out by countries. Hence, **statement 2 is correct.**
  - ◆ In 2020, countries had submitted their plans for climate action known as **nationally determined contributions (NDCs).**
- **Long-term low greenhouse gas emission development strategies (LT-LEDS)** provide the **long-term horizon for the NDCs**, Unlike NDCs, they are not mandatory.
- Nearly all signatories to the Paris Agreement updated their climate commitments during the 26<sup>th</sup> session of the **United Nations Conference on Climate Change (COP26)**. Hence, **statement 3 is correct.**

128. Ans: A

Exp:

- **The red-eared slider turtle** is primarily **aquatic** and will emerge from the water for basking on rocks and logs.
- It is native to **South-Eastern USA and Mexico.**
  - ◆ Hence, **statement 1 is correct.**

- It can tolerate a **wide range of habitats** and are sometimes found in **estuaries and coastal wetlands** with brackish water.

- ◆ It can also tolerate a **range of water quality and accept high levels of organic pollutants such as effluent and inorganic pollutants.**

- ◆ Hence, **statement 2 is correct.**

- The species **breeds faster compared to other local turtle varieties.** As their size increases, they no longer fit in small tanks or ponds.

- ◆ The owners release them in the wild or nearby waterbodies and once released, they become a threat to the local fauna.

- ◆ Hence, **statement 3 is not correct.**

- Hence, **option A is correct.**

129. Ans: C

Exp:

- **Operation Olivia:**

- ◆ Every year, the **Indian Coast Guard's "Operation Olivia"**, initiated in the **early 1980s**, helps protect **Olive Ridley turtles** as they congregate along the Odisha coast for breeding and nesting from November to December.

- It also intercepts unlawful trawling activities.

- Hence, **option C is correct.**

130. Ans: D

Exp:

- Shallow-water mining takes place at **depths less than 200 metres** and it has been touted as **less destructive than terrestrial mining and less risky than mining in Deep-Water Ecosystems.**

- ◆ Hence, **statement 1 is correct.**

- It is considered a relatively **low-risk and low-cost option to satisfy the demand for metals and minerals.** Also, technology for shallow-water mining already exists.

- ◆ Hence, **statement 2 is correct.**

- Shallow-water mining projects are already underway in Namibia and Indonesia, and projects have been proposed in Mexico, New Zealand, and Sweden.

- Hence, **option D is correct.**

131. Ans: C

Exp:

- The Asiatic caracal is a medium-sized and locally threatened cat species, They are found mostly in Rajasthan, Gujarat and Madhya Pradesh and are located in **Kutch, the Malwa Plateau, and the Aravalli hill range.** Hence, **Statement 1 is not correct.**

- It has been widely reported to be on the **brink of extinction in India**. Hence, **statement 2 is not correct**.
- The protection status of Asiatic Caracal are:
  - ◆ **IUCN Red List:** Least Concern
  - ◆ **Wildlife Protection Act, 1972:** Schedule I
  - ◆ **CITES:** Appendix I, Hence, **statement 3 is correct**.

132. Ans: C

Exp:

**Montreal Protocol:**

- It is a worldwide **agreement to stop the production of substances causing ozone depletion**.
- Adopted on 16 September 1987, the Protocol is to date the **only UN treaty ever that has been ratified by every country on Earth** - all UN Member States. Hence, **statement 1 is correct**.
  - ◆ **India** is a party to the Montreal Protocol since **June 1992**.
- It has led to the **phase-out of 99% of ozone-depleting chemicals** in refrigerators, air-conditioners and many other products.
- The Kigali Amendment to the Montreal protocol aims for the **phase-down of hydrofluorocarbons (HFCs)** by cutting their production and consumption. Hence, **statement 2 is correct**.

133. Ans: B

Exp:

- **Ozone is a special form of oxygen** with the chemical formula **O<sub>3</sub>**. The oxygen we breathe and that is so vital to life on earth is **O<sub>2</sub>**.
- About **90% of ozone occurs naturally in the Earth's upper atmosphere (Stratosphere)** between 10 and 40km above Earth's surface. Hence, **statement 1 is not correct**.
- **Ozone-Depleting Substances (ODS)** includes CFCs, HCFCs, halons, **methyl bromide**, carbon tetrachloride, and methyl chloroform. Hence, **statement 2 is correct**.

134. Ans: C

Exp:

- **The Gangetic Dolphin (*Platanista gangetica gangetica*)** was officially discovered in **1801**.
- They live in the **Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu** river systems of Nepal, India, and Bangladesh.
  - ◆ The Ganges river dolphin can **only live in freshwater and is essentially blind**. Hence, **statement 1 is correct**.

- ◆ They **hunt by emitting ultrasonic sounds**, which bounces off of fish and other prey, enabling them to "see" an image in their mind. They are also **called 'susu'**.

- The global population of the species is estimated at 4,000, and nearly **80% found in the Indian subcontinent**.
- It is a reliable **indicator of the health of the entire river ecosystem**. Hence, **statement 2 is correct**.

135. Ans: B

Exp:

**Sloth Bear:**

- Sloth bears are found in Sri Lanka, **India**, Bhutan and Nepal, predominantly in lowland areas.
- Sloth bears primarily eat termites and ants, and unlike other bear species, they routinely carry their cubs on their backs.
- They are also very fond of honey, hence their alternative name of "honey bear".
- Sloth bears do not hibernate. Hence **statement 2 is correct**.
- It is a forest-dwelling member of the family Ursidae (comprising 8 species of bears) that inhabits tropical or subtropical regions of India and Sri Lanka.
- **Protection Status:**
  - ◆ **IUCN Red List:** Vulnerable. Hence **statement 1 is not correct**.
  - ◆ **CITES listing:** Appendix I
  - ◆ **Indian Wildlife Protection Act, 1972:** Schedule I

136. Ans: C

Exp:

- India is home to approximately around 27,000 Asian Elephants, which is the world's largest population of the species.
  - ◆ **As per Elephant Census (2017), Karnataka** has the highest number of elephants (6,049), followed by **Assam** (5,719) and **Kerala** (3,054). Hence, **statement 1 is correct**.
- **Asian Elephants:**
  - ◆ There are three subspecies of Asian elephant which are the Indian, Sumatran and Sri Lankan.
    - The Indian subspecies has the widest range and accounts for most of the remaining elephants on the continent.
  - ◆ Elephants have the longest-known gestational (pregnancy) period of all mammals, lasting up to 680 days (22 months).
  - ◆ Global Population: Estimated 20,000 to 40,000.



- ◆ **Protection Status:**
  - IUCN Red List: Endangered.
  - Wildlife (Protection) Act, 1972: Schedule I.
  - CITES: Appendix I
- **African Elephants:**
  - ◆ There are two subspecies of African elephants, the Savanna (or bush) elephant and the Forest elephant.
  - ◆ Global Population: Around 4,00,000.
  - ◆ Earlier in July 2020, Botswana (Africa) witnessed the death of hundreds of elephants.
  - ◆ **Protection Status:**
    - IUCN Red List Status:
    - **African Savanna Elephant: Endangered. Hence, statement 2 is correct.**
    - African Forest Elephant: Critically Endangered
    - CITES: Appendix II.

137. Ans: D

Exp:

- **The Central Pollution Control Board:**
  - ◆ CPCB is a **statutory organisation** which was constituted in September, 1974 under the **Water (Prevention and Control of Pollution) Act, 1974. Hence, statements 1 and 2 are correct.**
  - ◆ It was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981.**
  - ◆ It serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the **Environment (Protection) Act, 1986.**
  - ◆ Principal Functions of the CPCB, as spelt out in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981
    - to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution.
    - to improve the quality of air and to prevent, control or abate air pollution in the country.
  - ◆ **National Ambient Air Quality Standards (NAAQs)** are the standards for ambient air quality with reference to various identified pollutant notified by the CPCB under the Air (Prevention and Control of Pollution) Act, 1981. **Hence, statement 3 is correct.**
    - List of pollutants under NAAQS: PM10, PM2.5, SO2, NO2, CO, NH3, Ozone, Lead, Benzene, Benzo-Pyrene, Arsenic and Nickel.

138. Ans: C

Exp:

**Coir Geotextile:**

- Coir is a 100% natural fiber, obtained from a renewable source – the coconut husk.
- Coir Geo Textile is naturally **resistant to rot, molds and moisture**, and free from any microbial attack hence it needs no chemical treatment. **Hence, statement 1 is correct.**
- It has a **permeable, natural** and strong fabric with **high durability. Hence, statement 2 is not correct.**
- It protects the land surface and promotes quick vegetation.
- It is **totally biodegradable** and helps in soil stabilization. **Hence, statement 3 is correct.**
- It can dissipate the energy of flowing water and absorb the excess solar radiation.

139. Ans: C

Exp:

- The Minamata Convention on Mercury is a **global treaty to protect human health and the environment** from the adverse effects of mercury and its compounds.
  - ◆ It was **agreed at the fifth session of the Intergovernmental Negotiating Committee in Geneva, Switzerland 2013.**
- Controlling the **anthropogenic releases of mercury throughout its lifecycle** is one of the key obligations under the Convention.
  - ◆ The **Convention also addresses interim storage of mercury** and its disposal once it becomes waste, sites contaminated by mercury as well as health issues.
- The Convention **covers all aspects of the life cycle of mercury, controlling and reducing mercury** across a range of products, processes and industries. This includes controls on:
  - ◆ mercury mining
  - ◆ the manufacture and trade of mercury and products containing mercury
  - ◆ disposal of mercury waste
  - ◆ emissions of mercury from industrial facilities.
- Countries that have **ratified the Convention are bound by international law** to put these controls in place.
  - ◆ India has ratified the Convention.
- **Hence, option C is correct.**

140. Ans: A

Exp:

Sparrow Day:

● About:

- ◆ Every year on 20<sup>th</sup> March, **World Sparrow Day** is observed to raise awareness and protect the house sparrows. **Hence statement 1 is correct.**
- ◆ The **Nature Forever Society of India and the Eco-Sys Action Foundation of France** came up with the idea for World Sparrow Day.
- ◆ The idea was to **dedicate a day for the house sparrow** in order to spread the word about its protection.
- ◆ The **first World Sparrow Day** was organised in **2010**.

● Characteristics of the Sparrows:

- ◆ The House Sparrow (*Passer domesticus*) is perhaps the **most widespread, commonly seen wild bird in the world**.
- ◆ It has been **transported all over the world by European settlers** and can now be found on **two-thirds of the landmasses** of the world including New Zealand, Australia, North America, India and Europe. **Hence statement 2 is not correct.**
- ◆ It is only absent from areas like **China, Indochina, Japan and areas of Siberia and Australia** to east and tropical Africa.

141. Ans: C

Exp:

- Recently, **Africa's Boma technique** was undertaken at **Keoladeo National Park** in Rajasthan's Bharatpur district. **Hence statement 2 is correct.**
  - ◆ It was undertaken for capturing chitals or spotted deer and translocating them to Mukundara Hills Tiger Reserve, so as to improve the prey base.
- The Boma capturing technique is **popular in Africa**. It involves **luring animals into an enclosure** by chasing them through a funnel-like fencing. **Hence statement 1 is correct.**
- The funnel tapers into an **animal selection-cum-loading chute**, supported with grass mats and green net to make it opaque for animals, which are herded into a large vehicle for their transport to another location.
 

This old technique was earlier utilised to capture **wild elephants for training and service**.

142. Ans: A

Exp:

- The Paris Agreement (also known as the Conference of Parties 21 or COP 21) was adopted in 2015.

- ◆ It replaced the Kyoto Protocol which was an earlier agreement to deal with climate change. **Hence, statement 1 is correct.**

- It is a global treaty wherein some 200 countries agreed to cooperate to reduce Green House Gas (GHG) Emissions and rein in climate change.
- It seeks to limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industry levels. **Hence, statement 2 is not correct.**

143. Ans: B

Exp:

- Methane is the simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms (CH<sub>4</sub>). Methane is a powerful greenhouse gas. It is flammable and is used as a fuel worldwide.
- Methane is produced by the **breakdown or decay of organic material and can be introduced into the atmosphere by either natural processes** – such as the decay of plant material in wetlands, the seepage of gas from underground deposits or the digestion of food by cattle – **or human activities** – such as oil and gas production, rice farming or waste management.
  - ◆ **Hence, statement 1 is correct.**
- Methane is **84 times more potent than carbon and doesn't last as long in the atmosphere before it breaks down**. This makes it a critical target for reducing global warming more quickly while simultaneously working to reduce other greenhouse gases.
  - ◆ **Hence, statement 3 is correct.**
- It is responsible for **creating ground-level ozone (Tropospheric Ozone)**, a dangerous air pollutant.
  - ◆ **Hence, statement 2 is not correct.**

144. Ans: C

Exp:

- Monkeypox is a **viral zoonotic** disease that occurs primarily in tropical rainforest areas of Central and West Africa and is occasionally exported to other regions. **Hence, statement 1 is correct.**
  - ◆ Monkeypox virus infection has been **detected in squirrels, Gambian rats, dormice, and some species of monkeys**.
  - ◆ Monkeypox is caused by monkeypox virus, a member of the **Orthopoxvirus genus in the family Poxviridae**.
- Monkeypox typically **presents clinically with fever, rash and swollen lymph nodes**.
  - ◆ It causes the lymph nodes to swell (lymphadenopathy). Hence, statement 2 is correct.

145. Ans: A

Exp:

- Desert fox is the **third sub-species of red fox in India.** Hence, **statement 1 is correct.**
  - ◆ Other two subspecies are: the Tibetan Red Fox and the Kashmir Red Fox.
- They can be differentiated from other fox species by their white tail-tip. Beady eyes and a small snout give them an endearing, almost adorable look.
- Its **range does not overlap** with that of other red fox subspecies. Hence, **statement 2 is correct.**
  - ◆ Desert fox inhabits the dry and semi-arid regions of western and north-western India and occupy less than half of their potential habitats in India.
- They are omnivores consuming almost everything from berries and plants to desert rodents, insects, spiders, small birds, and lizards, like the spiny tail.
- Protection Status:
  - ◆ **IUCN Red List: Least Concern. Hence, statement 3 is not correct.**
  - ◆ CITES listing: Appendix II
  - ◆ India's Wildlife (Protection) Act: Schedule II

146. Ans: A

Exp:

- **The Delhi Declaration of 2019:** It was signed by the 14<sup>th</sup> CoP of the UNCCD, called for better access and stewardship over land and emphasised gender-sensitive transformative projects. Hence, **pair 1 is correctly matched.**
- **The Bonn Challenge:** To bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030. Hence, **pair 2 is not correctly matched.**
- **Great Green Wall:** Initiative by Global Environment Facility (GEF), where eleven countries in Sahel-Saharan Africa have focused efforts to fight against land degradation and revive native plant life to the landscape. Hence, **pair 3 is not correctly matched.**
- Hence, **option A is correct.**

147. Ans: B

Exp:

**Vultures in India:**

- India is **home to 9 species of Vulture** namely the Oriental white-backed, Long-billed, Slender-billed, Himalayan, Red-headed, Egyptian, Bearded, Cinereous and the Eurasian Griffon.
- Most of these **9 species face danger of extinction.**

- Bearded, Long-billed, Slender-billed, Oriental white-backed are protected in the Schedule-1 of the Wildlife Protection Act 1972. Rest are protected under 'Schedule IV'

**Vulture Species and Their Protection Status**

Sr. No.	Name of the Vulture Species	IUCN status	Pictorial Representation
1.	Oriental White-backed Vulture (Gyps Bengalensis)	Critically Endangered	
2.	Slender-billed Vulture (Gyps Tenuirostris)	Critically Endangered	
3.	Long-billed Vulture (Gyps Indicus)	Critically Endangered	
4.	Egyptian Vulture (Neophron Percnopterus)	Endangered	
5.	Red-Headed Vulture (Sarcogyps Calvus)	Critically Endangered	
6.	Indian Griffon Vulture (Gyps Fulvus)	Least Concerned	
7.	Himalayan Griffon (Gyps Himalayensis)	Near Threatened	
8.	Cinereous Vulture (Aegyptius Monachus)	Near Threatened	
9.	Bearded Vulture or Lammergeier (Gypaetus Barbatus)	Near Threatened	

- Hence **option B is correct.**

148. Ans: C

Exp:

- A hypersonic missile is a weapon system which flies at **least at the speed of Mach 5 i.e. five times the speed of sound and is manoeuvrable.** Hence, **statement 1 is correct.**



- The manoeuvrability of the hypersonic missile is what sets it apart from a ballistic missile as the latter follows a set course or a ballistic trajectory. **Hence, statement 2 is correct.**
- Thus, unlike ballistic missiles, hypersonic missiles do not follow a ballistic trajectory and can be manoeuvred to the intended target.
- The two types of hypersonic weapons systems are Hypersonic Glide Vehicles (HGV) and Hypersonic Cruise Missiles.
  - ◆ The HGV are launched from a rocket before gliding to the intended target while the hypersonic cruise missile is powered by air breathing high speed engines or 'scramjets' after acquiring their target.

149. Ans: A

Exp:

- Recently, a fossil unearthed in central Montana (US) of a species named **Syllipsimopodi bideni** represents the **oldest-known relative of today's octopuses** and boasts 10 arms, with two twice as long as the other eight.
  - ◆ It has been named after the US president, Joe Biden.
- Syllipsimopodi, about 12 cm long, had a torpedo-shaped body and squid-like appearance though it was not closely related to squids.
  - ◆ It also is the oldest-known creature with suckers, which enable the arms to better grasp prey and other objects.
  - ◆ It represents the only member of the octopus lineage with 10 arms, meaning two were lost in later evolution.
- **Hence, option A is correct.**

150. Ans: D

Exp:

- **Conservation Status of Gangetic dolphins:**
  - ◆ Indian Wildlife (Protection), Act 1972: Schedule I.
  - ◆ **International Union for the Conservation of Nature (IUCN):** Endangered. **Hence, statement 1 is correct.**
  - ◆ Convention on International Trade in Endangered Species (CITES): Appendix I (most endangered).
  - ◆ Convention on Migratory Species (CMS): Appendix II (migratory species that need conservation and management or would significantly benefit from international co-operation).
- National Dolphin Research Centre (NDRC) is coming up on the 4,400 square metre plot of land on the premises of Patna University for the conservation of the endangered Gangetic river dolphin.

- **Vikramshila Ganges Dolphin Sanctuary** has been established in Bihar. **Hence, statement 2 is correct.**
- The **National Mission for Clean Ganga** celebrates 5<sup>th</sup> October as National Ganga River Dolphin Day. **Hence, statement 3 is correct.**
- The Conservation Action Plan for the Ganges River Dolphin 2010-2020, which "identified threats to Gangetic Dolphins and impact of river traffic, irrigation canals and depletion of prey-base on Dolphins populations".

151. Ans: D

Exp:

**Initiatives Related to Ganga**

- **Namami Gange Programme:** It is an Integrated Conservation Mission, approved as a 'Flagship Programme' by the Union Government in June 2014 to accomplish the twin objectives of effective abatement of pollution and conservation and rejuvenation of National River Ganga.
- **Ganga Action Plan:** It was the **first River Action Plan that was taken up by the Ministry** of Environment, Forest and Climate Change in 1985, to improve the water quality by the interception, diversion, and treatment of domestic sewage. **Hence, statement 2 is correct.**
- The National River Conservation Plan is an extension to the Ganga Action Plan. It aims at cleaning the Ganga River under Ganga Action Plan phase-2.
- **National River Ganga Basin Authority (NRGBA):** It was formed by the Government of India in the year 2009 under Section-3 of the Environment Protection Act, 1986.
- Ganga was declared as the '**National River**' of India in **2008. Hence, statement 1 is correct.**
- **Clean Ganga Fund:** In 2014, it was formed for cleaning up of the Ganga, setting up of waste treatment plants, and conservation of biotic diversity of the river.
- **Bhuvan-Ganga Web App:** It ensures involvement of the public in monitoring of pollution entering into the river Ganga.
- **Ban on Waste Disposal:** In 2017, the **National Green Tribunal** banned the disposal of any waste in the Ganga.

152. Ans: A

Exp:

- Chilika is **Asia's largest and world's second-largest lagoon. Hence, statement 1 is correct.**
- It **lies on the east coast of India in the state of Odisha**, separated from the mighty Bay of Bengal by a small strip of sand.



- It spreads over Puri, Khurda and Ganjam districts of Odisha on the east coast of India, at the mouth of the Daya River, flowing into the Bay of Bengal, covering an area of over 1,100 square kilometres.
- It is the **largest wintering ground for migratory birds** on the Indian sub-continent and is home to a number of threatened species of plants and animals.
- In 1981, Chilika Lake has designated the **first Indian wetland of international importance** under the Ramsar Convention.
- Irrawaddy dolphins are **found in coastal areas in South and Southeast Asia**, and in **three rivers**: the Ayeyarwady (Myanmar), the Mahakam (Indonesian Borneo) and the Mekong. **Hence, statement 2 is not correct.**

153. Ans: C

Exp:

#### Net Zero Target:

- It is referred to as **carbon neutrality**, which does not mean that a country would bring down its emissions to zero.
- Rather, it is a **state in which a country's emissions are compensated by the absorption and removal of greenhouse gases** from the atmosphere.
  - ◆ Further, absorption of the emissions can be increased by creating more carbon sinks such as forests.
    - While the removal of gases from the atmosphere requires futuristic technologies such as carbon capture and storage.
- More than 70 countries have promised to become Net Zero by the middle of the century i.e., by 2050.
- India has promised to cut its emissions to net zero by 2070 at the **conference of parties-26(COP)** summit. **Hence, statement 1 is correct.**
  - ◆ India aspires to **maximise the use of electric vehicles, ethanol blending to reach 20% by 2025**, and a strong modal shift to public transport for passenger and freight. **Hence, statement 2 is correct.**

154. Ans: A

Exp:

#### Leadership For Industry Transition

- The LeadIT initiative **lays specific focus on hard to abate sectors that are key stakeholders in the global climate action** and require specific interventions.
- It **gathers countries and companies that are committed to action to achieve the Paris Agreement.** **Hence, statement 2 is not correct.**

- It was launched by the **governments of Sweden and India at the UN Climate Action Summit in 2019** and is supported by the World Economic Forum. **Hence, statement 1 is correct.**
- LeadIT members subscribe to the notion that energy-intensive industries can and must progress on low-carbon pathways, aiming to achieve net-zero carbon emissions by 2050.

155. Ans: A

Exp:

- The **Red-crowned roofed turtle** is **native to India, Bangladesh and Nepal.**
  - ◆ Historically, the species was widespread in the **Ganga River**, both in India and Bangladesh. **It also occurs in the Brahmaputra basin.** **Hence, statement 1 is correct.**
- It is a freshwater turtle species found in deep flowing rivers with terrestrial nesting sites. **Hence, statement 2 is not correct.**

156. Ans: B

Exp:

#### Central Pollution Control Board (CPCB):

- **CPCB** is a **statutory organisation** which was constituted in September, 1974 **under the Water (Prevention and Control of Pollution) Act, 1974.** **Hence, statement 1 is not correct.**
  - ◆ It was also entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.
- It serves as a field formation and also provides technical services to the Ministry of Environment, Forest and Climate Change of the provisions of the Environment (Protection) Act, 1986.
- **Principal Functions of the CPCB:**
  - ◆ To promote **cleanliness of streams and wells in different areas of the States** by prevention, control and abatement of water pollution. **Hence, statement 2 is correct.**
  - ◆ To improve the quality of air and to prevent, control or abate air pollution in the country.
- **State Pollution Control Board (SPCB):**
  - ◆ They supplement the CPCB as they are a statutory organization entrusted to implement Environmental Laws and rules within the jurisdiction of a state.
  - ◆ Pollution control committees (PCC):
  - ◆ They perform similar functions to SPCB. The difference between the two is that PCC belongs to Union territories.





157. Ans: A

Exp:

- The Fund was created to promote **clean energy**, and funded through an initial **carbon tax** on the use of coal by industries. **Hence, statement 1 is correct.**
  - ◆ Its mandate is to fund research and development of **innovative clean energy** technology in the fossil and **non-fossil fuel-based sectors**.
- It is governed by an **Inter-Ministerial Group** with the **Finance Secretary** as the Chairman. **Hence, statement 2 is not correct.**

158. Ans: C

Exp:

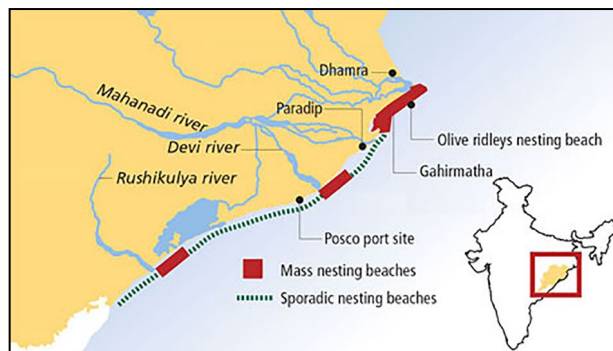
- The migratory bird that traversed the **Central Asian Flyway (CAF)** is only one of the two — the other has been sighted at Jamnagar in Gujarat.
  - ◆ It's a medium-sized bulky wader with a straight, dark-brown bill and yellowish-brown legs. **Hence, statement 1 is correct.**
  - ◆ It has a striped crown with an indistinct white eyebrow. Its upperparts are grey, with dark feather tips; its underparts are white.
  - ◆ **Its Scientific Name is *Calidris tenuirostris***
- Its IUCN Protection Status is Endangered. **Hence, statement 2 is correct.**

159. Ans: A

Exp:

**Olive Ridley Turtles:**

- The Olive ridley turtles are the **smallest and most abundant of all sea turtles** found in the world. **Hence, statement 1 is correct.**
  - ◆ They are found in **warm waters of the Pacific, Atlantic and Indian oceans.**
  - ◆ The **Odisha's Gahirmatha Marine Sanctuary** is known as the **world's largest rookery (colony of breeding animals) of sea turtles.**
- These turtles are **carnivores** and get their name from their **olive-coloured carapace.**
- They are best known for their **unique mass nesting called Arribada**, where thousands of females **come together on the same beach to lay eggs.** **Hence, statement 2 is correct.**
- **IUCN Red List categorized Olive Ridley Turtles as Vulnerable** and Wildlife Protection Act, 1972 listed them in Schedule 1. **Hence, statement 3 is not correct.**
- To protect Olive Ridley Turtles, the **Indian Coast Guard's "Operation Olivia"**, initiated to help **protect Olive Ridley turtles as they congregate along the Odisha coast** for breeding and nesting from November to December.



160. Ans: C

Exp:

**Swachh Survekshan Awards:**

- Swachh Survekshan has been conducted since 2016 and is the **world's largest urban sanitation and cleanliness survey.** **Hence, statement 1 is correct.**
  - ◆ It has been instrumental in fostering a spirit of healthy competition among towns and cities to improve their service delivery to citizens and towards creating cleaner cities.
  - ◆ It is conducted under the ambit of the **Swachh Bharat Mission (Urban)**,
- The primary goal of Swachh Survekshan is to **encourage large-scale citizen participation and create awareness** amongst all sections of society about the importance of working together toward making towns and cities better places to reside in.
- Its nodal ministry is Housing and Urban Affairs (MoHUA). **Hence, statement 2 is not correct.**
- As of 2022, Indore emerged as **India's first 7-star Garbage Free city**, while Surat, Bhopal, Mysuru, Navi Mumbai, Vishakhapatnam, and Tirupati earned 5-star Garbage Free certifications. **Hence, statement 3 is correct.**

161. Ans: C

Exp:

- **Biomass co-firing** is the practice of substituting a part of the fuel with biomass at coal thermal plants. **Hence, statement 1 is correct.**
- **Co-firing** is an option to convert **biomass to electricity**, in an efficient and clean way, and to reduce **GHG (Greenhouse Gasses)** emissions of the power plant.
- **Biomass co-firing** is a globally accepted cost-effective method for decarbonizing coal fleets. **Hence, statement 2 is correct.**
- **Biomass co-firing** is an effective way to curb emissions from open burning of crop residue, it also decarbonized the process of electricity generation using coal.

162. Ans: A

Exp:

- Recently, the **rare butterfly Palmking** (*Amathusia phidippus*) was **sighted for the first time in Tamil Nadu**.
  - ◆ Palmking was first recorded in South India by British scientist H.S.Ferguson in 1891. More than a Century later, it was rediscovered in 2007.
- Palmking belongs to the Nymphalidae subfamily and feeds on palm, coconut and calamus varieties of plants.
  - ◆ The butterfly is characterised by its brown colour and dark bands and is described as reclusive, mostly resting in the shade.
- It is not easy to spot a Palmking because its wood colour makes for easy camouflage and it rarely spreads its wings.
- **Distribution:**
  - ◆ This butterfly is widely distributed across parts of India, Myanmar, Indo China, Peninsular Malaysia and Thailand.
  - ◆ It occurs in the Indonesian archipelago and the Philippines.
  - ◆ In India, Palmking sightings were recorded in the forests of Arippa, Shendurney, Periyar Tiger Reserve in the south of Western Ghats.
- **Hence, option A is correct.**

163. Ans: D

Exp:

- The “AMI” group aims to ensure **impacts of cryosphere loss** is understood by political leaders and the public, and not only within **mountain and polar regions, but throughout the planet. Hence, statement 1 is not correct.**
- The **IPCC Sixth Assessment Cycle reports**, including the **Special Report on Ocean and Cryosphere** in a Changing Climate, conclude that such changes in the **cryosphere** will worsen with each additional increment of **global warming and greenhouse gas emissions** in the atmosphere.
- The founding governments of the group include **Chile (co-chair), Iceland (co-chair)**, Peru, Czech Republic, Nepal, Finland, Senegal, Kyrgyz Republic, Samoa, Georgia, Switzerland, New Zealand, Monaco, Vanuatu, Sweden, Tanzania, Liberia, Norway and Mexico. **Hence, statement 2 is not correct.**

164. Ans: C

Exp:

- **Vaquita Porpoise** (*Phocoena sinus*) is the **world’s smallest cetacean**. Its name means “**little cow**” in Spanish. **Hence, statement 1 is correct.**

- ◆ It has a dark ring around the eyes is its **most striking feature**, along with a proportionally **large dorsal fin**.
- ◆ It is unique **among the porpoises as it is the only species of that family found in warm waters**, and the size of the dorsal fin is believed to be an adaptation to that, allowing for extra body heat to dissipate.
- ◆ Like many other species of porpoise, vaquita tend to be shy and elusive, avoiding boats when approached.
- **Habitats:**
  - ◆ **Found only in the northern Gulf of California (Sea of Cortez) in Mexico**. Most commonly seen in shallow waters up to 50 metres deep. **Hence, statement 2 is correct.**
- **Threats:**
  - ◆ The vaquita population has been in sharp decline for decades, recently accelerated by **illegal fishing with gill-nets for the vulnerable totoaba**, a large fish sought after for its swim bladder.
  - ◆ The small animal frequently gets caught in fixed fishing nets (gill-nets), as by-catch.
- **Protection Status:**
  - ◆ **IUCN Red List:** Critically Endangered.
  - ◆ **CITES:** Appendix I

165. Ans: D

Exp:

**About Stratovolcano:**

- A **stratovolcano is a tall, conical volcano** composed of one layer of hardened lava, tephra, and volcanic ash.
- These volcanoes are characterized by a **steep profile and periodic, explosive eruptions**.
- The **lava that flows from them is highly viscous**, and cools and hardens before spreading very far.
- **Hence, option D is correct.**

166. Ans: A

Exp:

- Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
  - ◆ Further, the UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to

reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. Hence, statement 1 is correct.

● **Stakeholders in the EIA Process:**

- ◆ Those who propose the project
- ◆ The environmental consultant who prepares EIA on behalf of project proponent
- ◆ Pollution Control Board (State or National)
- ◆ The public has the right to express their opinion
- ◆ The Impact Assessment Agency
- ◆ Regional centre of the MoEFCC, Hence, statement 2 is correct.

- It is a statutory process under the Environment Protection Act, 1986 for some projects. Hence, statement 3 is not correct.

167. Ans: C

Exp:

- Himalayan Yak is **endemic to the Tibetan Plateau and the adjacent high-altitude regions.**
  - ◆ Yaks are most comfortable above 14,000 feet. They climb to an elevation of 20,000 feet when foraging and usually don't descend any lower than 12,000 feet.
  - ◆ The yak-rearing states of India are **Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh and Jammu & Kashmir.** Hence, statement 1 is correct.
- **IUCN Red list status of Himalayan Yak is Vulnerable,** further, IUCN considers the wild species of yak under *Bos mutus*, while the domestic form is considered under *Bos grunniens*. Hence, statement 2 is not correct.
- The countrywide population trend shows that the yak population has been decreasing at an alarming rate. **According to a census in 2019, India has some 58,000 yaks – a drop of about 25% from the last livestock census conducted in 2012.** Hence, statement 3 is correct.

168. Ans: C

Exp:

- **Carbon capture, utilization and storage (CCUS)** refers to Carbon capture that involves the development of sorbents that can effectively bind to the CO<sub>2</sub> present in flue gas or in atmosphere. Hence, statement 1 is correct.
- **NITI Aayog** has released a study report, titled '**Carbon Capture, Utilisation, and Storage (CCUS) Policy Framework and its Deployment Mechanism** in India'.
- **CCUS** can provide a wide variety of opportunities to convert the **captured CO<sub>2</sub>** to different **value-added**

**products like green urea, food and beverage, building materials, chemicals (methanol and ethanol), polymers (including bio-plastics).** Hence, statement 2 is correct.

- Capturing CO<sub>2</sub> from biogenic sources such as plants and soil to boost crop growth in a greenhouse could work.

169. Ans: D

Exp:

**Seaweeds:**

- They are the **primitive, marine non-flowering marine algae** without root, stem and leaves, play a major role in marine ecosystems. Hence statement 1 is not correct.
- Large seaweeds form dense underwater forests known as kelp forests, which act as underwater nurseries for fish, snails and sea urchins.
- Seaweeds, **found mostly in the intertidal region,** in shallow and deep waters of the sea and **also in estuaries and backwaters.** Hence statement 2 is not correct.
- The southern Gulf of Mannar's rocky intertidal and lower intertidal regions have rich populations of several seaweed species.

170. Ans: C

Exp:

- In 2009, the United Nations designated **22<sup>nd</sup> April** as '**International Mother Earth Day.** Hence, statement 1 is correct.
  - ◆ Earth Day is now globally coordinated by **EARTHDAY.ORG**, which is a non-profit organization. It was formerly known as **Earth Day Network.**
- It aims to **"build the world's largest environmental movement to drive transformative change for people and the planet."**
- On 22<sup>nd</sup> April 2022, the **52<sup>nd</sup> anniversary of Earth Day was celebrated.** The theme for Earth Day 2022 is **"Invest In our Planet".** Hence, statement 2 is correct.

171. Ans: C

Exp:

- **Vaquita Porpoise (*Phocoena sinus*)** is the **world's smallest cetacean.** Its name means **"little cow"** in Spanish. Hence, statement 1 is correct.
  - ◆ It has a dark ring around the eyes is **its most striking feature,** along with a proportionally **large dorsal fin.**
  - ◆ It is unique **among the porpoises as it is the only species of that family found in warm waters,** and the size of the dorsal fin is believed to be an adaptation to that, allowing for extra body heat to dissipate.
  - ◆ Like many other species of porpoise, vaquita tend to be shy and elusive, avoiding boats when approached..



- **Habitats:**
  - ◆ Found only in the northern Gulf of California (Sea of Cortez) in Mexico. Most commonly seen in shallow waters up to 50 metres deep. Hence, **statement 2 is correct.**
- **Threats:**
  - ◆ The vaquita population has been in sharp decline for decades, recently accelerated by **illegal fishing with gill-nets for the vulnerable totoaba**, a large fish sought after for its swim bladder.
  - ◆ The small animal frequently gets caught in fixed fishing nets (gill-nets), as by-catch.
- **Protection Status:**
  - ◆ **IUCN Red List:** Critically Endangered.
  - ◆ **CITES:** Appendix I

172. Ans: C

Exp:

- **Mainstreaming Biodiversity** is the process of **embedding biodiversity** considerations into **policies, strategies, and practices** of key public and private actors to promote the conservation and sustainable use of natural resources. Hence, **statement 1 is correct.**
- **United Nations Strategic Plan for Forests 2017–2030:**
  - ◆ The Strategic Plan features a set of six Global Forest Goals and 26 associated targets to be reached by 2030, which are voluntary and universal. Hence, **statement 2 is correct.**
  - ◆ It includes a target to increase forest area by 3% worldwide by 2030, signifying an increase of 120 million hectares, an area over twice the size of France.
  - ◆ It builds on the vision of the 2030 Agenda and recognizes that real change requires decisive, collective action, within and beyond the UN System

173. Ans: B

Exp:

- The **IUCN Red List Status** of sandalwood is Vulnerable, Hence, **statement 1 is not correct.**
- Santalum album, commonly known as Indian Sandalwood, is a **dry deciduous forest species native to China, India, Indonesia**, Australia, and the Philippines.
  - ◆ Sandalwood has been long **associated with the Indian heritage & culture, as the country contributed 85% of the world's sandalwood trade** erstwhile, Hence, **statement 2 is correct.**

174. Ans: C

Exp:

- Teak (*Tectona grandis*) also known as sagon, sagwan, Indian oak, and teca. Hence, **statement 1 is correct.**

- Its production covers **1% of global annual timber demand.** Hence, **statement 2 is not correct.**
- Teak, is a large **deciduous tree native to India, Myanmar, Laos and Thailand.** Teak is highly tolerant of a range of climate conditions and can be found from very dry to very moist regions. It is high resistance to decay and insect damage, and the heartwood changes from olive green to golden brown after exposure.
- This wood species is **listed in the IUCN Red List of Threatened Species as endangered, but not listed in the CITES.** Hence, **statement 3 is correct.**
- **African teak (*Pericopsis elata*),** also known as Afrormosia, Kokrodua and Assamela, has brown, green or yellow-brown bark. **The African teak is classified as Endangered on the IUCN Red List 2004, and is listed on Appendix II of CITES.**

175. Ans: C

Exp:

**Mugger or Marsh Crocodile:****Description:**

- It is **one of the 24 extant species of crocodylians** found globally. Hence, **statement 1 is not correct.**
- ◆ Estuarine or Saltwater Crocodile is considered the **Earth's largest living crocodile species.** Hence, **statement 2 is not correct.**
- The mugger is an egg-laying and hole-nesting species.
- The mugger is also **known to be dangerous.**

**Habitat:**

- It is mainly restricted to the Indian subcontinent where it may be found in a number of freshwater habitat types including rivers, lakes and marshes. However, it can even be found in coastal saltwater lagoons and estuaries.
- It is already **extinct in Bhutan and Myanmar.**

**Threats:**

- Habitat destruction, fragmentation, and transformation, fishing activities and use of crocodile parts for medicinal purposes.

**Protection Status:**

- **IUCN List of Threatened Species:** Vulnerable Hence, **statement 3 is correct.**
- **CITES:** Appendix I
- **Wildlife Protection Act, 1972:** Schedule I

176. Ans: C

Exp:

- **About Great Indian Bustard:**
  - ◆ The **Great Indian Bustard (*Ardeotis nigricaps*),** the **State bird of Rajasthan,** is considered India's **most critically endangered bird.**





- ◆ It is considered the **flagship grassland species**, representing the health of the grassland ecology.
- ◆ Its population is confined mostly to Rajasthan and Gujarat. Small populations occur in Maharashtra, Karnataka and Andhra Pradesh. **Hence, statement 2 is correct.**



- **Vulnerability:**
  - ◆ The bird is under **constant threats due to collision/electrocution with power transmission lines**, hunting (still prevalent in Pakistan), habitat loss and alteration as a result of widespread agricultural expansion, etc.
- **Protection Status:**
  - ◆ **IUCN red List:** Critically Endangered, **Hence, statement 1 is correct.**
  - ◆ **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** Appendix 1
  - ◆ **Convention on Migratory Species (CMS):** Appendix I
  - ◆ **Wildlife (Protection) Act, 1972:** Schedule I

177. Ans: B

Exp:

- **Kalakkad – Mundanthurai Tiger Reserve (KMTR):** Popularly known as KMTR, this reserve **was created in 1988 by combining the existing** and contiguous Kalakkad and Mundanthurai wildlife sanctuaries.
- Kalakkad – Mundanthurai was declared as the **first Tiger reserve in Tamil Nadu**. It occupies the southern part of the Western Ghats and consists of wet evergreen forests; it is the catchment area of 14 rivers. **Hence, statement 1 is not correct.**
- It is also part of the Agasthyamala Biosphere Reserve. **Hence, statement 2 is correct.**

- **Agasthyamala Biosphere Reserve** is considered one of the five centres of plant diversity and endemism in India by the **International Union for Conservation of Nature (IUCN)**.

178. Ans: D

Exp:

- The MoEFCC released the **Action Plan for Vulture Conservation 2006** with the **Drugs Controller General of India (DCGI)** banning the veterinary use of **diclofenac**. **Hence, statement 1 is correct.**
- It carries out **safety testing** of available **NSAIDs** on **vultures** and to develop new ones which do not affect vultures.
- **Action Plan for Vulture Conservation 2006** prevents the poisoning of the principal food of vultures, the cattle carcasses with veterinary NSAIDs. **Hence, statement 2 is correct.**

179. Ans: D

Exp:

- **Horseshoe crabs, medicinally priceless and one of oldest living creatures** on the earth, appear to be **disappearing** from their familiar spawning grounds due to destructive fishing practices along Chandipur and Balaramgadi coast in **Odisha's Balasore** district. **Hence, statement 1 is correct.**
- India has two species of Horseshoe crabs- the **coastal horseshoe crab (*Tachypleus gigas*)**, the **mangrove horseshoe crab (*Carcinoscorpius rotundicauda*)** and major concentration of the animal is found in Odisha. **Hence, statement 2 is correct.**
- Both these species are not listed on **IUCN red list** yet but are part of **Schedule 4 of Wildlife Protection Act, 1972**. **Hence, statement 3 is correct.**
  - ◆ The **blood of Horseshoe crab** is very important for **preparation of rapid diagnostic reagent**. All injectable and medicines are tested with the help of Horseshoe crabs. A molecule has been developed from reagent of Horseshoe crab that would **help treat pre-eclampsia**, a disease affecting pregnant women.
  - ◆ Palaeontological studies say the **age of Horseshoe crabs is 450 million years**. The creature has lived on earth without undergoing any morphological change due to its strong immune system.

180. Ans: C

Exp:

- **Ocean acidification** occurs when the **pH of seawater decreases** as a result of **dissolved carbon dioxide**. **Hence, statement 1 is correct.**



- **Carbon dioxide** is being absorbed from the atmosphere at a rate that exceeds the **oceans' natural buffering capacity**.
- **Ocean acidification** makes it difficult for many marine organisms to build and maintain their **shells and skeletons**. Hence, **statement 2 is correct**.

181. Ans: B

Exp:

**Kalakkad – Mundanthurai Tiger Reserve (KMTR):**

- Popularly known as KMTR, this reserve **was created in 1988 by combining the existing** and contiguous Kalakkad and Mundanthurai wildlife sanctuaries.
- Kalakkad – Mundanthurai was declared as the **first Tiger reserve in Tamil Nadu**. It occupies the southern part of the Western Ghats and consists of wet evergreen forests; it is the catchment area of 14 rivers. Hence, **statement 1 is not correct**.
- It is also part of the Agasthyamala Biosphere Reserve. Hence, **statement 2 is correct**.
  - ◆ **Agasthyamala Biosphere Reserve** is considered one of the five centres of plant diversity and endemism in India by the **International Union for Conservation of Nature (IUCN)**.

182. Ans: D

Exp:

- The **MoEFCC** released the **Action Plan for Vulture Conservation 2006** with the **Drugs Controller General of India (DCGI)** banning the veterinary use of **diclofenac**. Hence, **statement 1 is correct**.
- It carries out **safety testing** of available **NSAIDs** on **vultures** and to develop new ones which do not affect vultures.
- **Action Plan for Vulture Conservation 2006** prevents the poisoning of the principal food of vultures, the cattle carcasses with veterinary NSAIDs. Hence, **statement 2 is correct**.

183. Ans: C

Exp:

- Due to the loss of their **symbiotic algae**, **corals** become white and lose their **vibrant colors**. Hence, **statement 1 is not correct**.
- Warmer water temperatures can result in **coral bleaching**.
- **Zooxanthellae**, a kind of algae, are frequently seen in symbiotic relationships with corals. Hence, **statement 2 is not correct**.

184. Ans: C

Exp:

- Biogas, a renewable fuel produced using the anaerobic digestion process from organic feedstock, is primarily

composed of methane (50-65%), carbon dioxide (30-40%), hydrogen sulfide (1-2.5%) and a tiny fraction of moisture. Hence, **statements 1 and 2 are correct**.

- It contributes to all 17 of the United Nation's Sustainable Development Goals and can also be converted to produce numerous sustainable transportation fuels.

185. Ans: C

Exp:

- **Notre Dame Global Adaptation Initiative** is part of the **Climate Change Adaptation Program of the University of Notre Dame's Environmental Change initiative (ND-ECI)**. Hence, **statement 1 is correct**.
- **ND-GAIN's** Country Index shows which countries are best prepared to deal with global changes brought about by overcrowding, resource-constraints and climate disruption.
- **Climate risk** can be defined as a combination of **hazard exposure, sensitivity to impact, and adaptive capacity**. Hence, **statement 2 is correct**.

186. Ans: B

Exp:

- The **2022 Forest Declaration Assessment** is revealing that global deforestation rates have decreased. Hence, **statement 1 is not correct**.
- **Forest Declaration Assessment** publishes annual updates on progress toward global forest goals.
- According to the **2022 Forest Declaration Assessment**, **Brazil** was the world's leading contributor to deforestation in 2021. Hence, **statement 2 is correct**.
- The country marked a **3%** rise in the rate of deforestation in 2021 compared to the baseline 2018-2020.

187. Ans: A

Exp:

- **The objectives of the Beach Environment & Aesthetics Management Services BEAMS program are to:**
  - ◆ Abate pollution in coastal waters,
  - ◆ Promote sustainable development of beach facilities,
  - ◆ Protect & conserve coastal ecosystems & natural resources,
  - ◆ Strive and maintain high standards of cleanliness,
  - ◆ Hygiene & safety for beachgoers in accordance with coastal environment & regulations. Hence, **statement 1 is correct**.
- Beach Environment & Aesthetics Management Services comes under **ICZM (Integrated Coastal Zone Management) project**.
  - ◆ It was launched by the **Society of Integrated Coastal Management (SICOM)** and the **Union**



Ministry of Environment, Forest and Climate Change (MoEFCC). Hence, statement 2 is not correct.

188. Ans: D

Exp:

- **Corbett National Park** is located in the **Nainital district of Uttarakhand**.
- It was India's first national park, **established in 1936** as Hailey National Park to protect the endangered Bengal tiger.
  - ◆ Hence, **statement 1 is correct**.
- It is named **after Jim Corbett who played a key role in its establishment**.
- The **core area forms the Corbett National Park** while the **buffer contains reserve forests** as well as the Sonanadi Wildlife Sanctuary.
- The entire area of the reserve is **mountainous and falls in the Shivalik and Outer Himalaya geological provinces**.
  - ◆ Hence, **statement 2 is correct**.
- **Ramganga, Sonanadi, Mandal, Palain and Kosi** are the major rivers flowing through the Reserve.
  - ◆ Hence, **statement 3 is correct**.

189. Ans: D

Exp:

- **Green hydrogen** is produced by **electrolysis of water using renewable energy** (like Solar, Wind) and has a **lower carbon footprint**.
  - ◆ Hence, **statement 2 is not correct**.
- **Brown hydrogen** is produced using **coal where the emissions are released to the air**.
  - ◆ Hence, **statement 1 is not correct**.
- **Grey hydrogen** is produced from **natural gas where the associated emissions are released to the air**.
- **Blue hydrogen** is produced from **natural gas, where the emissions are captured using carbon capture and storage**.

190. Ans: D

Exp:

- It is an international agreement that aims to conserve migratory species throughout their ranges. The agreement was signed under the auspices of the United Nations Environment Program (UNEP) and is concerned with conservation of wildlife and habitats on a global scale. **Hence, statement 1 is correct**.
- It was signed in 1979 in Bonn, West Germany and entered into force in 1983.
- As an environmental treaty of the United Nations, CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats.

- India is a signatory to the CMS.
- India hosted the CMS CoP-13 (in 2020) at Gandhi Nagar, Gujarat.
- India has also launched the National Action Plan for the conservation of migratory species, **Hence, statement 3 is correct**.
- India is a temporary home to several migratory animals and birds.
- The important among these include Amur Falcons, Bar-headed Geese, Black-necked cranes, Marine turtles, Dugongs, Humpback Whales, etc.
- The Indian sub-continent is also part of the major bird flyway network, i.e, the Central Asian Flyway (CAF) that covers areas between the Arctic and Indian Oceans. **Hence, statement 4 is correct**.

191. Ans: C

Exp:

- **The Wildlife Institute of India** had prepared a Rs 260-crore **cheetah reintroduction project** seven years ago.
- This could be the **world's first inter-continental cheetah translocation project**.
- The Ministry of Environment, Forest and Climate Change (MoEFCC) in the 19<sup>th</sup> meeting of the National Tiger Conservation Authority (NTCA) **released an "Action Plan for Introduction of Cheetah in India"**. **Hence, statement 1 is correct**.
- The National Tiger Conservation Authority (NTCA) has decided to **bring 50 African Cheetah from Namibia within the next 5 years**. **Hence, statement 2 is correct**.

192. Ans: C

Exp:

- The **Urban Sustainability Assessment Framework (USAF)** developed under the **Sustainable Cities Integrated Approach Pilot (SCIAP)** project. **Hence, statement 1 is correct**.
- It is being Implemented by the **United Nations Industrial Development Organization (UNIDO)** and **UN-Habitat**.
- The **Sustainable Cities Integrated Approach Pilot (SCIAP)** project has received funding from the **Global Environment Facility (GEF-6)** to estimate the carbon sequestration potential of Indian cities. **Hence, statement 2 is correct**.

193. Ans: B

Exp:

- Recently, researchers have identified a new colorful species of leopard geckos named *Eublepharis pictus*, also known as the **Painted Leopard Gecko**.



◆ Based on IUCN conservation prioritization criteria, the researchers suggested it to list as Near Threatened (NT). **Hence, statement 1 is not correct.**

● **Eublepharis** is a genus of **terrestrial geckos** native to **eastern and southwestern Asia**.

◆ The new species appears to be common in the forests of Andhra Pradesh and Odisha. **Hence, statement 2 is correct.**

◆ It lives in **dry evergreen forests** mixed with **scrub and meadows**.

194. Ans: B

Exp.

● **Kanger Valley National Park** is located in the Bastar district (Near Jagdalpur) of the state of **Chhattisgarh**. **Hence, statement 1 is correct.**

● In 2016, the **Odisha** government was the first to recognise Community Forest Resources (CFRs) inside the **Simlipal National Park**. **Now** Chhattisgarh has become the **2<sup>nd</sup> state** by providing such rights. **Hence, statement 2 is not correct.**

● The Kanger Valley National Park is also known as **Kanger Ghati National Park**.

● The national Park is **situated in the valley of the river Kanger**. The park derives its name from the Kanger River, which flows throughout its length. **Hence, statement 2 is not correct.**

● The Park is a typical mixed humid deciduous type of forest, in which the Sal, Saugan, teak and bamboo trees are available in abundance. **Hence, statement 3 is not correct.**

195. Ans: B

Exp:

● The **National Wildlife Action Plan (2002-2016)** of the **Ministry of Environment, Forest and Climate Change (MoEFCC)** stipulated that state governments should declare land falling within **10 km of the boundaries of national parks and wildlife sanctuaries** as eco fragile zones or **Eco Sensitive Zones (ESZs)**. **Hence, statement 1 is correct.**

● ESZs are prescribed under the **Environmental (Protection) Act, 1986**. **Hence, statement 2 is not correct.**

● The purpose of declaring ESZs around national parks, forests and sanctuaries is to create some kind of a “**shock absorber**” for the protected areas.

● These zones would act as a **transition zone** from **areas of high protection** to those involving **lesser protection**.

196. Ans: D

Exp:

● Vermin are basically a problematic animal or a nuisance creature because they threaten humans, crops, livestock, or property.

● Species which have been classified as **Vermin** placed in **schedule V of the Wildlife Protection Act, 1972**. **Hence, statement 1 is correct.**

◆ Example: **common crows, fruit bats, rats and mice**, which may be hunted freely. **Hence, statement 3 is correct.**

● The act **does not define** the word **Vermin**. **Hence, statement 2 is not correct.**

◆ The 62<sup>nd</sup> section of the Wildlife Protection Act grants the central government the power to declare any wild animal as vermin.

● Wild animal species which are placed in Schedule I and Schedule II of the Wildlife Protection Act, 1972 cannot be declared as Vermin.

● An animal can be declared as vermin for any specified area and a specified period of time.

● The Center declared rhesus monkeys in Himachal Pradesh, wild boar in Uttarakhand and Nilgai in Bihar to be vermin.

197. Ans: C

Exp:

● **Biomass co-firing** is the practice of substituting a part of the fuel with biomass at coal thermal plants.

◆ The Union Ministry of Power, while presenting the Union Budget in February 2022, mandated 5-10% co-firing at every thermal power plant in the country. **Hence statement 1 is correct.**

● **Significance of Biomass CO-firing:**

◆ It is an effective way to curb emissions from open burning of crop residue; it also decarbonises the process of electricity generation using coal.

◆ It can help cut emissions from combustion of fossil fuels, address India's burgeoning problem of farm stubble burning to some extent, reduce waste burden while also creating jobs in rural areas.

● **Challenges in Biomass Co-Firing:**

◆ Around **95,000-96,000 tonnes of biomass pellets are required per day for co-firing**, however, **India's pellet manufacturing capacity is 7,000 tonnes per day** at present despite a surplus 228 million tonnes of agricultural residue available in the country. **Hence statement 2 is not correct.**

◆ Only pellets with up to 14% of moisture can be used for combustion along with coal. **Hence statement 3 is correct.**



198. Ans: D

Exp:

- Dragonfly is an **aerial predator insect most commonly found near freshwater habitats** throughout most of the world. **Hence, statement 1 is correct.**
  - ◆ Their distinctive **colors make them look beautiful.** This makes them valuable subjects for research on insect behavior, both for ecology and art.
- Most species of dragonflies live in the **tropics and particularly in the rainforests.** **Hence, statement 2 is correct.**
- Dragonflies act as **important bio-indicators of the ecological health of an area.** As they feed on mosquitoes and other insects that are vectors to life-threatening diseases like Malaria and Dengue. **Hence, statement 3 is correct.**
- The rapid destruction of their habitat poses a **direct threat to their survival** making their conservation urgent.

199. Ans: D

Exp:

- The **Conference of Parties** comes under the **UNFCCC** which was formed in 1994. The UNFCCC was established to work towards **stabilization of greenhouse gas concentrations in the atmosphere.**
  - ◆ **COP is the apex decision-making authority of the UNFCCC.**
  - ◆ It laid out a **list of responsibilities for the member states which included:**
    - Formulating measures to mitigate climate change.
    - Cooperating in preparing for adaptation to the impact of climate change.
    - Promoting education, training and public awareness related to climate change. **Hence, pair 1 is correctly matched.**
- The **Cartagena Protocol on Biosafety** is an **international agreement on biosafety as a supplement to the CBD (Convention on Biological Diversity)** effective since 2003.
  - ◆ The Protocol seeks to **protect biological diversity from the potential risks** posed by living modified organisms resulting from modern biotechnology. **Hence, pair 2 is correctly matched.**
- The **Nagoya Protocol** is a legal framework for the implementation of one of the objectives of the **CBD**, which is the fair & equitable sharing of benefits arising out of the **utilization of genetic resources.**
  - ◆ The protocol was adopted in 2010 in Nagoya, Japan. **Hence, pair 3 is correctly matched.**
- **Therefore, option D is correct.**

200. Ans: C

Exp:

**National Green Tribunal (NGT):**

- It is a specialised body set up under the **National Green Tribunal Act (2010)** for effective and expeditious **disposal of cases relating to environmental protection and conservation of forests** and other natural resources.
- With the establishment of the NGT, **India became** the third country in the world to set up a specialised environmental tribunal, only after Australia and New Zealand, and **the first developing country to do so.** **Hence, statement 1 is correct.**
- NGT is mandated to make **disposal of applications or appeals finally within 6 months** of the filing of the same.
  - ◆ The Tribunal is an open court, and its proceedings **can be attended in person only.** **Hence, statement 2 is correct.**
- The NGT has five places of sitting, **New Delhi is the principal place of sitting** and Bhopal, Pune, Kolkata and Chennai are the other four.

201. Ans: D

Exp:

- As part of India's Mantra to achieve sustainability in energy demand and to further tackle climate change, it has launched the **Panchamrit initiative**, which includes.
  - ◆ Increase its **energy needs to 500 gigawatts from renewables.** **Hence statement 1 is correct.**
  - ◆ committed to attaining **net-zero carbon emissions by 2070. (Net-zero refers to the removal of the emissions of carbon dioxide from the atmosphere as compared to what is produced).** **Hence, statement 2 is correct.**
  - ◆ India would supply **50% of its energy needs through renewable sources by 2030.** **Hence statement 3 is correct.**

202. Ans: B

Exp:

- The **Convention on Biological Diversity (CBD), a legally binding treaty to conserve biodiversity, has been in force since 1993.** **Hence, statement 1 is not correct.**
  - ◆ Nearly all countries have ratified it (**notably, the US has signed but not ratified**).
- The CBD Secretariat is based in **Montreal, Canada and it operates under the United Nations Environment Programme.** **Hence, statement 2 is correct.**
- The Parties (Countries) under **Convention of Biodiversity (CBD)**, meet at regular intervals and these meetings are called **Conference of Parties (COP).**

203. Ans: B

Exp:

- Theri desert is **situated in the state of Tamil Nadu and is confined to Thoothukudi district. Hence, statement 1 is not correct.**
- The **red dunes are called 'theri' in Tamil.** They consist of sediments dating back to the Quaternary Period and are made of marine deposits.
  - ◆ They have very low water and nutrient retention capacity. The dunes are susceptible to aerodynamic lifts. This is the push that lets something move up. It is the force that is the opposite of weight.
  - ◆ The iron-rich heavy minerals like ilmenite, magnetite, garnet, hypersthene and rutile present in the soil had undergone leaching by surface water and were then oxidized because of the favorable semi-arid climatic conditions.
    - It was due to these processes that the dunes near Tiruchendur, a coastal town of Thoothukudi district are red-colored. **Hence, statement 2 is correct.**

204. Ans: A

Exp:

- Extended Producer Responsibility (EPR) was introduced through **Plastic Waste Management Rule 2016** but has been given legal force through **Plastic Waste Management (PWM) Amendment Rules, 2021.**
  - ◆ **Hence statement 1 is correct.**
- Researchers gathered samples of snow from 19 different sites in the **Ross Ice Shelf in Antarctica and discovered plastic particles** in all of them.
  - ◆ There were 13 different types of plastic found, with the **most common being PET (Polyethylene Terephthalate)**, commonly used to make soft drink bottles and clothing. The possible sources of microplastics were examined. **Hence statement 2 is correct.**
- Chemical Oxygen Demand (COD) indicates the amount of oxygen demand for both organic and inorganic substances in the water body. So, **COD is the true indication of pollution in any water body. Hence statement 3 is not correct.**
  - ◆ Biochemical oxygen demand (BOD) is the amount of dissolved oxygen (DO) needed to break down organic material present in a given water or water body.

205. Ans: D

Exp:

- The EPI, a biennial index, was started in 2002 as the Environmental Sustainability Index published by the

**World Economic Forum** in collaboration with the **Yale Center for Environmental Law and Policy** and the **Columbia University Center for International Earth Science Information Network.** Hence **statement 1 is correct.**

- Denmark **tops the 2022 rankings** — an achievement rooted in strong performance across nearly all issues tracked by the EPI, with notable leadership in efforts to promote a clean energy future and sustainable agriculture. **Hence statement 2 is correct.**
- With a **paltry score of 18.9, India's 180<sup>th</sup> ranking comes after Pakistan, Bangladesh, Vietnam and Myanmar.**
  - ◆ India has also **scored low on rule of law, control of corruption and government effectiveness**, according to EPI.
  - ◆ **India was earlier ranked 168<sup>th</sup> in EPI-2020**, with a score of 27.6, **Hence, statement 3 is correct.**

206. Ans: B

Exp:

- **The Glasgow Climate Pact, an agreement signed during the 2021 United Nations Climate Change Conference (CoP26)**, recognised the need to consider further actions to reduce non-carbon dioxide greenhouse gas emissions, including methane, by 2030. **Hence, statement 1 is correct.**
- The US and the European Union launched the **Global Methane Pledge** at COP26 in Glasgow. More than 100 countries have committed to cutting methane emissions by 30% by 2030.
- India has not signed up for the Global Methane Pledge. **Hence, statement 2 is not correct.**

207. Ans: D

Exp.

Biomass can be converted into electric power through several methods.:

- **Combustion of biomass material:** The most common is direct combustion of biomass material, such as agricultural waste or wood materials.
- **Gasification:** It produces a synthesis gas with usable energy content by heating the biomass with less oxygen than needed for complete combustion.
- **Pyrolysis:** IT yields bio-oil by rapidly heating the biomass in the absence of oxygen.
- **Anaerobic digestion:** It produces a renewable natural gas when organic matter is decomposed by bacteria in the absence of oxygen.
- Bioventing and Biosparging are methods of Bioremediation. Hence, they have nothing to do with electricity power generation from Biomass.
- **Hence, option D is correct.**

