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**Test Booklet Series**

**C**

## TEST BOOKLET

## GENERAL STUDIES (P) 2026 – Test – 6329

**Time Allowed: Two Hours** **Maximum Marks: 200**

## INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES **NOT** HAVE ANY UNPRINTED OR TURN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **Do NOT** write anything else on the Test Booklet.

4. This Test Booklet contains **100** items (Questions). Each item is printed in **English.** Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response with you consider the best. In any case, choose **ONLY ONE** response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See direction in the answers sheet.

6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **1/3rd of the allotted marks** will be deducted.

7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per instruction sent to you with your Admission Certificate.

8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.

9. Sheet for rough work are appended in the Test Booklet at the end.

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO**

**1.** Which of the following books/reports are related to sustainable development?

1. Agenda-21 report of Rio Conference
2. Our Common Future
3. Limits to Growth

Select the correct answer using the code given below.

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

**2.** Consider the following pairs:

| ***Biosphere Reserve*** | | ***State*** |
|---|---|---|
| 1. Seshachalam Biosphere Reserve | : | Tamil Nadu |
| 2. Nokrek Biosphere Reserve | : | Meghalaya |
| 3. Pachmarhi Biosphere Reserve | : | Odisha |
| 4. Dehang-Debang Biosphere reserve | : | Arunachal Pradesh |

How many pairs given above are correctly matched?

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

**3.** Which of the following organizations certifies the 'Green List of Protected and Conserved Areas' for their quality of protection of natural values and the effectiveness of actions taken against threats?

(a) The International Union for Conservation of Nature
(b) The World Wide Fund for Nature
(c) Conservation International
(d) BirdLife International

**4.** Consider the following major ports of India:

1. Kandla
2. Vishakhapatnam
3. Marmagao
4. Paradwip

Which of the following is the correct sequence of the above ports as we travel from North to South?

(a) 1-2-3-4
(b) 1-3-2-4
(c) 4-1-2-3
(d) 1-4-2-3

**5.** Arrange the following world climatic types encountered in Northern hemisphere as one moves away from Equator:

1. China Type
2. Sudan Type
3. British Type
4. Arctic Type

Select the correct answer using the code given below.

(a) 1-2-3-4
(b) 2-1-3-4
(c) 1-3-2-4
(d) 2-3-1-4

**6.** Consider the following statements regarding the Global Geothermal Alliance:

1. It aims to achieve a five-fold growth in the installed capacity for geothermal power generation by 2030.
2. It was launched at the UN Climate Change Conference in Glasgow (COP26).

Which of the statements given above is/are correct?

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

# ANSWERS & EXPLANATIONS

## GENERAL STUDIES (P) TEST – 6329

**Q 1. D**

- **Our Common Future:** Our Common Future, also known as the **Brundtland Report was published in 1987 by the United Nations.** Its targets were multilateralism and interdependence of nations in the search for a sustainable development path. The report sought to recapture the **spirit of the Stockholm Conference** which had introduced environmental concerns to the formal political development sphere. Our Common Future placed environmental issues firmly on the political agenda; it aimed to discuss the environment and development as one single issue.
- **Limits to Growth:** The **Limits to Growth is a 1972** report on the computer simulation of exponential economic and population growth with a finite supply of resources. It is commissioned by the **Club of Rome.** The authors of the report intended to explore the possibility of a sustainable ecological and economic stability along with economic growth.
- **Agenda-21:** Agenda 21 is a non-binding action plan of the United Nations with regard to sustainable development. It is a product of the **Earth Summit (UN Conference on Environment and Development) held in Rio de Janeiro, Brazil, in 1992.** It is an action agenda for the UN, other multilateral organizations, and individual governments around the world that can be executed at local, national, and global levels.
- **Hence option d is the correct answer.**

**Q 2. B**

- **Seshachalam Biosphere Reserve: The first Biosphere Reserve in Andhra Pradesh,** is located in southern Eastern Ghats of Chittoor and Kadapa districts.It was designated as Biosphere Reserves of India in 2010. It is the richest floristic hot spot harboring many endemic and rare plants. **Hence pair 1 is not correctly matched.**
  - Climate: tropical Monsoon
  - Forest type: Both dry and Moist deciduous Type
  - Fauna:The faunal composition represents the Deccan Peninsular zone of bio-geographic classification of India.The forests of the reserve harbor certain highly endangered wildlife species, like slender loris, indian giant squirrel, mouse deer, golden gecko, etc.Tigers, leopard, elephants , sloth bear, Indian wolf , wild boar, chinkara, four-horned antelope, chital and sambar, ibex, pig, bonnet monkey, mongoose, wild dogs, pangolin, bison, jackal, fox, civet cat, jungle cat, lizards are some of other animals commonly found roaming in this area.
  - Flora:The reserve is a home for nearly 1756 species of flowering plants.It has large reserves of Red Sandalwood (Pterocarpussantalinus) which is used in medicines, soaps, spiritual rituals.
- **Nokrek Biosphere Reserve: is located in Meghalaya (part of Garo Hills). Hence pair 2 is correctly matched.**
  - Rivers: Ganol, Dareng and Simsang

- Climate: Tropical- High humidity, Monsoon Rains, High Temperature
- Forest Type: Evergreen and semi-evergreen deciduous forests
- Endemic Flora: Grand rasamala, White meranti, Lali, Chempaka, Wild lemon
- Endemic Fauna: Stump tailed macaque, Pig-tailed macaque, Giant flying squirrel.

- **The Pachmarhi Biosphere Reserve** is a conservation area and biosphere reserve in the **Satpura Range of Madhya Pradesh state in central India**. The conservation area was created in 1999 by the Indian government. It also contains animals from the Himalayan mountains and from the lower Western Ghats. UNESCO designated it a biosphere reserve in 2009. **Hence pair 3 is not correctly matched.**
- **Dehang-Debang Biosphere reserve**: Dihang-Dibang or Dehang-Debang is a biosphere reserve constituted in 1998. **It is in the Indian state of Arunachal Pradesh. Hence pair 4 is correctly matched.**
  - Rivers: Dehang, Debang and their tributaries
  - Vegetation Types: sub-tropical broad-leaved, sub-tropical pine, temperate broad-leaved, temperate conifer, sub-alpine woody shrub, alpine meadow (monton), bamboo brakes and grassland.
  - Endemic Flora: Tree fern, Begonia, Lady's slipper orchid
  - Fauna: Endemic Fauna: Red panda, Himalayan black bear, Green pit viper, Takin
  - Protected areas: Mouling National Park ,Dibang Wildlife Sanctuary.

**Q 3. A**

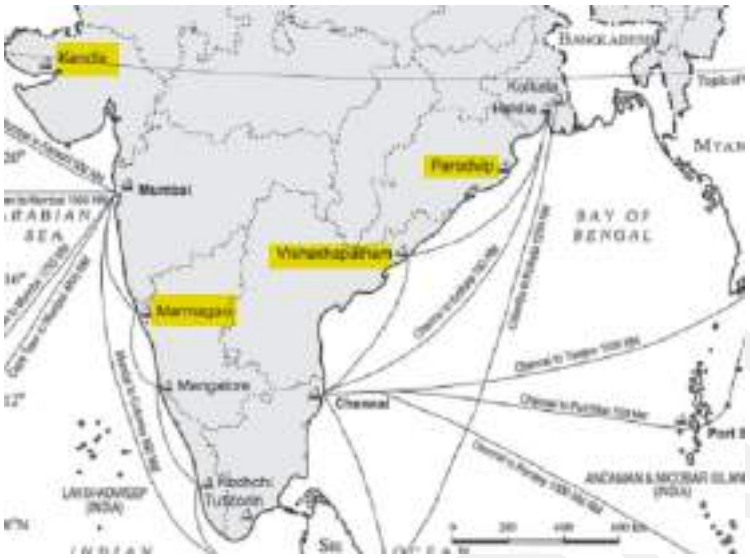
- **The IUCN's Green List of Protected and Conserved Areas is a global campaign for successful nature conservation. At its heart is the Green List Sustainability Standard which provides a global benchmark for how to meet the environmental challenges of the 21st century.**
- The IUCN Green List offers locally relevant expert guidance to help achieve fair and effective nature conservation results in protected and conserved areas. It can help guarantee that wildlife and ecosystems can survive, thrive and bring value to communities everywhere.
- **A protected or conserved area that reaches the IUCN Green List Standard is certified and recognized as achieving ongoing results for people and nature fairly and effectively.** Any site can join, work its way towards achieving verified success, and then maintain the Standard or further improve.
- **IUCN and the United Nations Environment – World Conservation Monitoring Centre maintain a global database of protected and conserved areas.** This database, accessible through Protected Planet, lists about 261,766 officially recognized protected areas, covering over 15% of the earth's land surface and 7.4% of the world's oceans. IUCN is working to identify and recognize these areas and to bring their achievements into the global community of protected and conserved areas.
- **Hence option (a) is the correct answer.**

**Q 4. D**

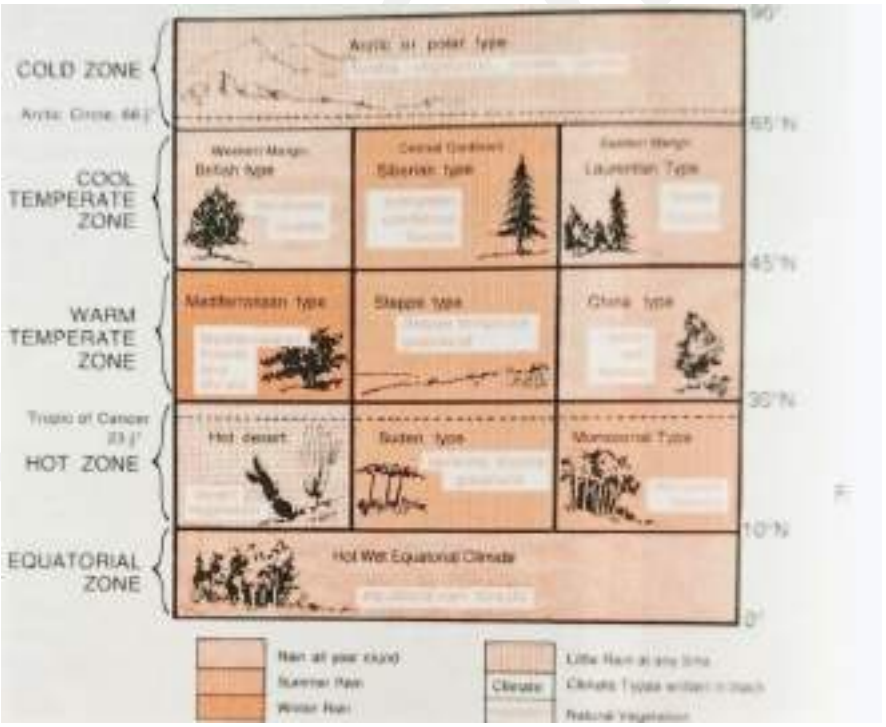
- **Kandla** - It is situated at the head of **Gulf of Kuchchh** has been developed as a major port to cater to the needs of western and north western parts of the country and also to reduce the pressure at Mumbai port. The port is specially designed to receive large quantities of petroleum and petroleum products and fertiliser. The offshore terminal at Vadinar has been developed to reduce the pressure at Kandla port.
- **Paradwip** - It is situated in the **Mahanadi delta**, about 100 km from Cuttack. It has the deepest harbour specially suited to handle very large vessels. It has been developed mainly to handle large-

scale export of iron-ore. Odisha, Chhattisgarh and Jharkhand are the parts of its hinterland.

- **Vishakhapatnam** - situated in **Andhra Pradesh** is a land-locked harbour, connected to the sea by a channel cut through solid rock and sand. An outer harbour has been developed for handling iron-ore, petroleum and general cargo. Andhra Pradesh and Telangana are the main hinterland for this port.
- **Marmagao** - It is situated at the entrance of the **Zuari estuary, is a natural harbour in Goa**. It gained significance after its remodelling in 1961 to handle iron-ore exports to Japan. Construction of Konkan railway has considerably extended the hinterland of this port. Karnataka, Goa, Southern Maharashtra constitute its hinterland.
- **Hence, option (d) is correct.**




**Q 5. B**



- **World Climatic Types**

| *Climatic Zone* | *Latitude (Approximate)* | *Climatic Type* | *Rainfall Regime (with approx. total)* | *Natural Vegetation* |
|---|---|---|---|---|
| Equatorial Zone | 0°-10°N and S | 1. Hot, wet equatorial | Rainfall all year round : 80 inches | Equatorial rain forests |
| Hot Zone | 10°-30°N and S | 2. a) Tropical Monsoon | Heavy summer rain: 80 binches | Monsoon forests |
| | | b) Tropical Marine | Much summer rain: 70 inches | |
| | | 3. Sudan Type | Rain mainly in summer: 30 inches | Savanna (tropical grassland) |
| | | 4. Desert: a) Saharan type | Little | Desert vegetation and scrub |
| | | b) Mid-latitude type | rain: 5 inches | |
| Warm Temperate Zone | 30-°40°N & S | Western Margin (Mediterranean type) | Winter rain: 35 inches | Mediterranean forests and shrub |
| | | 6. Central Continental (Steppe type) | Light summer rain: 20 inches | Steppe or temperate grassland |
| | | 7. Eastern Margin: a) China type | Heavier summer rain : 20 inches | Wawrm, wet forests and bamboo |
| | | b) Gulf type | | |
| | | c) Natal type | | |
| Cool Temperate Zone | 45°-65°N & S | 8. Western Margin (British type) | More rain in autumn & winter : 30 inches | Decidous forests |
| | | 9. Central Continental (Siberian type) | Light summer rain: 25 inches | Evergreen coniferous forests |
| | | 10. Eastern Margin (Laurentian type) | Moderate summer rain : 40 inches | Mixed forests (coniferous and deciduous) |
| Cold Zone | 65°-90° N & S | 11. Arctic or Polar | Very light summer rain : 10 inches | Tundra, mosses, lichens |
| Alpine Zone | | 12. Mountain climate | Heavy rainfall (variable) | Alpine pastures, confiers, fern, snow |

- **Hence option (b) is the correct answer.**

**Q 6. A**

- **The Global Geothermal Alliance** (GGA) is designed to ramp up the share of geothermal energy in the global energy mix both in the areas of geothermal power generation and the direct use of geothermal heat. The GGA serves as a platform for dialogue and knowledge-sharing among governments, international financing institutions, private sector investors and other practitioners as well as a coalition for action to increase the share of installed geothermal electricity and heat generation worldwide.
- **The Alliance has an aspirational goal to achieve a five-fold growth in the installed capacity for geothermal power generation and more than two-fold growth in geothermal heating by 2030. Hence statement 1 is correct.**
- **It was launched at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), held in Paris, France, in December 2015. Hence statement 2 is not correct.**
- Member countries include geothermal resource-rich countries with established or emerging geothermal markets, along with other countries that wish to support the activities of the Alliance. India is a member country of the Alliance.

**Q 7. A**

- In recent years, the conservation community has expanded its approach beyond just preventing extinction to actively promoting the recovery and health of threatened species. The IUCN Green Status of Species is an important development in this direction, providing a standardized framework to measure progress in species recovery globally.
- The **IUCN Green Status of Species is an innovative tool developed by the International Union for Conservation of Nature (IUCN) for assessing species recovery and the effectiveness of**

**conservation actions**. Unlike the better-known **Red List which primarily assesses extinction risk, the Green Status tracks recovery trajectories and quantifies conservation impact over time.**

- **Policy Development**: The Green Status of Species was launched as a complement to the IUCN Red List to provide a more holistic picture of species' status, tracking not just how close a species is to extinction, but also how close it is to full ecological recovery.
- **Key Features**: It provides a set of standardized metrics and categories to assess species recovery (e.g., fully recovered, slightly depleted, critically depleted). It quantifies both current and potential conservation impact, reflecting how interventions address threats and enable progress toward species' historic population levels and ecological roles.
- **Implementation Context**: The Green Status framework is used in addition to the IUCN Red List, supporting conservation planning, prioritization, and reporting under global biodiversity frameworks such as the Convention on Biological Diversity (CBD).
- **Current Significance**: It shifts the focus in conservation from simply avoiding extinction to actively facilitating the recovery of species and restoring their functional roles in ecosystems.
- **Hence option (a) is the correct answer.**

**Q 8. B**

- **Statement 1 is not correct:** Alliance to End Plastic Waste (AEPW) is a not-for-profit organization partnering with the finance community, government and civil society, including environmental and economic development NGOs. It has been launched in 2019 by an alliance of global companies from the plastics and consumer goods value chain with an aim to advance solutions to eliminate plastic waste in the environment, especially in the ocean. It is currently made up of nearly thirty member companies and has committed over $1.0 billion with the goal of investing $1.5 billion over the next five years to help end plastic waste in the environment. The Alliance will develop and bring to scale solutions that will minimize and manage plastic waste and promote solutions for used plastics by helping to enable a circular economy. The Alliance membership represents global companies located throughout North and South America, Europe, Asia, Southeast Asia, Africa, and the Middle East.
- **Statement 2 is correct:** The alliance is includes companies that make, use, sell, process, collect and recycle plastics. This includes chemical and plastic manufacturers, consumer goods companies, retailers, converters, and waste management companies, also known as the plastics value chain. The alliance has been working with the World Business Council for Sustainable Development as a founding strategic partner.

**Q 9. D**

- The physiological density is the number of people per unit area of net cultivated area.
  - **Physiological density = total population / net cultivated area**
- The agricultural density is the number of farmers per unit area of net cultivated area.
  - **Agricultural density = total agricultural population / net cultivable area.**

- Agricultural population includes cultivators and agricultural labourers and their family members.
- **Statement 1 is not correct:** Physiological density is same in both countries as their population and net cultivated area are same.
- **Statement 2 is not correct:** Agricultural density in country X is lower than country Y as it is highly mechanised and has lesser number of agricultural population for same amount of net cultivable area.

**Q 10. D**

- Earth's rotation is the rotation of planet Earth around its own axis. Earth rotates eastward, in prograde motion. As viewed from the north pole star Polaris, Earth turns counterclockwise.
- The Earth formed out of a nebula that collapsed. As the nebula collapsed it began rotating. The Earth's rotation comes from the initial tendency to rotate that was imparted on it when it formed, only the relatively weak tidal forces from the Moon act to slow it down.
- Melting land ice, like mountain glaciers and the Greenland and Antarctic ice sheets, will change the Earth's rotation only if the meltwater flows into the oceans. If the meltwater remains close to its source (by being trapped in a glacier lake, for example), then there is no net movement of mass away from the glacier or ice sheet, and the Earth's rotation won't change. But if the meltwater flows into the oceans and is dispersed, then there is a net movement of mass and the Earth's rotation will change. For example, if the Greenland ice sheet were to completely melt and the meltwater were to completely flow into the oceans, then **global sea level would rise by about seven meters (23 feet) and the Earth would rotate more slowly**, with the length of the day becoming longer than it is today, by about two milliseconds. **Hence option 2 is correct.**
- Because of Earth's dynamic climate, winds and atmospheric pressure systems experience constant change. These fluctuations may affect how our planet rotates on its axis. Changes in the atmosphere, specifically atmospheric pressure around the world, and the motions of the winds that may be related to such climate signals as El Niño are strong enough that their effect is observed in the Earth's rotation signal.
- From year to year, winds and air pressure patterns change, causing different forces to act on the solid Earth. **During El Niño years, for example, the rotation of the Earth may slow** because of stronger winds, increasing the length of a day by a fraction of a millisecond (thousandth of a second). **Hence option 3 is correct.**
- **Earth's rotation is slowing slightly with time; thus, a day was shorter in the past. This is due to the tidal effects the Moon** has on Earth's rotation. As Earth rotates, the Moon's gravity causes the oceans to seem to rise and fall. (The Sun also does this, but not as much.) There is a little bit of friction between the tides and the turning Earth, causing the rotation to slow down just a little. Atomic clocks show that a modern-day is longer by about 1.7 milliseconds than a century ago. Scientists predict that it would take 50 billion years for Earth to slow enough to permamently face the Moon, at which point the Moon would stop receding from the Earth and Moon-induced tides on Earth will cease. So in short, yes, over very long time periods the Moon will slow Earth's rotation to the point where there are no tides caused by the Moon, but at that point the Earth-Moon system will no longer exist. **Hence option 1 is correct.**
- Other factors affecting rotational speed include the rapidity of a planet's initial formation (faster collapse means more angular momentum conserved) and impacts from meteorites, which can slow down a planet or knock it off stride.

**Q 11. C**

- Nature is extremely important to develop technology and technology loosens the shackles of environment on human beings. In the early stages of their interaction with their natural environment humans were greatly influenced by it. They adapted to the dictates of Nature. This is so because the level of technology was very low and the stage of human social development was also primitive**. This type of interaction between primitive human society and strong forces of nature was termed as environmental determinism. At that stage of very low technological development we can imagine the presence of a naturalised human, who listened to Nature, was afraid of its fury and worshipped it.**

- With social and cultural development, humans develop better and more efficient technology. **They move from a state of necessity to a state of freedom. They create possibilities with the resources obtained from the environment.** The human activities create cultural landscape. The imprints of human activities are created everywhere; health resorts on highlands, huge urban sprawls, fields, orchards and pastures in plains and rolling hills, ports on the coasts, oceanic routes on the oceanic surface and satellites in the space. **The earlier scholars termed this as possibilism.**
- A geographer, Griffith Taylor introduced another concept which reflects a middle path (Madhyam Marg) between the two ideas of environmental determinism and possibilism. He termed it as **Neodeterminism or stop and go determinism. The concept shows that neither is there a situation of absolute necessity (environmental determinism) nor is there a condition of absolute freedom (possibilism). It means that human beings can conquer nature by obeying it.** They have to respond to the red signals and can proceed in their pursuits of development when nature permits the modifications. It means that possibilities can be created within the limits which do not damage the environment and there is no free run without accidents. **Hence the correct answer is option (c).**

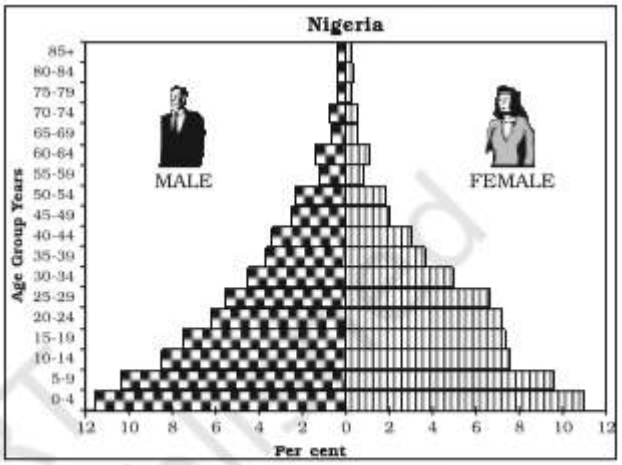
**Q 12. D**

- **Recent Context: AstroSat, India's first dedicated multi-wavelength space observatory, completed a decade of operations in 2025.** It continues to contribute significantly to space-based astronomical research, providing extensive data across electromagnetic spectra for Indian and international scientists.
- AstroSat is renowned for being **India's first dedicated astronomy satellite capable of observing the universe in multiple spectral bands simultaneously, including X-rays, ultraviolet (UV), and optical.** It represents a significant advancement in India's space science capabilities, complementing global missions and enhancing the nation's position in astrophysical research. **AstroSat is not dedicated to radio astronomy. Hence statement 1 is not correct.**
- AstroSat was launched in 2015 with the objective to enable simultaneous multi-wavelength observations of cosmic sources, similar to major global observatories like NASA's Hubble.
- Equipped with **five major payloads**, AstroSat **covers a broad spectrum ranging from near and far ultraviolet to optical and X-ray bands. Hence statement 2 is not correct.**
- The mission has produced high-quality data, leading to several discoveries concerning neutron stars, black holes, star formation, and cosmic radiation, and fostering international collaborations.
- AstroSat has enabled Indian scientists to participate in cutting-edge research, supported capacity building in astrophysics, and facilitated India's global scientific standing.
- **Notable Achievements: It is the first Indian mission to operate in X-ray and UV regions**, and one of the few in the world offering such capability simultaneously.
- **AstroSat is placed in low Earth orbit (around 650 km altitude), not in geostationary orbit. Geostationary orbits are not suitable for continuous sky observation in astronomy. Hence statement 3 is not correct.**

**Q 13. A**

- The age-sex structure of a population refers to the number of females and males in different age groups. A population pyramid is used to show the age-sex structure of the population. The shape of the population pyramid reflects the characteristics of the population. The left side shows the percentage of males while the right side shows the percentage of women in each age group.

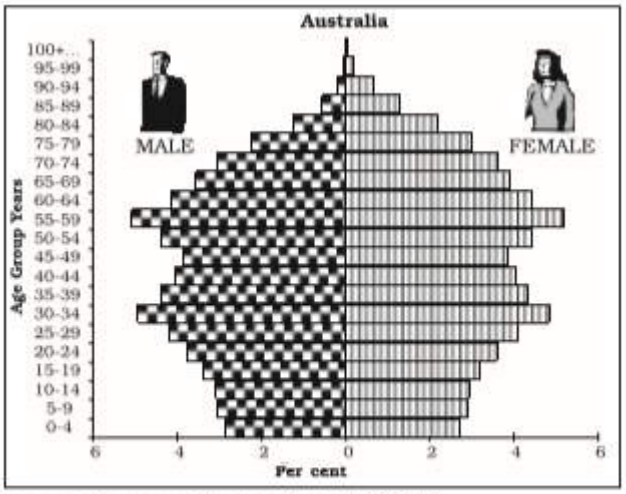
- **Expanding Populations:** The age-sex pyramid of Nigeria as you can see is a **triangular shaped pyramid** with a wide base and is typical of less developed countries. These have larger populations in lower age groups due to high birth rates. If you construct the pyramids for Bangladesh and Mexico, it would look the same. **Hence pair 2 is correctly matched.**




*Source: Demographic Year Book, 2009-10*

***Fig. : Expanding Population***

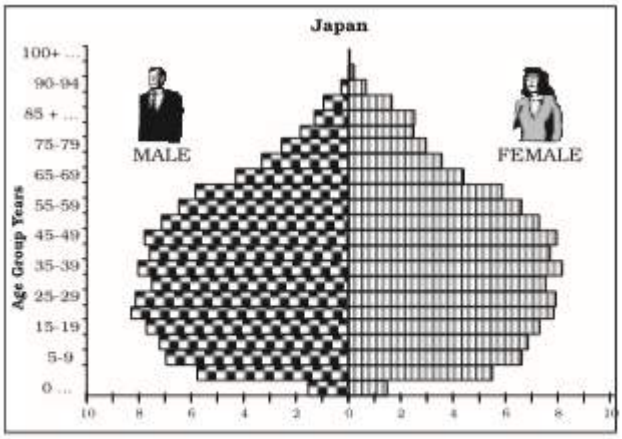
- **Constant Population:** Australia's age-sex pyramid is **bell shaped** and tapered towards the top. This shows birth and death rates are almost equal leading to a near constant population. **Hence pair 1 is correctly matched.**




*Source: Demographic Year Book, 2009-10*

***Fig. : Constant Population***

- **Declining Population:** The Japan pyramid has a narrow base and a tapered top showing low birth and death rates. The population growth in developed countries is usually zero or negative. **It is not an inverted pyramid. Hence pair 3 is not correctly matched.**




Source: Demographic Year Book, 2009-10

***Fig. : Declining Population***

**Q 14. A**

- **Recent Context:** In 2025, new rules were notified to operationalize the Promotion and Regulation of Online Gaming Act, establishing a regulatory authority for online gaming in India. This development addresses growing concerns regarding online gaming, consumer safety, and legal accountability.
- The **regulatory framework for online gaming in India aims to oversee the legal and ethical operation of online games, including e-sports and social games.** A dedicated authority is set up to streamline registration, enforce standards, and ensure user protection, while imposing penalties for violations.
- **Policy Background/Framework**: The **Online Gaming Authority of India (OGAI) is constituted under recent legislative efforts focused on the promotion and regulation of online gaming activities.**
- **Implementation Mechanism**: The Authority is tasked with regulating online games, **maintaining a comprehensive registry, and certifying legality via mandatory registration for providers of both social games and e-sports. In other words, both social games and e-sports must register with the Authority and obtain a valid Certificate of Registration before operation. Hence statements 1 and 2 are correct.**
- **Current Relevance**: OGAI's role is crucial amidst the rapid rise of digital gaming, concerns about illegal betting, consumer grievances, and technological risks associated with online platforms.
- **Broader Impact**: The framework strives to protect users, formalize the online gaming sector, support lawful innovation, and **ensure that violations—especially involving money games—carry meaningful consequences, potentially including criminal liability. The rules specify that violations, such as facilitating unauthorized online money games, are non-bailable criminal offenses and can hold company staff criminally liable. Hence statement 3 is not correct.**

**Q 15. B**

- In 2025, the **WTO Agreement on Fisheries Subsidies officially entered into force**, marking a significant milestone in global efforts to **regulate fisheries subsidies that contribute to overfishing, unsustainable practices, and ecological degradation.** Countries are now moving toward implementation, with a focus on promoting ocean sustainability and combating illegal, unreported, and unregulated fishing.
- The **WTO Agreement on Fisheries Subsidies is the first multilateral agreement dedicated to protecting the marine environment by addressing harmful subsidies that promote**

**unsustainable fishing.** It seeks to protect depleting fish stocks, combat illegal fishing practices, and ensure the livelihood security of communities dependent on marine resources. **Aquaculture in landlocked states is not the focus; the agreement concerns subsidies related to marine capture fisheries. Hence option (c) is not correct.**

- **Policy Development**: Negotiated over several years, the agreement was finalized at the 12th WTO Ministerial Conference (MC12). It responds to UN Sustainable Development Goal (SDG) 14.6, which targets harmful fisheries subsidies.
- **Key Features**: The agreement **prohibits subsidies that contribute to illegal, unreported, and unregulated (IUU) fishing, as well as those that support overfished stocks and unregulated high seas fishing. It explicitly aims at curbing those subsidies that directly enable unsustainable fishing operations. The agreement does not prohibit subsidies to artisanal fishing within territorial seas, especially as such fishing supports local livelihoods in developing countries. Hence option (a) is not correct and option (b) is correct.**
- **Implementation Context**: While the **agreement is binding, it allows special and differential treatment for developing countries, recognizing the importance of fisheries for livelihoods in these regions. However, the prohibition on subsidies linked to IUU fishing is universal.** Subsidies for domestic cold-chain development are not covered by the agreement's prohibitions, as they are not directly linked to overfishing or IUU practices. H**ence option (c) is not correct.**
- **Current Significance**: Marine overfishing is a critical global problem with ecological, economic, and food security consequences. The agreement's focus on eliminating harmful subsidies is vital for restoring marine ecosystems and ensuring the sustainability of global fish stocks.

**Q 16. A**

- Despite the inhospitability of desert region, different groups of inhabitants have been found living. They struggle against an environment deficient in water, food and other means of livelihood. Some, like the Egyptians have attained a high level of civilization, others like the **Bedouin Arabs** have fared quite well with their flocks of sheep, goats, camels and horses.
- The **Bushmen** of the Kalahari and the **Bindibu** of Australia remain so **primitive** in their mode of living that they barely survive.
- Both Bushmen and Bindibu tribes are **nomadic herders and food gatherers**, growing **no crops** and **domesticating no animals**.
- **The Bushmen** roam the **Kalahari Desert** with their bows and poisoned arrows, spears, traps and snares. They are not only skilful and strong but have great endurance. In order to capture their prey, they have to be very patient and if necessary run many miles to track down the wounded animals. In this way, they hunt antelope, and other smaller animals. The women and children collect insects, rodents and lizards, and gather honey, roots, grass and grubs. Bushmen either **wear** a **loin cloth** or go virtually naked.
- The **Bindibu of Australia** live in very much the same way as the Bushmen. They are lean and dark but healthy. They are skilled trackersand some of them use wooden throwing sticks or boomerangs and spears. They also domesticate the **dingo**, a wild dog that assists them in tracking down kangaroos, rabbits and birds. The women gather grass, roots, seeds, berries, moles and insects, to supplement their diet. Like the wandering Bushmen, the Bindibu move in family groups in search of fresh hunting grounds. But one distinct difference is that they always stay close to a water supply as they still have not devised a means of tapping and storing water. They live in **wurlies**, simple shelters made of branches arid tufts and grass.

- The **Bedouin of Arabia** ride on horses and live in tents; the **Tuaregs of the Sahara** are camel riders and dwell in grass **zeriba**, while the **Gobi Mongols** ride on horses to herd their yaks and live in portable yurts (a kind of tent). **The Bedouin** are the **best examples** of a desert group who have fared well as **nomadic herdsmen**. Besides keeping large flocks of animals, they are also **engaged in trade** with the caravan merchants and the oases people. All round the year, the Bedouin wander with their herds in search of water and green pastures. Their **wealth is their animals**: sheep, goats, camels and perhaps a few horses. The animals provide them with all that they require, daily milk and cheese and on occasions meat as well.
- Their skin is used for hides or leather, for making tents, clothing, belts, footwear and water bags. From the hair and wool, the Bedouin make clothes, mats, ropes, rugs and carpets. These can also be **exchanged at trading stations or oases** for other necessities of life which the desert herdsmen cannot produce like dates, grain, beverages, medicines, firearms and other manufactured articles.

**Q 17. A**

- Ecosystems are complex systems that provide a variety of benefits to humans and the environment. These benefits, known as ecosystem services, can be broadly categorized into four main types:
  - **Provisioning services:**
    - These are the tangible goods that ecosystems provide to humans, such as ***Provision of food,* water, timber, and fiber.**
  - **Regulating services:**
    - These are the processes that ecosystems perform to regulate the natural environment and provide benefits to humans, such as climate regulation, **water purification, pollination, pest and disease control, *Carbon Sequestration* and storage, and Moderation of Extreme events.**
  - **Supporting services:**
    - Supporting services are the fundamental ecosystem processes that underpin the functioning of ecosystems. **They provide the basis for all other ecosystem services, including provisioning, regulating, and cultural services.**
    - Supporting services are often **not directly visible or tangible**, but they are essential for the health and well-being of ecosystems and the people who depend on them.
    - These are the essential processes that underpin the functioning of ecosystems, such as **nutrient cycling, soil formation, primary production, and *Maintenance of Genetic Diversity.***
  - **Cultural services:**
    - These are the **non-material benefits** that ecosystems provide to humans, such as ***recreation and tourism,* aesthetic enjoyment, spiritual fulfillment, and inspiration for art, literature, and music.**
- **Hence option (a) is the correct answer.**

**Q 18. A**

- International Conferences like the Earth Summit (1992) continuously focused attention on Environmental Issues. It produced a declaration of principles called as Rio - Declaration on Environment and Development which was a plan for the sustainable development of the Resources of the Earth into the 21st century. That is why it was called as **Agenda-21**. It is a non-binding action plan of the United Nations with regard to sustainable development. **Hence, option (a) is the correct answer.**

**Q 19. C**

- NCAP. **"Overall objective of the NCAP is comprehensive mitigation actions for prevention, control and abatement of air pollution** besides augmenting the air quality monitoring network across the country and strengthening the awareness and capacity building activities. Tentative national level target of 20%–30% reduction of PM2.5 and PM10 concentration by 2024 is proposed under the NCAP taking 2017 as the base year for the comparison of concentration.
- **Statement 1 is not correct.** The **NCAP will be a mid-term, five-year action plan with 2019 as the first year**. However, the international experiences and national studies indicate that significant outcome in terms of air pollution initiatives are visible only in the long-term, and hence the programme may be further extended to a longer time horizon after a mid-term review of the outcomes City specific action plans are being formulated for **122 non-attainment cities identified for implementing mitigation actions under NCAP. Hence, Statement 2 is not correct.**
- **Statement 3 is correct**. **Collaborative and participatory approach** involving relevant Central Ministries, State Governments, local bodies and other Stakeholders with focus on all sources of pollution forms the crux of the Programme.
- **Statement 4 is correct:** One important feature of NCAP include, an increasing number of monitoring stations in the country including rural monitoring stations, technology support, emphasis on awareness and capacity building initiatives, setting up of certification agencies for monitoring equipment, source apportionment studies, emphasis on enforcement, specific sectoral interventions

**Q 20. A**

- **The 2022 update of the International Energy Agency published Global Methane Tracker for the first time includes emissions from the coal sector, creating a complete set of emission estimates for the energy sector and cementing the Tracker's indispensable role in the fight to bring down methane emissions and implement the new Global Methane Pledge. Hence option (a) is the correct answer.**
- The inclusion in the Global Methane Tracker of country-by-country estimates for coal activities, alongside those for oil and gas operations, makes China - the largest source of global energy-related methane emissions, followed by Russia and the United States. **The energy sector is responsible for around 40% of total methane emissions attributable to human activity, second only to agriculture.**
- A rapid and sustained reduction of methane emissions is both achievable and essential to limit the rise in global average temperatures. According to the Intergovernmental Panel on Climate Change, today's concentrations of methane in the atmosphere are higher than at any time in at least 800000 years, and methane has contributed around 30% of observed global warming to date.
- **As per the Global Methane Initiative (GMI) website,India ranks fourth, and its methane emissions are nearly one-third that of China. India has not signed up for the Global Methane Pledge.** The Pledge was proposed by the European Union and the United States of America at the Major Economies Forum (MEF) on Energy and Climate on September 17, 2021 targeting at 30% reduction in global methane emissions from 2020 levels by 2030. **India declined joining The Pledge as it is outside the ambit of the UNFCCC and its Paris Agreement.**

**Q 21. B**

- In the Census of India migration is enumerated on two bases
  - **place of birth,** if the place of birth is different from the place of enumeration (known as life-time migrant);

- **place of residence,** if the place of last residence is different from the place of enumeration (known as migrant by place of last residence).

- As per 2001 census, out of 1,029 million people in the country, 307 million (30 per cent) were reported as migrants by place of birth. However, this figure was 315 million (31 per cent) in case of place of last residence. **Over 45.58 crore Indians were found to be "migrants" for various reasons during the enumeration exercises of Census 2011.** Census data shows that marriage and employment are the major reasons for migration.
- The **Economic Survey 2016-17** used data from Census 2011, **rail traffic data** and changes in population in different age categories to estimate migration statistics. It estimates that **an average of 90 million people migrated annually through railways between Indian states** annually during the last five years.
- **Hence only place of birth and place of residence were used as bases for enumeration of migration**.

**Q 22. D**

- **Recent Context:** In 2025, discoveries concerning the role of regulatory T cells (Tregs) and the FOXP3 gene in immune tolerance were recognized with the Nobel Prize in Physiology or Medicine. This has heightened interest in the mechanisms that maintain immune system balance and prevent autoimmunity.
- Regulatory T cells (Tregs) form a central part of the body's immune regulation by maintaining peripheral immune tolerance. They play a vital role in preventing autoimmunity, ensuring that the immune system does not attack the body's own tissues. The FOXP3 gene is crucial for the development and function of Tregs, and its malfunction is associated with severe autoimmune syndromes.
- **Immunological Tolerance**: The immune system distinguishes self from non-self and avoids attacking the body's own tissues, an ability regulated at both central (thymus) and peripheral levels through specialized T cells.
- **Regulatory T Cells (Tregs)**: A subtype of T lymphocytes, Tregs suppress the activation and response of self-reactive immune cells that escape central tolerance, thereby controlling inflammation and preventing autoimmune diseases.
- **FOXP3 Gene**: This gene encodes a transcription factor essential for the development and functional maintenance of Tregs. Mutations in FOXP3 lead to regulatory T cell deficiency, causing severe autoimmunity as seen in IPEX syndrome.
- **Clinical Relevance**: Understanding the role of FOXP3 and Tregs has advanced therapeutic approaches in autoimmune diseases, transplantation tolerance, and cancer immunotherapy.
- **Statement 1 is correct:** FOXP3 is a master regulator necessary for the development of regulatory T cells.
- **Statement 2 is correct:** Mutations in the FOXP3 gene cause IPEX (Immune dysregulation, Polyendocrinopathy, Enteropathy, X-linked syndrome), a rare but severe autoimmune disorder.
- **Statement 3 is correct:** Regulatory T cells (Tregs) help maintain immune self-tolerance by suppressing self-reactive T cells, preventing autoimmunity.

**Q 23. D**

- A population Census is the process of collecting, compiling, analyzing and disseminating demographic, social, cultural and economic data relating to all persons in the country, at a particular time in ten years interval.

- The first population Census in India was conducted in 1872 but its **first synchronous decennial Census was conducted only in 1881.** Since then, censuses have been undertaken uninterruptedly once every ten years. **Hence statement 1 is not correct.**
- The census year 1921 registered a negative growth rate of -0.31 per cent which happened only once throughout the demographic history of India. It is because of this decline that the year **1921** is called the **'demographic divide'** in the demographic history of India. **Hence statement 2 is not correct.**
- Out of the 121 crore Indians, 83.3 crore live in rural areas while 37.7 crore stay in urban areas. Census 2011 shows that for the first time since Independence, the absolute increase in population is more in urban areas than in rural areas. The **rural–urban distribution is 68.84% and 31.16% respectively.**

**Q 24. A**

- Anabolism and catabolism are two fundamental processes in the realm of ecology, each with its distinct role in the flow of energy and matter within ecosystems. They are two subcategories of metabolism. **Anabolism refers to the process of growth, whereas catabolism refers to the process of breakdown.**
- **Anabolism:**
  - Anabolism refers to the biosynthetic phase of metabolism, **where complex organic compounds are built from simpler forms.**
  - It represents the **constructive aspect of metabolism**, involving energy-requiring reactions. Anabolism plays a pivotal role in the capture and utilization of energy from the environment.
  - A prime **example of anabolism is photosynthesis i**n green plants, where carbon dioxide and water are transformed into complex carbohydrates like glucose using the energy harnessed from sunlight. Essentially, anabolism is responsible for the production of the organic matter that forms the foundation of ecological food chains.
  - This process requires energy in the form of ATP to produce cell components such as proteins, carbohydrates, and lipids.
- **Catabolism:**
  - Catabolism involves the degradative phase of metabolism. **In this process, complex organic compounds are broken down into simpler forms, often releasing energy in the process.**
  - Catabolic reactions are essential for harnessing the stored energy in organic matter, making it accessible to organisms for their metabolic needs.
  - **Catabolism includes activities such as respiration**, where complex organic compounds are broken down into simpler forms (e.g., glucose into carbon dioxide and water), releasing energy for the organism's use.
  - It is a metabolic condition that is **destructive in nature.**
- **Hence option (a) is the correct answer.**

**Q 25. B**

- **Recent Context: Recently, 72 of the 193 member states signed the United Nations Convention against Cybercrime in Hanoi, Vietnam.**
- **About United Nations Convention Against Cybercrime**
  - Convention was adopted by the General Assembly of the United Nations on 24 December 2024.
  - It will enter into force 90 days after the 40th State deposits its ratification.
  - The signing process will remain open until 31 December 2026.

- **India has not signed the treaty yet. Hence statement 3 is not correct.**
- **UN Office on Drugs and Crime (UNODC) served as secretariat to negotiations. Hence statement 1 is correct.**

- **UN Convention Against Cybercrime is the first universal legally binding framework for the collection, sharing and use of electronic evidence for all serious offences.**
- **Budapest Convention on Cybercrime (2001)**, drafted by the Council of Europe, was the first international treaty focused on combating cybercrime and strengthening cross-border cooperation.
  - A number of states such as Russia and China have rejected the Budapest Convention and have long advocated for a new international cybercrime convention.
- **Key features of the Convention Against Cybercrime**
  - **Expanded Scope of Cyber Offences:** It criminalize cyber-dependent crimes and also offences related to online fraud, online child sexual abuse, non-consensual dissemination of intimate images etc.
  - **International Cooperation:** It establishes a 24/7 network to boost international cooperation.
  - **Protection of sovereignty:** States Parties shall carry out their obligations under this Convention in a manner consistent with the principles of sovereign equality and territorial integrity of States and that of non-intervention in the domestic affairs of other States.
  - **Victim Support:** The Convention **encourages States to provide victims with access to recovery services, compensation, restitution, and the removal of illicit content.** This support will be **delivered according to each country's domestic laws**. **Hence statement 2 is not correct.**
  - **Respect for human rights:** States Parties to ensure that the implementation of their obligations under the Convention is consistent under international human rights law.

**Q 26. C**

- The 15th Conference of Parties (COP15) to the United Nations Convention on Biological Diversity (CBD) held in Montreal in December 2022 adopted the Kunming-Montreal Global Biodiversity Framework (GBF). **The GBF includes four goals and 23 targets to address the loss of biodiversity and restore natural ecosystems by 2030. Hence statement 1 is correct.**
- The targets of the GBF include:
  - Protecting at least 30% of the world's land, water, coastal, and marine areas
  - Restoring at least 30% of degraded terrestrial, inland water, coastal, and marine ecosystems
  - Reducing or eliminating the loss of areas with high biodiversity importance
  - Cutting global food waste in half and reducing overconsumption and waste
  - Reducing the use of pesticides and hazardous chemicals by half
  - Phasing out or reforming subsidies that harm biodiversity by at least USD 500 billion per year and scaling up incentives for conservation and sustainable use
  - Mobilizing at least USD200 billion per year in funding from all sources for biodiversity-related causes
  - Increasing international financial flows to developing countries to at least USD 20 billion per year by 2025 and at least USD 30 billion per year by 2030
  - Preventing the introduction of invasive species and reducing the establishment of other known or potential invasive species

- Requiring large and transnational companies to disclose their risks and impacts on biodiversity

- To ensure success, clear indicators have been set to measure progress and countries will be required to report on a large set of indicators related to their progress every five years or less. The CBD will combine national information submitted by countries into global trend and progress reports.
- **The GBF aims to protect at least 30% of the planet by 2030 and reverse ecosystem degradation.** As part of the GBF, countries have pledged to reduce harmful government subsidies worth USD500 billion annually and identify subsidies that are harmful to biodiversity by 2025. **Hence statement 2 is correct.**
- To support the implementation of the GBF, **the Global Environment Facility has been requested to establish a Special Trust Fund,** and a multilateral fund for the equitable sharing of benefits between providers and users of digital sequence information on genetic resources will be established within the GBF. **Hence statement 3 is correct.**
- As part of the GBF, countries have committed to reducing the use of pesticides and hazardous chemicals by half by 2030. The use of pesticides has been linked to the decline of pollinators, such as bees, and can have negative impacts on human health.
- The GBF aims to prevent the introduction of invasive species and reduce the establishment of other known or potential invasive species. The GBF also calls for sustainably using and managing biodiversity and valuing nature's contributions to people. The targets of the GBF need to be achieved by 2030.

**Q 27. B**

- **What is AVAS (Acoustic Vehicle Alerting System)?**
  - AVAS is an on-board device that generates an artificial sound when an electric or hybrid vehicle is moving at low speeds (typically up to ~20 km/h). Its purpose is simple: to warn pedestrians, cyclists and other vulnerable road users that a very-quiet vehicle is approaching. This is not a GPS or app — it's an audible alert system built into the vehicle. **Hence, Option (b) is the correct answer.**
- **Why was AVAS proposed in India?**
  - Electric vehicles (EVs) are much quieter than internal-combustion vehicles at low speeds, so pedestrians — especially the visually impaired, elderly and children — can be unaware of an approaching EV. To reduce such accidents, the Ministry of Road Transport & Highways (MoRTH) issued a draft notification proposing mandatory AVAS for new EV models (passenger and goods vehicles). The draft sets a compliance timeline (new models from a notified date and a later deadline for existing models). The draft, as reported in the Indian press, excludes two- and three-wheelers in the initial design.
- **Key features / timeline**
  - Who:
    - Draft by Ministry of Road Transport and Highways (MoRTH).
  - Which vehicles:
    - Draft targets electric passenger vehicles, buses and trucks (not two-wheelers/three-wheelers in the initial draft).
  - Speed threshold:
    - AVAS is generally required to operate at low speeds (around 0–20 km/h) when tyre/road noise is insufficient to alert pedestrians.

- Proposed timeline:
  - According to the draft notification issued on September 23, all new models of electric vehicles, including both passengers and goods, **manufactured after October 1, 2026**, will have to be fitted with Acoustic Vehicle Alerting System to meet the requirements with regard to audibility.
  - **For the existing models, the cut-off date is October 1, 2027** and after that they too will have to install AVAS in the vehicles.

- **International context**
  - AVAS is not novel — regulators elsewhere (EU, USA, Japan and others) have already required or recommended similar pedestrian-alert systems for quiet vehicles. Measurement standards (how loud, measured where and at what speeds) have been harmonized in many jurisdictions so AVAS noise is audible but not intrusive. So India is aligning with global road-safety practice.

**Q 28. C**

- CNG is an acronym for Compressed Natural Gas. **It is a mixture of hydrocarbons consisting of approximately 80 to 90 per cent methane in gaseous form.**
- **CNG is lead free** and reduces harmful emissions. Another advantage of CNG is the extension of life of lubricating oils as the fuel does not contaminate and dilute the crankcase oil.
- Compared to petrol or diesel CNG vehicles emit 40% less of nitrous oxide, 80% less of Carbon monoxide and 25% less of Carbon dioxide.
- **It is a safe-fuel and lighter than air.**
- **Hence both the statements are correct.**

**Q 29. C**

- **The highest peak in the Indian Garhwal Himalayas has two summits, the main summit at 7,816 m and Nanda Devi East at 7, 434 m.** The mountain is surrounded by a number of peaks over 21,000 ft, making it an extremely difficult place to even reach.
- **Nanga Parbat, also called Diamir, is one of the world's tallest mountains, 8,126 meters high, situated in the western Himalayas 27 km in Kashmir**. The mountain's steep south wall rises nearly 4,600 meters above the valley immediately below and the north side drops about 7,000 meters to the Indus River.
- **Annapurna, Nepali Annapurna Himal, lies in north-central Nepal.** It forms a ridge some 48 km long between the gorges of the Kali (Kali Gandak; west) and Marsyandi (east) rivers north of the town of Pokhara. The mountain contains four main summits, two of which are Annapurna I (8,091 meters) and II (7,937 meters).
- **Dhaulagiri is a mountain massif of the Himalayas in west-central Nepal.** It is situated on the western side of the deep Kali (Kali Gandak) River gorge, about 65 km northwest of Annapurna. Many of Dhaulagiri's snow- and glacier-covered peaks exceed 7,620 meters, including Dhaulagiri I, II, III, and IV. The tallest, Dhaulagiri I, reaches an elevation of 8,167 meters and is the world's seventh-highest mountain.
- **Kamet is the second-highest mountain in the Garhwal region of India, after Nanda Devi.** It lies in the Chamoli District of Uttarakhand, close to the border with Tibet. Due to its position near the Tibetan Plateau, Kamet is remote and not as accessible as some Himalayan peaks. It also receives a great deal of wind from the Plateau. Part of the Zaskar Range, it is 7,756 meters high. **Hence, option (c) is the correct answer**

**Q 30. C**

- **Statement 1 is not correct:** The word smog is derived from two words- Smoke and Fog. There are two types of smog viz. Classical smog and Photochemical smog. Classical smog occurs in cool humid climate. It is a mixture of smoke, fog and sulphur dioxide. Chemically it is a reducing mixture and so it is also called as reducing smog.
- **Statement 2 is not correct and statement 3 is correct:** Photochemical smog occurs in warm, dry and sunny climate. The main components of the photochemical smog result from the action of sunlight on unsaturated hydrocarbons and nitrogen oxides produced by automobiles and factories. Photochemical smog has high concentration of oxidizing agents and is, therefore, called as oxidising smog.

**Q 31. A**

- **Albedo** is the portion of solar energy reflected from the surface of the Earth back into space. It is a reflection coefficient and has a value less than one.
- When the solar radiation passes through the atmosphere, a certain amount of it is scattered, reflected and absorbed. The reflected sum of radiation is called as the **albedo of the earth.**
- Albedo is an important concept in climatology, astronomy, and environmental management. It plays a major role in the energy balance of the earth's surface, as it defines the rate of the absorbed portion of the incident solar radiation.
- The difference in the average albedo of Earth has an important influence on the temperature of the Earth. If the average albedo is lower than the previous year's albedo, it specifies that amount of radiation absorbed is higher . This results in the rise in the temperature of the Earth.Earth's albedo is constantly measured using satellites to monitor the global warming.
- Albedo of different kinds of surfaces:

| ***Surfaces*** | ***Percentage of radiation being reflected*** |
|---|---|
| **Snow cover** | **70-90** |
| **Sand** | **20-30** |
| Grass | 14-37 |
| Dry Ground | 15-25 |
| Wet Ground | 10 |
| **Grassland** | **10-25** |
| **Water** | **3-5** |
| Thick clouds | 70-80 |
| Thin clouds | 25-50 |
| Black soil | 8-14 |

**Q 32. D**

- Climate feedbacks: These are the processes that can either amplify or diminish the effects of climate forcings. **Feedback that increases an initial warming is called "positive feedback." A feedback that reduces an initial warming is a "negative feedback." Hence statement 1 is not correct.**
- Scientists are aware of a number of **positive feedbacks loops in the climate system. One example is melting of ice. The ice albedo effect is simply a name for how ice and snow reflect solar radiation, and thus help keep the Earth cool. Since a cool Earth also tends to have more ice and snow, the ice albedo effect is an example of a positive climate feedback.** Because ice is light-coloured and reflective, a large proportion of the sunlight that hits it is bounced back to space, which limits the amount of warming it causes. But as the world gets hotter, ice melts, revealing the

darker-coloured land or water below. The result is that more of the sun's energy is absorbed, leading to more warming, which in turn leads to more ice melting and so on. Other examples of **positive feedback mechanism include Water vapour release, carbon release into the atmosphere etc. Hence statement 2 is not correct.**

- However in case of **cloud feedback,** feedback type changes with behavior of clouds. Seen from below, clouds emit infrared radiation back to the surface, and so exert a warming effect; seen from above, clouds reflect sunlight and emit infrared radiation to space, and so exert a cooling effect. **Whether the net effect is warming or cooling depends on details such as the type and altitude of the cloud.** High clouds tend to trap more heat and therefore have a positive feedback, low clouds normally reflect more sunlight so they have a negative feedback.

**Q 33. C**

- **Acidic Lavas**: These lavas are highly viscous with a high melting point. They are light-colored, of low density, and have a high percentage of silica. They flow slowly and seldom travel far before solidifying. The resultant volcano is therefore steep-sided. The rapid cooling of lava in the vent obstructs the flow of the outpouring lava, **resulting in loud explosions throwing out many volcanic bombs or pyroclasts**. **Hence, option (c) is the correct answer.**
- **Basic/Basaltic Lavas**: These are the hottest lavas and are highly fluid. They are dark-colored like basalt, rich in iron and magnesium but poor in silica. They flow quietly and are not very explosive. They affect extensive areas, spreading out as thin sheets over great distances before they solidify. The resultant volcano is gently sloping with a wide diameter and forms a flattened shield or dome.

**Q 34. A**

- A climatic region has a homogeneous climatic condition which is the result of a combination of factors. Temperature and rainfall are two important elements that are considered to be decisive in all the schemes of climatic classification. The classification of climate, however, is a complex exercise. There are different schemes of classification of climate.
- Koeppen based his scheme of Climatic classification on monthly values of temperature and precipitation. **He identified five major climatic types**, namely:
  - Tropical climates, where the mean monthly temperature throughout the year is over 18°C.
  - (Dry climates, where precipitation is very low in comparison to temperature, and hence, dry. If dryness is less, it is semiarid (S); if it is more, the climate is arid(W).
  - Warm temperate climates, where the mean temperature of the coldest month is between 18°C and minus 3°C.
  - Cool temperate climates, where the mean temperature of the warmest month is over 10°C, and the mean temperature of the coldest month is under minus 3°C.
  - Ice climates, where the mean temperature of the warmest month is under 10°C.
- Each type is further subdivided into sub-types on the basis of seasonal variations in the distributional pattern of rainfall and temperature. Koeppen used letter symbols to denote climatic types. He used S for semi-arid and W for arid and the following small letters to define sub-types: f (sufficient precipitation), m (rain forest despite a dry monsoon season), w (dry season in winter), h (dry and hot), c (less than four months with mean temperature over 10°C), and g (Gangetic plain).
- Koeppen divided India into nine climatic regions. **Hence, statement 1 is not correct.**
- The details of Indian climatic regions based on this classification are given in the below table.

| Type of Climate | Areas |
|---|---|
| Amw Monsoon with short dry season | West coast of India south of Goa |
| As – Monsoon with dry summer | Coromandel coast of Tamil Nadu |
| Aw – Tripical savannah | Most of the Peninsular plateaus, south of the Tropic of Cancer |
| Bwhw – Semi-arid steppe climate | North-western Gujarat, some parts of western Rajasthan and Punjab |
| Bwhw – Hot desert | Extreme western Rajasthan |
| Cwg – Monsoon with dry winter | Ganga plain, eastern Rajasthan, northern Madhya Pradesh, most of North-east India |
| Dfe – Cold humid winter with short summer | Arunachal Pradesh |
| E – Polar type | Jammu and Kashmir, Himachal Pradesh and Uttarakhand |

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

**Q 35. C**

- Initially, nuclear energy was hailed as a non-polluting way for generating electricity. Later on, it was realised that the use of nuclear energy has two very serious inherent problems. The first is **accidental leakage, as occurred in the Three Mile Island and Chernobyl incidents** and the second is safe disposal of radioactive wastes.
- **Three Mile Island, Pennsylvania, United States**
  - Loss of coolant and partial core meltdown due to operator errors and technical flaws. There was a small release of radioactive gases.
- **Chernobyl, Kiev Oblast, Ukraininan SSR, Soviet Union** A flawed reactor design and inadequate safety procedures led to a power surge that damaged the fuel rods of reactor no. 4 of the Chernobyl power plant. This caused an explosion and meltdown, necessitating the evacuation of 300,000 people and dispersing radioactive material across Europe.
- **Fukushima, Japan** The Fukushima **nuclear disaster** was triggered by a tsunami that flooded and damaged the 3 active reactors at the Fukushima Daiichi nuclear power plant, drowning two workers. Loss of backup electrical power led to overheating, meltdowns, and evacuations.
- **Deepwater Horizon oil spill, also called Gulf of Mexico oil spill**
  - It is **largest marine oil spill** in history, caused by an April 20, 2010, explosion on the Deepwater Horizon oil rig—located in the Gulf of Mexico, approximately 41 miles (66 km) off the coast of Louisiana—and its subsequent sinking.
- **Hence, option (c) is the correct answer.**

**Q 36. A**

- Recently, Representatives from a number of Central Asian countries have endorsed a six-year work programme that identifies priority transboundary conservation regions important for conserving seventeen iconic mammal species of the region.
- **The Central Asian Mammals Initiative (CAMI) was launched in 2014 at the 11th Meeting of the Conference of the Parties (COP11) to the Convention on the Conservation of Migratory Species of Wild Animals (CMS).** The overall goal of the initiative is to improve the conservation status of large migratory mammals and their habitats in the wider Central Asian region by strengthening coordination and crossborder cooperation, while addressing major threats.
- **CAMI operates directly under the Convention on the Conservation of Migratory Species of Wild Animals (CMS), serving as a strategic framework to coordinate conservation efforts for 17 key migratory mammals across Central Asia,** tackling threats like habitat loss and poaching through regional cooperation. It currently covers 17 species, including the argali sheep, Asiatic cheetah, Asiatic wild ass, Bukhara deer, Eurasian lynx, gobi bear, goitered gazelle, kiang, Mongolian gazelle, Pallas's cat, Persian leopard, Przewalski's horse, saiga antelope, snow leopard, urial, wild camel, and wild yak. **Hence, statement 1 is not correct and statement 2 is correct.**

**Q 37. B**

- **Ecotone**
  - **An ecotone is a transitional area between two different ecosystems, such as a forest and grassland. Hence, statement 1 is correct.**
  - Ecotones also appear where one body of water meets another (e.g., estuaries and lagoons) or at the boundary between the water and the land (e.g., marshes).
  - **It has some of the characteristics of each bordering biological community and often contains species not found in the overlapping communities. Hence, statement 2 is correct.**
  - An estuary is a partially enclosed, coastal water body where freshwater from rivers and streams mixes with salt water from the ocean.
  - Ecotones often have a larger number of species and larger population densities than the communities on either side.
  - **This tendency for increased biodiversity within the ecotone is referred to as the "edge effect." Hence, statement 3 is not correct.**
  - Those species which occur primarily or most abundantly in the ecotones are called "edge" species.

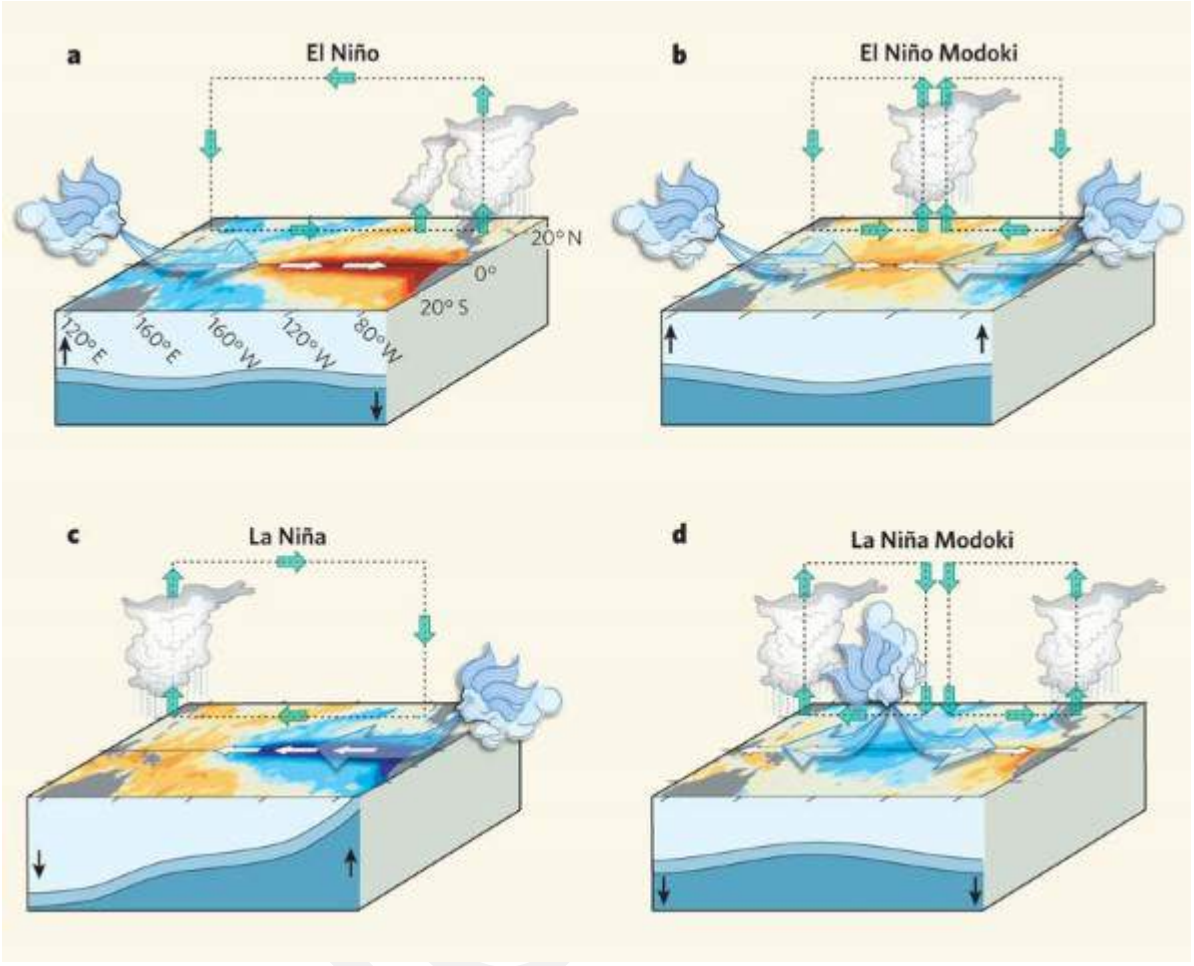
**Q 38. D**

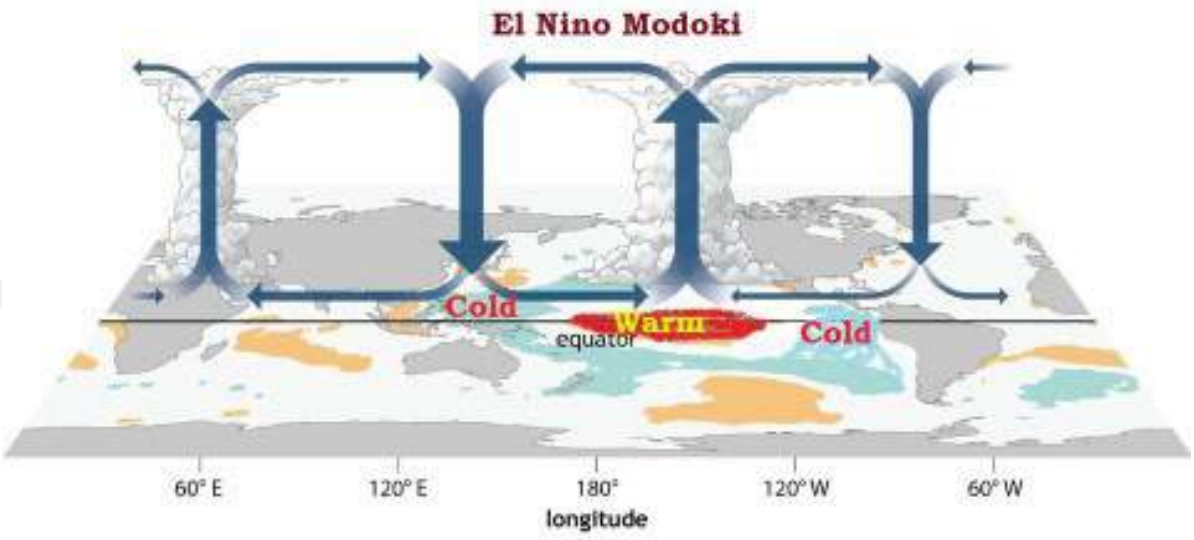
- **Sherms is a place dug hollow beneath a thorn tree, surrounded by bushes.** Bushmen tribes travel in small family groups and live together in Sherms.
- **Wurlies are simple shelters made of branches and tufts and grass.** Bindibu or Aborigines tribes also travel in family groups and live in Wurlies.

**Q 39. D**

- Almost 50 per cent of the storms do not sustain since the west-central and the north Arabian Sea have a relatively colder sea temperature (due to Findlater Jet or Somali Current that causes local upwelling).
- In the usual course, there was an occurrence of one extremely severe cyclone every four-five years. Now the Arabian Sea started receiving tropical cyclones of high intensity in a small-time interval. For instance, in 15 years (1998 to 2013), five extremely severe cyclones originated in the Sea. In October 2014, the west coast of India saw an extremely severe cyclonic storm, 'Nilofar (Category 4). In 2015, within one week, the Arabian Sea experienced two more cyclones, even stronger than Nilofar: Cyclone 'Chapal' followed by Cyclone 'Megh'.
- **El Niño Modoki (pseudo El Niño) creates conditions which are not conducive for cyclogenesis in the Bay of Bengal. On the other hand, it offers large convergence over the Arabian Sea,** explaining a large number of cyclones in that region. **Hence statement 1 is not correct.**
  - The reason why El Nino Modoki brings only fewer number of cyclones in the Bay of Bengal is because one of the two descending limbs of the Walker Cell is over the western Pacific and Bay of Bengal. The descending limb causes dry conditions not conducive for cyclone formation. The ascending limb of the Walker Cell, on the other hand, brings rain. Also, an El Nino Modoki creates stronger divergence over the western Pacific and Bay of Bengal compared to El Nino. Divergence (opposite of convergence) means surface winds move away from each other and result in low relative vorticity (rotational flow of winds). These conditions are not conducive for cyclones. This explains why Bay of Bengal region (close to western Pacific) has fewer cyclones during an El Nino Modoki.

- **El Niño Modoki is a coupled ocean-atmosphere phenomenon in the tropical Pacific.** Conventional El Niño is characterized by strong anomalous warming in the eastern equatorial Pacific. Whereas, El Niño Modoki is associated with strong anomalous warming in the central tropical Pacific and cooling in the eastern and western tropical Pacific.




- **When a pair of tropical cyclones form on each side of the equator, they are called twin cyclones**. In May 2022, twin tropical cyclones Asani (northern hemisphere - counter-clockwise) & Karim (southern hemisphere - clockwise) formed at nearly the same time on opposite sides of the Equator. **The Madden-Julian Oscillation (MJO)** coupled with Rossby waves helped fuel the twin storms by promoting convection. **Hence statement 2 is not correct.**

- **The MJO can influence tropical cyclone numbers and strength in nearly all ocean basins. Hence statement 3 is correct.**

- **Madden-Julian Oscillation (MJO):**
  - MJO is an eastward moving trough (series of thunderstorms) in the tropics that recurs every 30 to 60 days. Unlike ENSO, which is stationary (in the Pacific Ocean), the MJO is an eastward moving disturbance. ENSO is associated with persistent features that last several seasons over the Pacific Ocean basin. On the other hand, multiple MJO events occur within a season (i.e., weather varies on a week-to-week basis).
  - The MJO consists of enhanced rainfall convective phase and suppressed rainfall convective phase. These two phases produce opposite changes in rainfall and this entire dipole propagates eastward. The effect is witnessed mainly in the tropical region, in the band between 30 degrees North and 30 degrees South of the equator.

**Q 40. A**

- **A Ramsar Site** is a wetland site designated to be of international importance under the Ramsar Convention also known as "The Convention on Wetlands", an intergovernmental environmental treaty established in 1971 by UNESCO, which came into force in 1975.
- **Thol and Wadhwana from Gujarat and Sultanpur and Bhindawas from Haryana** were added to the Ramsar Sites list. **Hence pair 1 is correctly matched.**
- **Bhindawas Wildlife Sanctuary, the largest wetland in Haryana is a human-made freshwater wetland. Hence pair 2 is not correctly matched.**
- **Sultanpur National Park from Haryana** supports more than 220 species of resident, winter migratory and local migratory waterbirds at critical stages of their life cycles.
- **Thol Lake Wildlife Sanctuary from Gujarat** lies on the Central Asian Flyway and more than 320 bird species can be found here. **Hence pair 4 is not correctly matched.**
- **Wadhvana Wetland from Gujarat** is internationally important for its birdlife as it provides wintering ground to migratory waterbirds, including over 80 species that migrate on the Central Asian Flyway.
- The human-made **Haiderpur wetland** spreads over an area of 6,908 hectares in **Bijnor, Uttar Pradesh. Hence pair 3 is not correctly matched.**
  - Formed in 1984 on a floodplain of the River Ganga on the Madhya Ganga Barrage, the wetland is located within the boundaries of Hastinapur Wildlife Sanctuary.
- **Hence option (a) is the correct answer.**

**Q 41. C**

- The present composition of the earth’s atmosphere is chiefly contributed by nitrogen and oxygen. There are three stages in the evolution of the present atmosphere.
- The first stage is marked by the loss of the primordial atmosphere. In the second stage, the hot interior of the earth contributed to the evolution of the atmosphere. Finally, the composition of the atmosphere was modified by the living world through the process of photosynthesis.
- **The early atmosphere, with hydrogen and helium, is supposed to have been stripped off as a result of the solar winds.** This happened not only in the case of the earth but also in all the terrestrial planets, which were supposed to have lost their primordial atmosphere through the impact of solar winds.

- **During the cooling of the earth, gases and water vapour were released from the interior solid earth.** This started the evolution of the present atmosphere. The early atmosphere largely contained water vapour, nitrogen, carbon dioxide, methane, ammonia and very little free oxygen.
- **The process through which the gases were outpoured from the interior is called degassing.**
- Continuous volcanic eruptions contributed water vapour and gases to the atmosphere. As the earth cooled, the water vapour released started getting condensed.
- The carbon dioxide in the atmosphere got dissolved in rainwater and the temperature further decreased causing more condensation and more rain.
- **The rainwater falling onto the surface got collected in the depressions to give rise to oceans.** The earth's oceans were formed within 500 million years of the formation of the earth.
- Sometime around 3,800 million years ago, life began to evolve. However, **around 2,500-3,000 million years before the present, the process of photosynthesis got evolved.** Life was confined to the oceans for a long time. Oceans began to contribute oxygen through the process of photosynthesis. Eventually, oceans were saturated with oxygen, and 2,000 million years ago, oxygen began to flood the atmosphere.

**Q 42. D**

- **Ministry of Environment, Forests and Climate Change (MoEFCC) notifies norms for fly ash utilization by power plants.**
  - MoEFCC has notified the **latest amendments exercising the power under the Environment (Protection) Act 1986.** Amendments are aimed at better utilization of fly ash by coal-based thermal power plants (TPPs) in the country.
- **About Fly ash:**
  - **Ash is the mineral matter left after burning coal. In a power plant, a major portion of the ash is carried off with flue gases (hence, the term fly ash), and can be filtered using electrostatic precipitators.** Due to improper handling, it ends up in neglected ash ponds in dangerous quantities, polluting the surface and groundwater.
- **Composition: substantial amounts of oxides of silicon, aluminum, calcium; arsenic, boron, chromium, lead, etc. in trace concentrations.**
- Usage: manufacturing of Portland cement, bricks, tiles, manufacturing of absorbents (for purification of waste gases, drinking water), etc.

| Chemical Composition | *Fly Ash* (%) | Lime (%) |
|---|---|---|
| C | 23.29 | 0 |
| CaO | 3.10 | 91.99 |
| $SiO_2$ | 36.10 | 3.75 |
| $Al_2O_3$ | 25.03 | 2.09 |
| FeO | 8.66 | 0.50 |
| MgO | 1.24 | 1.19 |
| $Na_2O$ | 0 | 0.43 |
| $SO_3$ | 0.59 | 0.05 |
| $TiO_2$ | 0.91 | 0 |
| $K_2O$ | 1.08 | 0 |
| TOTAL | 100.00 | 100.00 |

- **Hence, option (d) is the correct answer.**

**Q 43. C**

- **Biological oxygen demand (BOD)**

- Biological oxygen demand (BOD) is a measure of the amount of dissolved oxygen (DO) required by aerobic organisms to break down organic matter in water over a specific period of time. **Hence statement I is correct.**
- BOD is a widely used indicator of water quality, as it reflects the amount of organic pollution in the water.
- Higher BOD values indicate the presence of more organic matter, which requires more oxygen to decompose. A low BOD value typically indicates a clean or minimally polluted water body. This is because a low BOD value means that there is not much organic matter present to consume dissolved oxygen. **Hence statement II is not correct.**

**Q 44. C**

- **Recent Context:** In recent years, the global community has advanced efforts to improve disaster preparedness and response through integrated early warning systems. **The Early Warnings for All (EW4ALL) initiative was launched as a response to rising concerns about the impacts of climate and weather-related hazards, aiming to shield all people from disasters by accelerating the deployment of multi-hazard early warning systems worldwide.** As of 2024, its implementation is prominent in international disaster risk reduction agendas. **Hence statement 1 is correct.**
- By integrating efforts across global agencies, it aims for timely and effective alerts for extreme weather, water, and climate events, reducing disaster risks for vulnerable populations.
- The **initiative is a UN-backed programme jointly led by the World Meteorological Organization (WMO), United Nations Office for Disaster Risk Reduction (UNDRR), International Telecommunication Union (ITU), and International Federation of Red Cross and Red Crescent Societies (IFRC). Hence statement 2 is correct.**
- EW4ALL is anchored in building multi-hazard early warning systems with a **four-pillar approach: disaster risk knowledge, detection/monitoring/forecasting, warning dissemination and communication, and preparedness and response capabilities.**
- It contributes directly to the Sendai Framework for Disaster Risk Reduction and Sustainable Development Goals by aiming to reduce mortality, safeguard livelihoods, and protect economic assets from natural hazards.
- It focuses on infrastructure, global partnerships, community engagement, and inclusivity. Significant effort is being made to overcome inequitable access and regional disparities in early warning system coverage.

**Q 45. D**

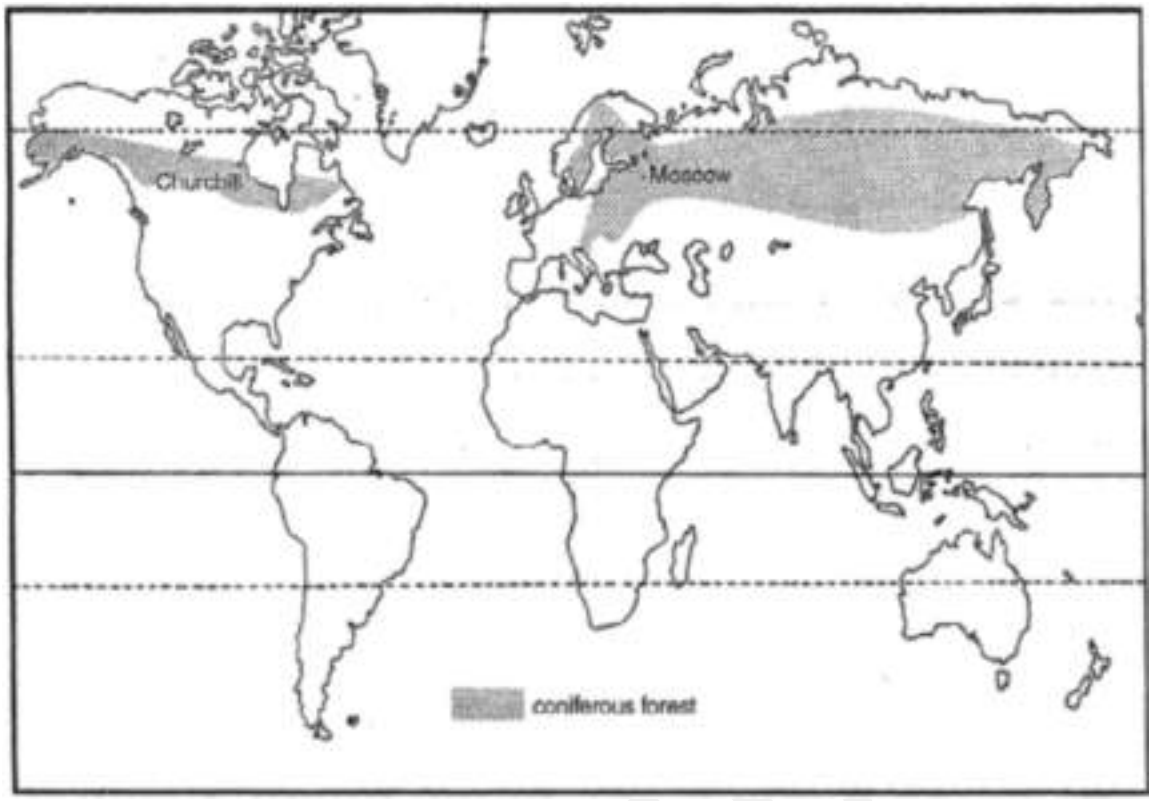
- The National Mission for Green India (GIM) is one of the eight Missions outlined under the National Action Plan on Climate Change (NAPCC). **Hence, statement 2 is correct**.
- It aims at protecting; restoring and enhancing India's diminishing forest cover and responding to climate change by a combination of adaptation and mitigation measures. This mission has adopted an integrated cross-sectoral approach as it will be implemented on both public as well as private lands with a key role of the local communities in planning, decision making, implementation, and monitoring. **Hence, statement 3 is correct.**
- **Mission Goals**
  - To increase forest/tree cover and improve quality of forest;
  - To improve/enhance eco-system services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like

fuel, fodder, and timber and non-timber forest produces (NTFPs); and

- To increase forest-based livelihood income. **Hence, statement 1 is correct.**

**Q 46. A**

- **The term "tropical glaciers" may sound like an oxymoron, but to one-sixth of the world's population residing in places like South America, Africa and Indonesia, they represent a major water source that is rapidly melting away.** Ice can accumulate in the tropics only if temperatures are below freezing or around freezing with large amounts of snowfall. Tropical glaciers exist today only on high mountain peaks such as the A**ndes and Mt. Kilimanjaro** and do not reach anywhere near sea level. Like polar ice caps, tropical glaciers are located high in the equatorial mountain ranges. The Andes mountain range contains the largest glaciated area in the tropics, the Qualccaya Ice Cap in Peru. **Hence, statement 1 is not correct.**
- **Extratropical cyclones occur in temperate zones and high-latitude regions, though they are known to originate in the Polar Regions. Middle and high-latitude cyclones have an important role in everyday weather as well as in the Earth's climate system. In the polar regions, and more precisely in the Arctic, the unique environment in which the cyclones exist adds to the importance that cyclones play in the climate system**. In findings published in November 2022, NASA scientists project spring Arctic cyclones will intensify by the end of this century because of sea ice loss and rapidly warming temperatures. Those conditions will lead to stronger storms that carry warmer air and more moisture into the Arctic. A polar cyclone is always identified within a low-pressure zone embedded in a large mass of very cold air that lies atop the poles. **Hence, statement 3 is not correct.**
- **The Cool Temperate Continental (Siberian) Climate is experienced only in the northern hemisphere where the continents within the high latitudes have a broad east-west spread.** On its pole ward side, it merges into the Arctic tundra of Canada and Eurasia at around the Arctic Circle. **The Siberian Climate is conspicuously absent in the southern hemisphere because of the narrowness of the southern continents in the high latitudes.** The strong oceanic influence reduces the severity of the winter and coniferous forests are found only on the mountainous uplands of southern Chile, New Zealand, Tasmania and south-east Australia. **Hence, statement 2 is correct.**




**Q 47. D**

- Limiting factor: A lot of factors determine the survival of an organism. One single factor can limit the range of an organism. This single factor is called as a limiting factor.
- For example, seeds don't germinate quickly in evergreen rain forests in spite of good rains and vegetation as the surface soil is heavily leached (nutrients washed away by running water). Here, poor soil is the limiting factor. Likewise, germinated saplings may not survive due to lack of light because of the dense canopy. Here, the absence of light (shade of the forest) is the limiting factor. Some of the important limiting factors and their significance is as follows:
  - **Light :** The spectral quality of solar radiation is important for life. The UV component of the spectrum is harmful to many organisms.
  - **Rainfall:** Majority of biochemical reactions take place in an aqueous medium.
  - **Temperature:** A few organisms can tolerate and thrive in a wide range of temperatures (they are called eurythermal). A vast majority of them are restricted to a narrow range of temperatures (stenothermal).
  - Atmosphere: 21% oxygen helps in the survival of many organisms; 78% nitrogen prevents spontaneous combustion and 0.038% carbon dioxide helps primary producers in the synthesis of carbohydrates.
  - **Organic compounds:** Proteins, carbohydrates, lipids etc. are essential for energy transfer in the living world.
  - **Inorganic compounds:** Carbon, carbon dioxide, water, sulphur, nitrates, phosphates, and ions of various metals are essential for organisms to survive.
  - **Altitude:** Vertical zonation of vegetation is caused due to altitude. Change in temperature with altitude is a limiting factor.
  - **Buffering capacity of the earth:** A neutral pH (pH of 7) is maintained in the soil and water bodies due to the buffering capacity of earth. The neutral pH is conducive for the survival and

sustenance of living organisms.

- **Salinity:** Some organisms are tolerant of a wide range of salinities (euryhaline). Others are restricted to a narrow range of salinities (stenohaline).

- **Hence option (d) is the correct answer.**

**Q 48. C**

- **Indira Sagar dam built on the Narmada river.** It is a concrete gravity dam, located in Khandwa district of Madhya Pradesh. Indira sagar project was the key project on Narmada river providing excellent storage site of water. **Indira Sagar Dam has the biggest reservoir in India. Hence pair 1 is not correctly matched.**
- **Krishnarajasagar Dam built across Kaveri River** near Mysore in Karnataka. It is one of the principal and largest dam built on the river Kaveri in Karnataka in, South India. **Hence pair 2 is not correctly matched.**
- **Mettur Dam built across Kaveri River** at Salem district in **Tamil Nadu.** It is one the largest and one of the oldest dam built in India. Mettur Dam has biggest and the most power generating capacity dam in Tamil Nadu. **Hence pair 3 is correctly matched.**

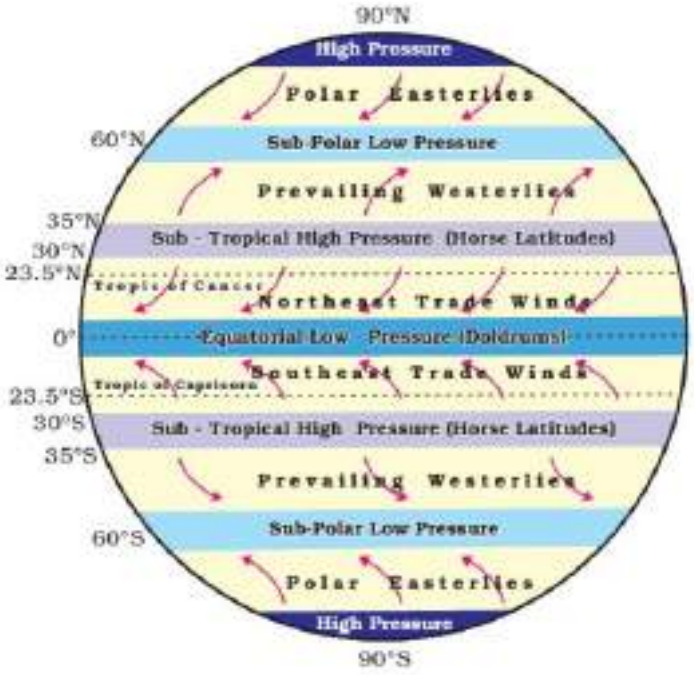
**Q 49. A**

- **Recent Context:** In 2024, as part of the nationwide celebrations marking the 150th anniversary of 'Vande Mataram', renewed attention has been drawn to the historical and constitutional status of India's national symbols, including the national song and the national anthem. This includes revisiting their origins, significance, and the debates around their official status.
- **'Vande Mataram,' composed in Sanskrit by Bankim Chandra Chatterjee, was chosen as the national song**, while **'Jana Gana Mana,' written by Rabindranath Tagore**, was adopted as the **national anthem.** The process of **according equal statuses is rooted in the deliberations and decisions of the Constituent Assembly**, the body that framed the Constitution of India.
- **Policy Background/Framework**: The Constituent Assembly recognized the unifying force of national symbols and formally adopted 'Jana Gana Mana' as the national anthem and **'Vande Mataram' as the national song on 24th January 1950. Hence Statement-I is correct.**
- Establishing equal status for the national anthem and national song was aimed at honoring diverse contributions to the freedom movement and reinforcing a shared sense of national identity. **Hence Statement-II is correct.**
- **Hence, the correct answer is (a) Both Statement I and Statement II are correct and Statement II is the correct explanation of Statement I.**

**Q 50. D**

- The horizontal distribution of air pressure across the latitudes is characteriesd by high or low pressure belts. In reality, the location of these pressure belts is not permanent. They shift northward in July and southward in January, following the changing position of the sun’s direct rays as they migrate between the Tropics of Cancer and Capricorn. The thermal equator (commonly known as the belt of highest temperature) also shifts northwards and southwards of the equator. With the shifting of thermal equator northwards in summer and southwards in winter, there is also a slight shift in pressure belts towards north and south of their annual average location.
- These pressure belts are:
  - The Equatorial Low Pressure Belt;
  - The Sub tropic High Pressure Belt

- The Sub-polar Low Pressure Belt
- The Polar High Pressure Belts
-




*Major Pressure Belts and Wind System*

- **The Equatorial Low Pressure Belt:** The sun shines almost vertically on the equator throughout the year. As a result the air gets warm and rises over the equatorial region and produce equatorial low pressure. This belt extends from equator to 10 degree N and 10 degree S latitudes. Due to excessive heating horizontal movement of air is absent here and only conventional currents are there. Therefore this belt is called doldrums (the zone of calm) due to virtual absence of surface winds. These are the regions of convergence because the winds flowing from sub tropical high pressure belts converge here. This belt is also known as-Inter Tropical Convergence Zone (ITCZ).
- **The Sub-tropical High Pressure Belts:** The sub-tropical high pressure belt extends between the latitudes of 25°- 35° in both the hemispheres. In the northern hemisphere it is called as the North sub-tropical high pressure belt and in the southern hemisphere it is known as the South sub-tropical high pressure belt. This belt owes its origin to the rotation of the earth and sinking and settling down of winds i.e. dynamically induced. It is not a thermally induced pressure belts unlike the Equatorial Low Pressure Belt and the Polar High Pressure Belt. **Hence option (d) is the correct answer.**
- **The Sub-polar low Pressure Belts:** The sub-polar low pressure belts extend between 45 degree N and the Arctic Circle in the northern hemisphere and between 45°S and the Antarctic Circle in the southern hemisphere. They are known as the North sub-polar low and the South sub-polar low pressure belts respectively. Winds coming from the sub-tropical and the polar high belts converge here to produce cyclonic storms or low pressure conditions. This zone of convergence is also known as polar front.
- **The Polar High Pressure Belts:** In polar regions, sun never shines vertically. Sun rays are always slanting here resulting in low temperatures. Because of low temperature, air compresses and its density increases. Hence, high pressure is found here. In northern hemisphere the belt is called the North polar high pressure belt while it is known as the South polar high pressure belt in the southern hemisphere. Winds from these belts blow towards sub-polar low pressure belts.

**Q 51. B**

- The ocean current is the horizontal flow of a mass of waters in a fairly defined direction over great distances. They are like a stream of water flowing through the main body of the ocean in a regular pattern. The average speed of the current is between 3.2 km to 10 km per hour. Ocean currents with higher speed are called stream and currents with lower speed are called drift. **Hence statement 1 is not correct.**
- The ocean water is also affected by the Coriolis force and follows Ferrel's Law. So all the ocean currents follow the clockwise direction in the northern hemisphere and anticlockwise direction in the southern hemisphere. **Hence statement 2 is correct.**
- Cold currents always move from the poles to the equator and vice-versa in case of warm currents. They are also affected by the configuration of the ocean. **Hence statement 3 is correct.**

**Q 52. A**

- **The Ministry of Finance approved 'Maitri II,' India's newest Antarctic research station, projected to be operational by January 2029.** This station has been **designed as a green research base, emphasizing the use of renewable energy and advanced automation for scientific observation in Antarctica—reflecting India's commitment to sustainable scientific pursuits in polar regions.**
- India's research presence in Antarctica is strategic for advancing climate science, polar research, and global environmental collaborations. The establishment of sustainable, technologically advanced research stations supports scientific data collection on climate change, oceanography, and polar ecology, while showcasing India's leadership in environmentally responsible polar exploration.
- India's Antarctic missions are anchored by the **'Indian Antarctic Act, 2022,' which underlines environmental sustainability and scientific cooperation in accordance with global treaty obligations.**
  - **Maitri II will operate as a green base under it—designed for low environmental impact, integrating solar and wind energy to supply power and minimize fossil fuel consumption, alongside housing advanced automated instruments for remote and continuous monitoring.**
- The **National Centre for Polar and Ocean Research (NCPOR) manages India's Antarctic stations**, ensuring that scientific endeavors adopt green technologies and operational best practices.
- With rising concerns over climate change and fragile polar ecosystems, the use of renewable energy systems and technological innovation in Antarctic research has gained global prominence. India's efforts set a precedent for other nations.
- **Hence, the correct answer is (a): Both Statement I and Statement II are correct and Statement II is the correct explanation of Statement I.**

**Q 53. B**

- **UNDP** in October 2012 launched the Biodiversity Finance Initiative – BIOFIN, as a new global partnership seeking to address the biodiversity finance challenge in a comprehensive manner – building a sound business case for increased investment in the management of ecosystems and biodiversity.

  The goals of BIOFIN include the following:
  - Develop and pilot a new approach and methodology to fill the financing gap for biodiversity;
  - Support CBD parties in reporting on resource mobilization (Financial Reporting Framework);
  - **Assist countries to better mobilize and align domestic and international finance for biodiversity**, including implementation of NBSAPs, and to achieve sustainable development

goals.

- BIOFIN is managed by the UNDP Ecosystems and Biodiversity Programme globally, in partnership with the European Union, the Governments of Germany, Switzerland, Norway and Flanders, who support the initiative with a contribution of US$28 million.
  The Biodiversity Finance Initiative - BIOFIN - methodology is currently implemented in 31 countries. The global BIOFIN team works with interdisciplinary national teams, customising the methodology to the national context and implementing prioritised finance solutions. BIOFIN countries are across three regions. In Eurasia, Asia and Pacific – Bhutan, Sri Lanka, Indonesia, **India**, Thailand, Vietnam, Georgia, Kyrgyzstan, Kazakhstan, Fiji, Malaysia, Philippines, Mongolia; in Africa – Rwanda, Botswana, Zambia, South Africa, Uganda, Seychelles, Mozambique, Namibia; and in Latin America and Caribbean – Cuba, Costa Rica, Belize, Peru, Colombia, Ecuador, Guatemala, Mexico, Brazil, Chile.
- BIOFIN in India is led by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**. The initiative is hosted by the **National Biodiversity Authority (NBA)**, working with four relevant State Biodiversity Boards, with technical assistance from Wildlife Institute of India (WII) and National Institute of Public Finance and Policy (NIPFP). UNDP India manages the programme under the guidance of MoEFCC.
- **Hence, only statments 1 and 2 are correct**.

**Q 54. C**

- Statement 1 is not correct because Moho's discontinuity is boundary between Crust and Mantle. Boundary between Mantle and core is called guntenberg's discontinuity.
- Statement 2 is not correct. It is the Aesthenosphere, not lithosphere which is a source of Magma. Lithosphere consist of crust and uppermost solid mantle while Aesthenosphere is upper and weak portion of mantle extending upto 400 km.
- Statement 3 is correct. Outer core is liquid and inner core is solid. Since the outer core is liquid, we find Shadow zones of P and S waves.

**Q 55. D**

- The Hazardous Substances Management Division (HSMD) is the nodal point within the Ministry of Environment, Forest and Climate Change for management of chemical emergencies and hazardous substances.
- The main objective of the programme is to promote safe management and use of hazardous substances including hazardous chemicals and hazardous wastes, in order to avoid damage to health and the environment. The Division is also the nodal point for the following International Conventions/Agreements viz.,
  - **Basel Convention** on Control of Trans-boundary Movement of Hazardous Waste and their Disposal;
  - **Rotterdam Convention** on Prior Informed Consent Procedure for certain Chemicals and Pesticides in International Trade;
  - **Stockholm Convention** on Persistent Organic Pollutants;
  - Strategic Approach to International Chemicals Management; and
  - Minamata Convention on Mercury.
- **The Waigani Convention** (Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management

of Hazardous Wastes within the South Pacific Region) - The main effect of this Convention is to ban the import of all hazardous and radioactive wastes into South Pacific Forum Island Countries.

- **Hence option (d) is the correct answer.**

**Q 56. D**

- President of India inaugurated the observance of the Mahasamadhi centenary of Sree Narayana Guru at Kerala.
- **About Sree Narayana Guru (1856–1928)**
  - Born in Chempazhanthy (near present-day Thiruvananthapuram) to Ezhava family.
  - He was a saint, philosopher, poet, and social reformer who revolted against caste system.
- **Key Contributions**
  - Emphasized the principle of "One caste, One Religion, One God for all human beings."
  - He launched the Aruvipuram movement for equal rights to temple entry.
  - In 1903, along with P. Palpu, he **established an organization, later called the Sri Narayana Dharma Paripalana Yogam for upliftment of Ezhava community.**
  - He lent support to Vaikkom Satyagraha for temple entry (1924-25) in Travancore.
  - Works: Anukamba Dasakam, Brahmavidya Panchakam, etc.
  - Values: Equality, Non-violence, Compassion, Integrity, Courage etc.
- **Hence all the statements are correct.**

**Q 57. B**

- **Statement 1 is correct: CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora)** is an international agreement between governments. Its aim is to **ensure that international trade in specimens of wild animals and plants does not threaten their survival.**
- **Statement 2 is not correct:** CITES was drafted as a result of a resolution adopted in **1963 at a meeting of members of IUCN** (The World Conservation Union). The text of the Convention was finally agreed at a meeting of representatives of 80 countries in Washington, D.C., the United States of America, on 3 March 1973, and **on 1 July 1975 CITES entered in force.**
- **Statement 3 is correct:** CITES **is an international agreement to which States and regional economic integration organizations adhere voluntarily**. States that have agreed to be bound by the Convention ('joined' CITES) are known as Parties. **Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws.** Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level.

**Q 58. B**

- The atmosphere consists of different layers with varying density and temperature. Density is highest near the surface of the earth an decreases with increasing altitude. The column of atmosphere is divided into five differen layers depending upon the temperature condition. They are: troposphere, stratosphere mesosphere, thermosphere and exosphere. The troposphere is the lowermost layer of the atmosphere. Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator. Thickness of the troposphere is greatest at the equator because heat is transported to great heights by strong convectional currents. This layer contains dust particles and water vapour. All changes in climate and weather take place in this layer. The temperature in

this layer decreases at the rate of 1 °C for every 165m of height. This is the most important layer for a biological activity.

- The zone separating the tropsophere from stratosphere is known as the tropopause. The air temperature at the tropopause is about minus 800C over the equator and about minus 45oC over the poles. The temperature here is nearly constant, and hence, it is called the tropopause.
- The stratosphere is found above the tropopause and extends up to a height of 50 km. One important feature of the stratosphere is that it contains the ozone layer. This layer absorbs ultra-violet radiation and shields life on the earth from intense, harmful form of energy. The mesosphere lies above the stratosphere, which extends up to a height of 80 km. In this layer, once again, temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at the height of 80 km. The upper limit of mesosphere is known as the mesopause.
- The thermosphere is a layer of Earth's atmosphere. The thermosphere is directly above the mesosphere and below the exosphere. It extends from about 90 km (56 miles) to between 500 and 1,000 km (311 to 621 miles) above our planet. Temperatures climb sharply in the lower thermosphere (below 200 to 300 km altitude), then level off and hold fairly steady with increasing altitude above that height.
- **Hence, only statements 2 and 4 are correct.**

**Q 59. C**

- **Leachate is a liquid that seeps through solid wastes or other medium and has extracts of dissolved or suspended material from it.**
- Leachate generation is a major problem for municipal solid waste (MSW) landfills and causes significant threat to surface water and groundwater. A highly contaminated liquid called leachate is generated from decomposition of garbage and precipitation that infiltrates and percolates downward through the volume of waste material. When leachate reaches and mixes with groundwater or seeps into nearby bodies of surface water, public health and environmental quality are jeopardized.

**Q 60. B**

- **Statement 1 is not correct:** Global Footprint Network is an independent think tank originally founded in 2003. It was established as a charitable not-for-profit organization.Global Footprint Network develops and promotes tools for advancing sustainability, including the ecological footprint and biocapacity, which measure the amount of resources we use and how much we have. These tools aim at bringing ecological limits to the center of decision-making.
- Every year, Global Footprint Network produces a new edition of its National Footprint Accounts, which calculate Ecological Footprint and biocapacity of more than 200 countries and territories from 1961 to the present. It has also launched Ecological Footprint Explorer, an open data platform for the National Footprint Accounts.
- **Statement 2 is correct:** Earth Overshoot Day marks the date when humanity’s demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year. Earth Overshoot Day is hosted and calculated by Global Footprint Network.
- **World Summit on Sustainable Development, 2002 (WSSD)**
  - Also known as the Earth Summit, it was held in Johannesburg, South Africa. It was convened to discuss sustainable development by the United Nations. WSSD gathered a number of leaders from business and non-governmental organizations, 10 years after the first Earth Summit in Rio de Janeiro. (It was therefore also informally nicknamed "Rio+10").

**Q 61. D**

- **Semi-clustered or fragmented settlements** may result from a tendency of clustering in a restricted area of dispersed settlement. More often such a pattern may also result from **segregation or fragmentation of a large compact village.**
- In this case, **one or more sections of the village society choose or are forced to live a little away from the main cluster or village. In such cases, generally, the land-owning and dominant community occupies the central part of the main village, whereas people of lower strata of society and menial workers settle on the outer flanks of the village.**
- Such settlements are widespread in the Gujarat plain and some parts of Rajasthan.

**Q 62. D**

- **Recent Context: Union Ministry of Electronics and Information Technology (MeitY) proposed amendments to Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 (IT Rules 2021) to check misuse of Synthetically Generated Information, including Deepfakes.**
- The amended Rules shall come into effect from November 15, 2025 and be called as Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2025.
- **Proposed amendments aim to strengthen due diligence obligations of intermediaries' particularly Social Media Intermediaries (SMIs) and Significant Social Media Intermediaries (SSMIs).**
- **About Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021**
  - **Originally notified in 2021 and subsequently amended in 2022 and 2023.** They prescribe-
  - Framework for regulation of content by online publishers of news and current affairs content, and curated audio-visual content.
  - Due diligence obligations on intermediaries, including SMIs with objective of ensuring online safety, security and accountability.
  - Defines SMIs and SSMIs as:
    - SMI means an intermediary which primarily or solely enables online interaction between two or more users and allows them to create, upload, share, disseminate, modify or access information using its services.
    - SSMIs mean a social media intermediary having number of registered users in India above such threshold as notified by Central Government.
  - **Defines Synthetically Generated Information (SGI):** Information that is artificially or algorithmically created, generated, modified or altered using a computer resource, in a manner that appears reasonably authentic or true. **SGI covers all content forms—text, audio, visual—not just text from AI chatbots. Hence statement 1 is not correct.**
  - The rules **mandates that intermediaries offering computer resources enabling creation or modification of SGI must ensure such information is labelled or embedded with a permanent unique metadata or identifier.**
    - In case of **visual content, label should cover at least 10 percent of the total surface area,** and in case of **audio content, it should cover the initial 10 percent of the total duration. Hence statement 2 is not correct.**
    - **Label or identifier must enable immediate identification of content as SGI.**

- **Prohibits intermediaries from modifying, suppressing, or removing such labels or identifiers. Hence statement 3 is not correct.**

- **Significant Social Media Intermediaries (SSMIs): It requires SSMIs to** obtain a user declaration on whether uploaded information is synthetically generated; deploy reasonable and proportionate technical measures including automated tools or other suitable mechanisms to verify such declarations; ensure that SGI is clearly and prominently displayed with an appropriate label or notice. If they fail to comply, the platforms may lose the legal immunity they enjoy from third-party content.

**Q 63. A**

- **Recent Context:** Union Minister of State for Health and Family Welfare recently launched the third edition of the **Tobacco Free Youth Campaign 3.0 at a hybrid event**.Efforts to curb tobacco use have gained renewed urgency in India, with recent reports highlighting a significant tobacco user base and policy measures such as stronger packaging regulations and expanded tobacco control campaigns. The legislative and programmatic framework for tobacco control has been under frequent review, particularly with rising concerns about emerging products like e-cigarettes.
- The country has enacted strict legal measures while also adapting to new threats such as electronic nicotine delivery systems (ENDS).
- India's **Cigarettes and Other Tobacco Products Act (COTPA) 2003** forms the cornerstone of tobacco control, prohibiting sales to minors, restricting advertising, and mandating health warnings. It **prohibits sale of tobacco products to persons under 18 years. Hence statement 1 is correct.**
- The **National Tobacco Control Programme (NTCP)** was introduced under the Ministry of Health and Family Welfare to implement and coordinate tobacco control efforts nationwide.
- The **Prohibition of Electronic Cigarettes Act, 2019**, strictly **bans all forms of production, manufacture, import, export, storage, sale, and advertisement of e-cigarettes, without exceptions for regulated/ licensed retail sales. Hence statement 2 is not correct.**
- Tobacco control has implications for non-communicable disease prevention, youth protection, and the achievement of national and global public health goals such as those outlined by the World Health Organization.

**Q 64. A**

- **Temperate Continental (Steppe) Climate:**
  - A steppe is a dry, grassy plain. Steppes occur in temperate climates, which lie between the tropics and polar regions.Temperate regions have distinct seasonal temperature changes, with cold winters and warm summers.Though they lie in the Westerly wind belt, they are so remote from the maritime influence that the grasslands are practically treeless.In the northern hemisphere, the grasslands are far more extensive and are entirely continental. **Hence statement 1 is correct.**
  - In Eurasia, they are called the Steppes, and stretch eastwards from the shores of the Black Sea across the great Russian plain to the foothills of the Altai Mountains, a distance of well over 2,000 miles.
  - In the southern hemisphere, there is a maritime influence in the steppe type of climate.Its annual precipitation is always more than the average 20 inches because of the warm ocean currents that wash the shores of the steppe-lands here. Pretoria, in South Africa, has an annual precipitation of 26 inches with the wettest months in November, December, January and February, the summer season of the southern hemisphere. There are three months (June, July and August) without any

rain. This is the period of drought. The dry season is particularly pronounced in temperate grasslands adjoining deserts, for example in Australia. **Hence statement 2 is not correct.**

**Q 65. C**

- **REDD+ is a framework created by the UNFCCC Conference of the Parties** (COP) to guide activities in the forest sector that reduces emissions from deforestation and forest degradation, as well as the sustainable management of forests and the conservation and enhancement of forest carbon stocks in developing countries. **Hence statement 1 is correct and statement 2 is not correct.**
  - REDD+ goes beyond simply deforestation and forest degradation and includes the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks.
- It aims at the implementation of activities by national governments to reduce human pressure on forests that result in greenhouse gas emissions at the national level, but as an interim measure also recognizes subnational implementation. **The implementation of REDD+ activities is voluntary and depends on the national circumstances, capacities and capabilities of each developing country and the level of support received. Hence statement 3 is correct.**
- The framework is commonly referred to as the Warsaw Framework for REDD+ (WFR) adopted at COP 19 in Warsaw, December 2013 and provides the complete methodological and financing guidance for the implementation of REDD+ activities.
  - REDD+ is also recognized in Article 5 of the Paris Agreement, where Parties re-iterated the encouragement to implement REDD+ activities, and that these should be an integral element of the Paris Agreement. Therefore, the WFR is a foundation for Parties engaged in REDD+ to fulfill the highest level of commitment to climate actions in the forest sector.
- Complying with the UNFCCC decisions on REDD+, India has prepared its National REDD+ Strategy. The Strategy builds upon existing national circumstances which have been updated in line with India's National Action Plan on Climate Change, Green India Mission, and India's Nationally Determined Contribution (NDC) to UNFCCC.

**Q 66. B**

- Global Forest Resources Assessment 2025 GFRA, **released every five years by FAO**, was published during the Global Forest Observations Initiative (GFOI) Plenary in Bali, Indonesia. GFOI is a flagship programme of the Group on Earth Observations (GEO), which is a network of governments, academia, organisations, civil society and the private sector aiming to harness the power of Earth Intelligence. o India is a member of GEO. **Hence, statement 1 is not correct**.
- India has achieved a significant milestone in global forest statistics by advancing to the 9th position worldwide in terms of total forest area, according to the Food and Agriculture Organization (FAO)'s Global Forest Resources Assessment (GFRA) 2025 released on 22 October 2025. In the previous assessment, India was ranked 10th. India has also maintained its 3rd position globally in the annual net gain of forest area. **Hence, statement 2 is correct.**
- **Key highlights of GFRA 2025**
- Forest extent: Forests cover 4.14 billion hectares, or 32% of the global land area.
- Nearly half of the world's forests are located in the tropics, followed by boreal, temperate and subtropical domains. Europe has the largest forest area, accounting for 25% of the world's total.
- **India's Forest Extent:**
  - India moved up one rank to 9th position in terms of total forest area globally, accounting for 2% of global forest area.

- India ranks 5th in terms of rubber plantations.
- Deforestation and expansion: Deforestation slowed to 10.9 million hectares per year in 2015–2025, down from 17.6 million in 1990–2000.
- Natural Regeneration: More than 90% of the world's forests are regenerating naturally.
- Carbon Stock: Forest carbon stocks have increased, reaching 714 gigatonnes, with soil holding the majority of forest carbon stock, followed by living biomass, litter and deadwood.

**Q 67. B**

- **The Bonn Challenge** is a global effort to bring 150 million hectares of deforested and degraded land into restoration by 2020 and **350 million hectares by 2030.**
- It is an implementation vehicle for **national priorities** such as water and food security and rural development while contributing to the achievement of international climate change, biodiversity, and land degradation commitments.
- **Launched** by the **Government of Germany and IUCN**, the Bonn Challenge unites nations and regions in bringing landscapes into restoration, to halt and reverse the effects of land degradation.
- Underlying the Bonn Challenge is the forest landscape restoration approach, which **aims to restore ecological integrity** at the same time as **improving human well-being** through multifunctional landscapes.
- The restoration of 150 million hectares of degraded and deforested lands in biomes around the world – in line with the forest landscape restoration (FLR) approach – **will create approximately US$ 84 billion per year in net benefits** that could bring direct additional income opportunities for rural communities. About **90% of this value is potentially tradable**, meaning that it encompasses market-related benefits. Achieving the 350 million hectare goal will generate about US$ 170 billion per year in net benefits from watershed protection, improved crop yields, and forest products, and could **sequester up to 1.7 gigatonnes of carbon dioxide** equivalent annually.
- The Bonn Challenge is not a new global commitment but rather a practical means of realizing many existing international commitments, including the CBD Aichi Target 15, the UNFCCC REDD+ goal, and the Rio+20 land degradation neutrality goal.
- **Hence option (b) is the correct answer.**

**Q 68. A**

- Evolutionarily Distinct and Globally Endangered (EDGE) species are animal species which have a high 'EDGE score', a metric combining endangered conservation status with the genetic distinctiveness of the particular taxon. Distinctive species have few closely related species, and EDGE species are often the only surviving member of their genus or even higher taxonomic rank. The extinction of such species would therefore represent a disproportionate loss of unique evolutionary history and biodiversity.
- The Zoological Society of London launched the EDGE of Existence Programme in 2007 to raise awareness and funds for the conservation of these species. As of 2019, the programme has awarded **97 fellows funds to help conserve 87 different species in over 40 countries.**
- The largetooth sawfish has the highest ranking score of any EDGE Species. **Hence option (a) is the correct answer.**
- Focal species are typically selected from the priority EDGE species. These species are conserved by 'EDGE Fellows', who collect data on these species and develop conservation action plans.

- Some of the EDGE species found in India are: Ganges River Dolphin, Chinese Pangolin, Purple frog, Toad-skinned frog.

**Q 69. C**

- The **Jhelum**, an important tributary of the Indus, rises from a spring at Verinag situated at the foot of the Pir Panjal in the southeastern part of the valley of Kashmir. It flows through Srinagar and the Wular lake before entering Pakistan through a deep narrow gorge.
- The **Chenab** is the largest tributary of the Indus. It is formed by two streams, the Chandra and the Bhaga, which join at Tandi near Keylong in Himachal Pradesh. Hence, it is also known as Chandrabhaga. The river flows for 1,180 km before entering Pakistan.
- The **Ravi** is another important tributary of the Indus. It rises west of the Rohtang pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state. Before entering Pakistan and joining the Chenab near Sarai Sidhu, it drains the area lying between the southeastern part of the Pir Panjal and the Dhauladhar ranges.
- The **Satluj** originates in the 'Raksas tal' near Mansarovar at an altitude of 4,555 m in Tibet where it is known as Langchen Khambab. It flows almost parallel to the Indus for about 400 km before entering India and comes out of a gorge at Rupar. It passes through the Shipki La on the Himalayan ranges and enters the Punjab plains. It is an antecedent river. It is a very important tributary as it feeds the canal system of the Bhakra Nangal project.
- 

- **Hence, option (c) is the correct answer.**

**Q 70. B**

- **Statement 1 is not correct:** National Afforestation and Eco-Development Board (NAEB) was set up in 1992 under the Ministry of Environment, Forest and Climate Change. It wasn't set up under the provisions of the Forest Conservation Act, 1980.
- **Statement 2 is correct:** It is responsible for promoting afforestation, tree planting, ecological restoration and eco-development activities in the country, with special attention to the degraded

forest areas and lands adjoining the forest areas, national parks, sanctuaries and other protected areas as well as the ecologically fragile areas like the Western Himalayas, Aravallis, Western Ghats, etc.

- National Mission for a Green India or the commonly called Green India Mission (GIM), is one of the eight Missions outlined under India's action plan (National Action Plan on Climate Change) for addressing the challenge of climate change. It is aimed at protecting, restoring and enhancing India's diminishing forest cover and responding to climate change by a combination of adaptation and mitigation measures. It has the broad objective of both increasing the forest and tree cover by 5 million ha, as well as increasing the quality of the existing forest and tree cover in another 5 million ha of forest/non-forest lands in 10 years.
- **Statement 3 is not correct:** NAEB doesn't act as the nodal agency for the implementation of the Green India Mission at the national level. At the national level, the Mission is set up as an autonomous Society under the aegis of the Ministry of Environment, Forest and Climate Change (MoEFCC) to facilitate smooth implementation of the Mission. The Governing Council of the Society, Chaired by the Minister for Environment and Forests, Government of India and drawing upon cross-sectoral representation, provides the overall guidance. In addition, the National Executive Council (NEC) chaired by the Secretary of Ministry of Environment and Forest has the overall responsibility for the Mission which approves the Perspective Plans & Annual Plan of Operations (APOs) submitted by States.

**Q 71. B**

- Eco-sensitive zones (ESZ) were formulated by the Ministry of Environment and Forests to ensure that these areas act as "shock absorbers" for the protected areas against any non-forest activity by way of regulating, managing, and prohibiting such activities around ecologically fragile areas.
- This was a part of the action plan envisaged in the 'Wildlife Conservation Strategy', adopted in 2002. The basic aim of these guidelines was to regulate certain activities around protected areas so as to minimize the negative impacts of activities such as mining, power projects, etc. in the fragile ecosystem encompassing the PAs.
- According to the guidelines, **activities including commercial mining, the setting of sawmills and industries causing pollution, commercial use of firewood, and establishment of major hydropower projects, are prohibited in such areas.** It also prohibits tourism activities like flying over protected areas in an aircraft or hot air balloon, and discharge of effluents and solid waste in natural water bodies or terrestrial areas. **Hence options 1 and 2 are correct.**
- **Felling of trees, drastic change in agriculture systems and commercial use of natural water resources, movement of vehicular traffic, groundwater harvesting and setting up of hotels and resorts, are the activities regulated in the areas. Hence option 3 is not correct.**
- On the other hand, **activities permitted in the areas include ongoing agriculture and horticulture practices by local communities, rainwater harvesting, organic farming,** adoption of green technology, and use of renewable energy sources. The width of the ESZ and type of regulation differs from one protected area to the other. However, as a general principle, the width of the ESZ is 10 km around the protected area. **Hence option 4 is not correct.**

**Q 72. A**

- The Global Environment Facility (GEF) was established on the eve of the 1992 Rio Earth Summit to help tackle most pressing environmental problems. The GEF unites countries in partnership with international institutions, civil society organizations (CSOs), and the private sector to address global

environmental issues while supporting national sustainable development initiatives. The following funds are managed by GEF -:

- Special Climate Change Fund**. Hence option 1 is correct.**
- Least Developed Countries Fund**. Hence option 2 is correct.**
- GEF Trust Fund - Climate Change focal area

- **Adaptation Fund (AF)**
  - It was established in 2001 to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change. The Adaptation Fund is financed with a share of proceeds from the clean development mechanism (CDM) project activities and other sources of funding.
  - **It is supervised and managed by the Adaptation Fund Board (AFB).** The AFB is composed of 16 members and 16 alternates and meets at least twice a year (Membership of the AFB). **Hence option 3 is not correct.**

**Q 73. C**

- **The Kyoto Protocol was an international treaty that extended the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits state parties to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and that human-made CO2 emissions are driving it.**
- The Kyoto Protocol was entered into force on 16 February 2005. The Kyoto Protocol implemented the objective of the UNFCCC to reduce the onset of global warming by reducing greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system.
- **The Kyoto Protocol applied to the seven greenhouse gases listed in Annex A: carbon dioxide (CO2), Methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), nitrogen trifluoride (NF3). Nitrogen trifluoride was added for the second compliance period during the Doha Round. Hence option (c) is the correct answer.**
- The Protocol's first commitment period started in 2008 and ended in 2012. All 36 countries that fully participated in the first commitment period complied with the Protocol. A second commitment period was agreed to in 2012 to extend the agreement to 2020, known as the Doha Amendment to the Kyoto Protocol, in which 37 countries had binding targets.

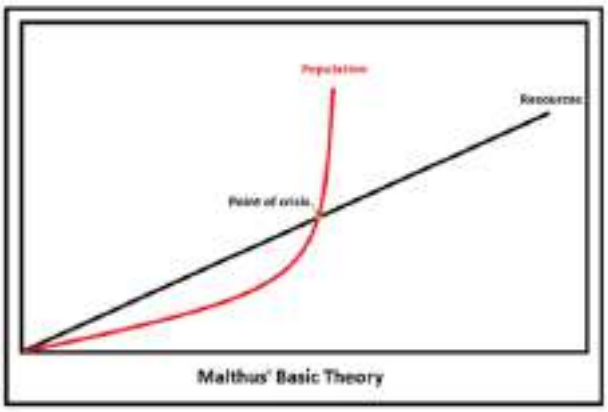
**Q 74. D**

- **Recent Context:** India recently conducted its **first DNA-based Synchronous All India Population Estimation of Elephants (SAIEE)**, reflecting a significant development in wildlife conservation and scientific enumeration methods. Insights from this exercise offer a more accurate picture of the wild Asian elephant population across the country and help inform conservation policy. **Hence statement 1 is correct.**
- By utilizing DNA fingerprinting, the technique overcomes challenges associated with under- or over-counting elephants in diverse and difficult terrains. This approach increases the accuracy of population estimates and provides valuable data for biological and geographical analysis.
- The SAIEE adopted DNA-based methods (from dung samples) to replicate individual identities and avoid double counting.
- The estimation was **conducted by the Wildlife Institute of India under the aegis of Project Elephant, not the Zoological Survey of India. Hence statement 2 is correct.**

- **Wild Asian elephants in India inhabit multiple landscapes, notably the Himalayan foothills, the North East, East-central India, and the Western and Eastern Ghats. Hence statement 3 is correct.**
- Asian elephants have one of the longest gestation periods among mammals, around 20–22 months.

**Q 75. A**

- **In his 1798 work,** An Essay on the Principle of Population, Malthus examined the relationship between population growth and resources. From this, he developed the Malthusian theory of population growth in which he wrote that population growth occurs exponentially, so it increases according to birth rate. On the other hand, food production increases arithmetically (linear), so it only increases at given points in time. Malthus wrote that, left unchecked, populations can outgrow their resources. **Hence option (a) is the correct answer.**




- Marx believed that the nature of economic relations in Europe's industrial societies was the central problem for the world's rapidly growing population. **Marx dismiss Malthusian notion** that the rising world population, rather than capitalism, was the cause of ills. **Marx's argued that when society is well ordered, increases in the population should lead to greater wealth, not hunger and misery.** In contrast, he saw that the problem was the evils of the capitalist system. Marx was of the view that this problem is only possible in a capitalist society and not rising world population.
- **The demographic transition theory** is a generalised description of the changing pattern of mortality, fertility and growth rates as societies move from one demographic regime to another. According to this theory, **economic development has the effect of bringing about a reduction in the death rate.**

**Q 76. C**

- **Statement 1 is correct:** Famous Copper extraction mines in India are Khetri, Alwar, Bhilwara, and Udaipur in Rajasthan, Balaghat in Madhya Pradesh, Hazaribagh and Singhbhum in Jharkhand.
- **Statement 2 is correct:** Famous Bauxite mines in India are Katni, Amarkantak in Madhya Pradesh, Bilaspur and Maikala Hills in Chhattisgarh, Koraput in Odisha.

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**Q 77. D**

- **Recent Context: Prime Minister Narendra Modi launched the Pradhan Mantri Dhan-Dhaanya Krishi Yojana (PMDDKY) on October 11, 2025**, at IARI Pusa, New Delhi. With an **annual outlay of Rs 24,000 crore for six years** starting from FY 2025–26, **the scheme aims to transform agriculture in 100 underdeveloped districts across India.**
- **Pradhan Mantri Dhan-Dhaanya Krishi Yojana (PMDDKY) is a farmer-centric initiative launched by the Prime Minister to boost agricultural productivity and rural incomes. Instead of creating new programmes, the scheme brings together 36 existing Central schemes and aligns them with state-level initiatives to directly benefit farmers.**
- **Policy Development:** The scheme originates from the intent to streamline and revamp 36 agricultural schemes across 11 ministries, including flagship programs such as PM-KISAN (cash transfers), PM Fasal Bima Yojana (crop insurance), and PMKSY (irrigation).
- **Key Features:** PMDDKY operates as a **convergence platform, bringing together input subsidies, credit, training, market support, infrastructure, and risk mitigation in underperforming districts. It targets comprehensive support, encompassing subsidies, infrastructure investment, loans, and market access. Hence option (d) is the correct answer.**
- **Implementation Context:** The scheme is coordinated at national, state, and district levels, with district-level plans tailored to local needs. It involves integration with state and private sector initiatives to ensure last-mile delivery and impact.
- **Current Significance:** By addressing low productivity, water scarcity, limited credit, and market inefficiencies through convergence, the scheme seeks to double farmer incomes, improve rural livelihoods, and promote sustainable agriculture. It demonstrates a modern governance approach rooted in data-driven, holistic planning.

**Q 78. C**

- **Statement 1 is correct: Ozone layer is present in the stratosphere acts as a protective layer against harmful Ultraviolet rays**. It is also present in the troposphere as a pollutant. **In the stratosphere, it is a product of UV radiations acting on dioxygen (O2) molecules.** The UV radiations split apart molecular oxygen into free oxygen (O) atoms. These oxygen atoms combine with the molecular oxygen to form ozone.

- The main reason of ozone layer depletion is believed to be the release of chlorofluorocarbon compounds (CFCs), also known as freons. These compounds are used in refrigerators, air conditioners. Once CFCs are released in the atmosphere, they mix with the normal atmospheric gases and eventually reach the stratosphere. In the stratosphere, they get broken down by powerful UV radiations, releasing chlorine free radical. The chlorine radicals then reacts with stratospheric ozone to form chlorine monoxide radicals and molecular oxygen. Reaction of chlorine monoxide radical with atomic oxygen produces more chlorine radicals. The chlorine radicals are continuously regenerated and cause the breakdown of ozone. Thus, CFCs are transporting agents for continuously generating chlorine radicals into the stratosphere and damaging the ozone layer.
- **Statement 2 is not correct: In winter, a special type of clouds called polar stratospheric clouds are formed over Antarctica.** They contain water, nitric acid and/or sulfuric acid. They are formed mainly during the event of the polar vertex in winter; more intense at the south pole. The Chlorine-catalyzed ozone depletion is dramatically enhanced in the presence of polar stratospheric clouds (PSCs). These polar stratospheric clouds provide a surface on which chlorine nitrate formed gets hydrolyzed to form hypochlorous acid. It also reacts with hydrogen chloride produced to give molecular chlorine. **Hence, PSCs don't prevent the spread of the ozone hole, rather they promote ozone depletion.**
- **Statement 3 is correct:** The thickness of the ozone in a column of air from the ground to the top of the atmosphere is measured in terms of Dobson units (DU). One Dobson unit being equivalent to a layer of pure ozone 0.01 mm thick at standard temperature and pressure.

**Q 79. D**

- **Proportion of literate population of a country in an indicator of its socio-economic development as it reveals the standard of living, social status of females, availability of educational facilities and policies of government.** Level of economic development is both a cause and consequence of literacy. In India – literacy rate denotes the percentage of population above 7 years of age, who is able to read, write and have the ability to do arithmetic calculations with understanding.
- The division of population into rural and urban is based on the residence. This division is necessary because rural and urban life styles differ from each other in terms of their livelihood and social conditions. T**he age-sex-occupational structure, density of population and level of development vary between rural and urban areas.**
- Agriculture, forestry, fishing and mining are classified as primary activities manufacturing as secondary, trade, transport, communication and other services as tertiary and the jobs related to research, information technology and developing ideas as quaternary activities. **The proportion of working population engaged in these four sectors is a good indicator of the levels of economic development of a nation. This is because only a developed economy with industries and infrastructure can accommodate more workers in the secondary, tertiary and quaternary sector.** If the economy is still in the primitive stages, then the proportion of people engaged in primary activities world be high as it involves extraction of natural resources.
- **Hence the correct answer is option (d).**

**Q 80. C**

- Waste Minimisation Circle (WMC) programme of National Productivity Council (NPC) provides information on waste and emission minimisation and recycling of waste.
- **Statement 1 is correct:** Waste Minimization is an appropriate strategy to address the problems of industrial pollution. The scheme aims to assist the Small and Medium Scale Industries in adoption

of cleaner production practices.The objectives of the clean technology scheme are as follows:

- To develop and promote programmes for clean technologies
- To develop tools and techniques for pollution prevention
- To formulate strategies and programmes in sustainable development.
- **To prevent pollution from small scale industries.** Activities relating to demonstration of already proven cleaner technologies/techniques, preparation of sector-specific manuals on waste minimisation, setting up of 'Waste Minimisation Circles' in specific clusters of small scale industries, training and awareness programmes for the personnel in small scale industries and waste minimisation and demonstration studies in selected sector.

- **Statements 2 and 3 are correct:** Waste Minimisation Circle (WMC) is an initiative sponsored by the Ministry of Environment and Forests, Government of India under the policy framework of promoting waste minimisation in India. The formation of waste minimization circles was initiated in 1995-96 through the National Productivity Council (NPC) acting as the nodal agency and with support from the World Bank, and is part of a project that aims to promote group efforts for demonstrating cleaner production techniques, and to provide opportunities for sharing information and knowledge on pollution prevention.

**Q 81. B**

- In India, systematic surveying, prospecting and exploration for minerals is undertaken by the Geological Survey of India **(GSI),** Oil and Natural Gas Commission **(ONGC)**, Mineral Exploration Corporation Ltd. (MECL), National Mineral Development Corporation **(NMDC)**, Indian Bureau of Mines (IBM), Bharat Gold Mines Ltd. (BGML), Hindustan Copper Ltd. (HCL), National Aluminium Company Ltd. (NALCO) and the Departments of Mining and Geology in various states.
- **Geological Survey of India**
  - It was established in 1851. The principal function of GSI relate to **creation and updation of national geoscientific data and mineral resource assessment,** air-borne and marine surveys and conducting multifarious geo-technical and geo-environmental and natural hazards studies. **Hence option 1 is correct.**
- **Oil and Natural Gas Commission**
  - The Oil and Natural Gas Commission (ONGC) is a statutory corporation **involved with petroleum exploration and production entity. Hence option 2 is correct.**
- **National Mineral Development Corporation**
  - It was incorporated in 1958 as a Government of India fully owned public enterprise. It is under the administrative control of the Ministry of Steel, Government of India. Since inception it has been involved in the **exploration of wide range of minerals** including iron ore, copper, rock phosphate, limestone, dolomite, etc. **Hence option 3 is correct.**
- **Nuclear Power Corporation of India Limited (NPCIL)**
  - It is a Public Sector Enterprise under the administrative control of the Department of Atomic Energy (DAE),Government of India. The Company was registered as a Public Limited Company under the Companies Act, 1956 in September 1987 with the objectives of operating atomic power plants and implementing atomic power projects for generation of electricity in pursuance of the schemes and programmes of the Government of India under the Atomic Energy Act, 1962. **It is responsible for design, construction, commissioning and operation of nuclear power reactors. Hence option 4 is not correct.**

**Q 82. B**

- Seafloor spreading is a process that occurs at mid-ocean ridges, where new oceanic crust is formed through volcanic activity and then gradually moves away from the ridge.
- Seafloor spreading and other tectonic activity processes are the results of mantle convection. Mantle convection is the slow, churning motion of Earth's mantle. Convection currents carry heat from the lower mantle and core to the lithosphere. Convection currents also "recycle" lithospheric materials back to the mantle. **Hence, statement 1 is not correct.**
- Seafloor spreading occurs along mid-ocean ridges—large mountain ranges rising from the ocean floor. Seafloor spreading occurs at divergent plate boundaries. As tectonic plates slowly move away from each other, heat from the mantle's convection currents makes the crust more plastic and less dense. The less-dense material rises, often forming a mountain or elevated area of the seafloor. **Hence, statement 2 is correct.**
- Eventually, the crust cracks. Hot magma fueled by mantle convection bubbles up to fill these fractures and spills onto the crust. This bubbled-up magma is cooled by frigid seawater to form igneous rock. This rock (basalt) becomes a new part of Earth's crust.
- Seafloor spreading is not consistent at all mid-ocean ridges. Spreading rate is the rate at which an ocean basin widens due to seafloor spreading. Spreading rates determine if the ridge is fast, intermediate, or slow. As a general rule, fast ridges have spreading (opening) rates of more than 90 mm/year. Intermediate ridges have a spreading rate of 40–90 mm/year while slow-spreading ridges have a rate less than 40 mm/year.
- Slowly spreading ridges are the sites of tall, narrow underwater cliffs and mountains. Rapidly spreading ridges have a much more gentle slope. **Hence, statement 3 is correct.**

**Q 83. B**

- **In 1854, the first modern cotton mill was established in Mumbai.** This city had several advantages as a cotton textile manufacturing center. It was very close to the cotton-producing areas of Gujarat and Maharashtra. Raw cotton used to be brought to Mumbai port to be transported to England. Therefore, cotton was available in Mumbai city itself.
- **Indian Railway was introduced in 1853** when a line was constructed from Bombay to Thane covering a distance of 34 km.
- Kolkata, being the capital city of British India(1773-1911), attracted the British capital. The establishment of **the first jute mill at Rishra in 1855** ushered in the era of modern industrial clustering in this region.**Hence the correct chronological order is 2-1-3.**

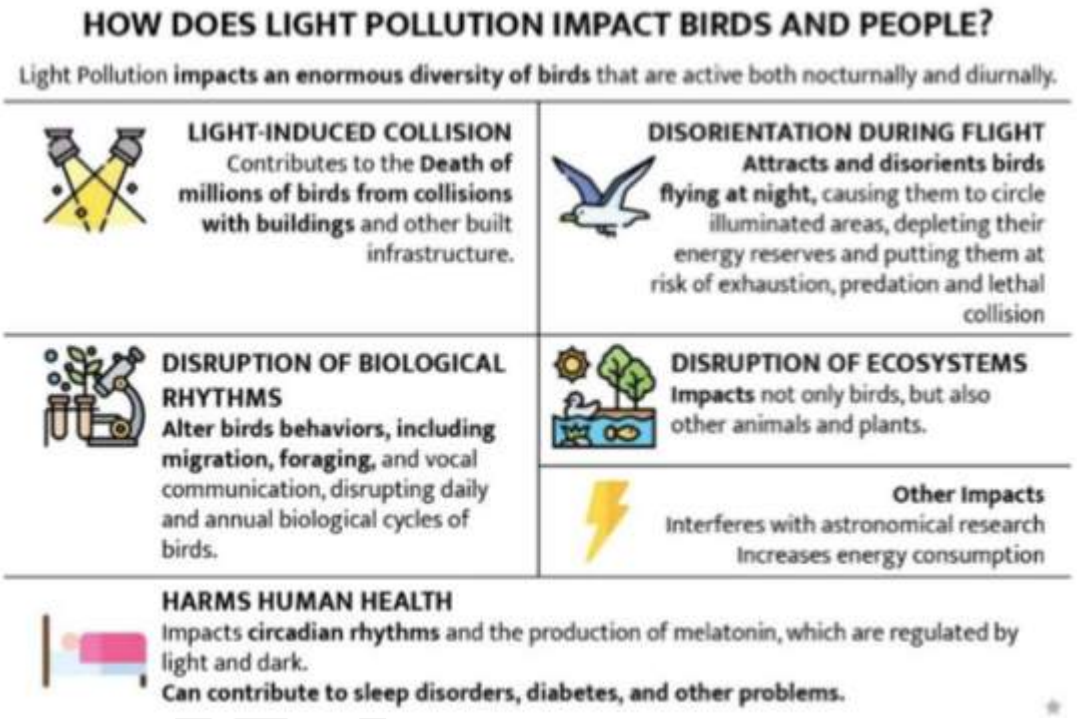
**Q 84. C**

- **Statement 1 is correct:** Temperate grasslands of the mid-latitudes produce the greatest quantity of wheat per capita amongst the world's wheat-growing nations.
- The temperate grasslands are ideal for extensive wheat cultivation.
- They are, naturally the greatest wheat exporters.
- **Statement 2 is correct:** Three-quarters of the world's wheat is winter wheat, i.e. wheat sown in winter or late autumn, and is then harvested in the summer. .
- The cool, moist spring stimulates early growth and the light showers in the ripening period help to swell the grains to ensure a good yield. They warm, sunny summer is not only advantageous for harvesting but also enables the straw to be dried for farm use.
- It is a hard wheat with a low moisture content, being ripened in the hot, sunny, continental summer. It is best for bread-making and is extensively traded.

- Spring wheat is grown in the regions where winter temperature is too cold for wheat seedlings to survive. The yield of spring wheat is hard wheat which is suitable for making cakes.

**Q 85. D**

- Why in news? 2022 International Dark Sky Week was recently conducted.
- About Light Pollution or Photo Pollution
  - Presence of excessive, misdirected, or obtrusive artificial (usually outdoor) light.
- Components of light pollution-
  - Glare – excessive brightness that causes visual discomfort.
  - Skyglow – brightening of the night sky over inhabited areas.
  - Light trespass – light falling where it is not intended or needed.
  - Clutter – bright, confusing and excessive groupings of light sources.




**Q 86. B**

- Stromboli is an island in the Tyrrhenian Sea, off the north coast of Sicily, containing Mount Stromboli, one of the four active volcanoes in Italy. It is one of the eight Aeolian Islands, a volcanic arc north of Sicily.
- **The volcano has erupted many times and is constantly active with minor eruptions, often visible from many points on the island and from the surrounding sea, giving rise to the island's nickname "Lighthouse of the Mediterranean".**
- Mount Stromboli has been in almost continuous eruption for the past 2,000–5,000 years, its last serious one occurred in 1921. **A pattern of eruption is maintained in which explosions occur at the summit craters, with mild to moderate eruptions of incandescent volcanic bombs, a type of tephra, at intervals ranging from minutes to hours. This pattern of Strombolian eruption, as it is known, is also observed at other volcanoes worldwide.**
- Eruptions from the summit craters typically result in a few short, mild, but energetic bursts, ranging up to a few hundred meters in height, containing ash, incandescent lava fragments, and stone blocks. Stromboli's activity is almost exclusively explosive, but lava flows do occur at times when volcanic activity is high.

- **Hence option (b) is the correct answer.**
- **Mt. Fuji:** Japan's Mt. Fuji is an active volcano about 100 kilometers southwest of Tokyo. Commonly called "Fuji-san," it's the country's tallest peak, at 3,776 meters.
- **Mount Vesuvius** is a somma-stratovolcano located on the Gulf of Naples in Campania, Italy, about 9 km east of Naples and a short distance from the shore. It is one of several volcanoes forming the Campanian volcanic arc.
- **Chimborazo** is a currently inactive stratovolcano in the Cordillera Occidental range of the Andes. Its last known eruption is believed to have occurred around 550 A.D. Chimborazo's summit is the farthest point on the Earth's surface from the Earth's center, given that it is located along the planet's equatorial bulge.

**Q 87. B**

- Quinary activities represent another subdivision of the tertiary sector other than quaternary activities.
- It represents special and highly paid skills of senior business executives, government officials, research scientists, financial and legal consultants, etc.
- Quinary activities are performed by the highest level of decision makers or policymakers.
- Quinary activities are services that focus on:
  - **the creation, re-arrangement and interpretation of new and existing ideas**
  - data interpretation
  - use and evaluation of new technologies.
- It is also referred to as 'gold collar' profession.
- **Outsourcing** or contracting out is giving work to an outside agency to improve efficiency and to reduce costs.

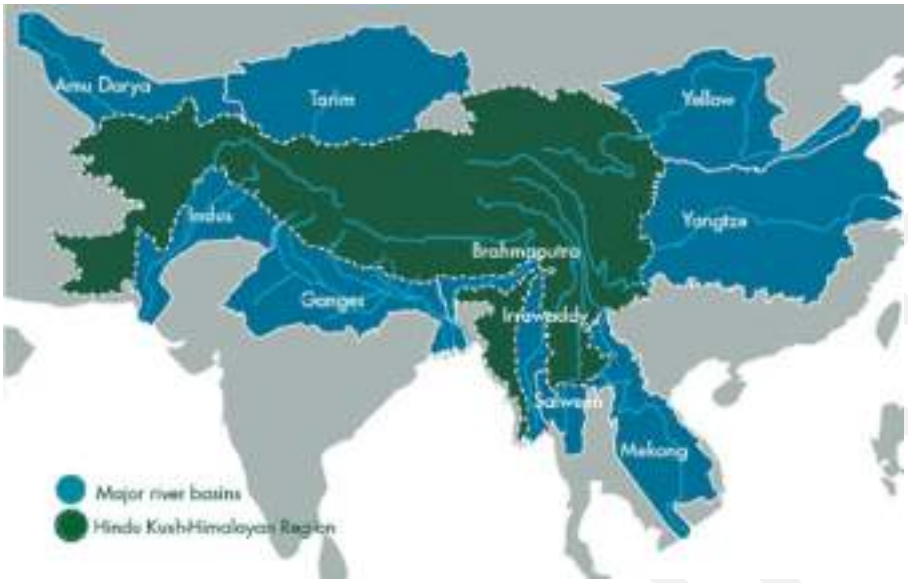
**Q 88. A**

- **The gradual reduction in the amount of global direct irradiance at the Earth's surface is called Global Dimming. In particular, it is the process of reducing the amount of solar radiation reaching the earth's atmosphere causing a drop in temperatures around the globe. It is believed that it has been caused by the increase in particulates such as sulphate aerosols in the atmosphere due to human action. Hence option (a) is the correct answer.**
- In 1990s, there was a trend from Global dimming to Global brightening, when emission of the above particulates got reduce. It is the opposite of the Global warming because it produces cooling effects. It is considered as the actual effect of carbon emissions on global warming.
- **air pollution from human activity is thought to be the major contributor in dimming process. Increased Aerosols which form from pollution can directly reflect and absorb radiation before it reaches the planet's surface and make clouds brighter and longer lasting, meaning they reflect more sunlight.**
- Global dimming has also withering effects on the atmospheric temperature of the earth as well as on the living beings as it reduces the atmospheric temperature of the Earth. As a result, precipitation will be low that causes very low rainfall, which leads to droughts.The Cooling effects causes decline of vegetation, soil erosion etc.

**Q 89. D**

- The **Hindu Kush Himalaya** is an 800-kilometer-long (500 mi) mountain range. To the north, near its northeastern end, the Hindu Kush buttresses the Pamir Mountains near the point where the

borders of China, Pakistan, and Afghanistan meet. The eastern end of the Hindu Kush in the north merges with the Karakoram Range. Towards its southern end, it connects with the Spin Ghar Range near the Kabul River.

- The **Hindu Kush Himalaya** region spans Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan. **Hence, statement 1 is not correct.**
- 

- The range has numerous high snow-capped peaks, with the highest point being Tirich Mir or Terichmir at 7,708 meters in Pakistan. The average peak height of these mountains is about 4,500 meters making it the Third Pole (after the North and South Poles) of Earth. Since it contains vast cryospheric zones, it has significant implications for climate. A recent report by the IPCC has highlighted the threat to the HKH region from global warming. It also forms the boundary between the Indus watershed in South Asia and the Amu Darya watershed in Central Asia.
- The **Rocky Mountains or the Rockies** is the mountain range dominating the western North American continent. It extends through a distance of about 4,800 km from Alberta and British Columbia to New Mexico (a part of the USA). It thus covers **only 2 countries- the USA and Canada**. **Hence, statement 2 is not correct.**
- 

- The **Andes group of mountains is the longest mountain range on land.** It is situated on the South American continent. It is home to numerous glaciers, volcanoes, grassland, desert, lakes, and forest. From Venezuela in the north, the range passes through **seven countries** including **Colombia, Ecuador, Peru, Bolivia, Argentina, and Chile**. **Hence, statement 3 is not correct.**

**Q 90. D**

- Earthquake waves are basically of two types - body waves and surface waves. **Body waves are generated due to the release of energy at the focus and move in all directions traveling through the body of the earth**. Hence, the name body waves. **Hence, statement 1 is correct.**
- The body waves interact with the surface rocks and generate a new set of waves called surface waves. These waves move along the surface.
- The velocity of waves changes as they travel through materials with different densities. **The denser the material, the higher is the velocity.** Their direction also changes as they reflect or refract when coming across materials with different densities. **Hence, statement 3 is correct.**
- The Surface waves are the last to report on a seismograph. **These waves are more destructive as compared to body waves.** They cause displacement of rocks, and hence, the collapse of structures occurs. **Hence statement 2 is correct.**

**Q 91. D**

- **United Nations Framework Classification (UNFC)**
  - UNFC is a global, principles-based and user-friendly system for classifying, managing, and reporting mineral, petroleum, renewable energy, anthropogenic resources, and injection projects. **Hence option (d) is the correct answer.**
  - It was adopted in 2004 by the United Nations Economic Commission of Europe (UNECE).
  - The UNFC consists of a three-dimensional system with the following three axes:
    - G Axis: Geological Assessment i.e. reconnaissance, prospecting, general exploration, and detailed exploration.
    - F Axis: Feasibility assessment studies
    - E Axis: Economic viability
  - The UNFC system is used for:
    - Policy formulation in energy and raw material studies

- National resources management functions
- Corporate business processes
- Financial Reporting

- UNFC currently applies to minerals, petroleum, renewable energy, nuclear fuel resources, injection projects for geological storage, and anthropogenic resources.

**Q 92. C**

- **Recent Context: In 2025, the Nobel Prize in Chemistry was awarded for the development of Metal–Organic Frameworks (MOFs),** highlighting their rapidly expanding applications in fields such as clean technology, environmental management, and advanced material science.
- **Metal–Organic Frameworks (MOFs) are highly porous crystalline materials made by linking metal ions or clusters with organic ligands.** Their **tunable structure** and **enormous surface area** enable selective capture, storage, and release of a wide variety of molecules. This makes MOFs promising in environmental, industrial, and health-related applications.
- **Policy Development**: MOFs are at the forefront of sustainable materials research, with applications aligned to national and global priorities such as water security, pollution mitigation, and critical minerals recovery.
- **Key Features**: MOFs have large, adjustable cavities, high chemical selectivity, stability, and can be engineered for specific molecular interactions.
  - **Implementation Context**: MOFs bridge chemistry, engineering, and environmental sciences, providing material solutions to challenges like atmospheric water scarcity, preservation of perishables, and recycling of strategic minerals.
  - **Current Significance**: Recent advances have led to real-world demonstrations of MOF-enabled water harvesting in arid climates, improved packaging for fresh produce, and experimental recovery of rare-earth elements from industrial waste streams—addressing pressing economic, nutritional, and technological needs.
- **Statement 1 is correct:** MOFs can absorb water vapor from dry air and release liquid water—useful for arid region water harvesting.
- **Statement 2 is correct:** Certain MOFs can trap ethylene gas, slowing ripening and spoilage of fruits in packaging.
- **Statement 3 is correct:** MOFs are being researched for selective extraction of rare-earth elements from wastewater.
- **Hence, option (c) is the correct answer.**

**Q 93. A**

- Coal is one of the important minerals which is used in the generation of thermal power and smelting of iron ore. It is one of the most mined minerals from the earth. Of the three fossil fuels (petroleum, natural gas, and coal), coal has the most widely distributed reserves; coal is mined in over 100 countries, and on all continents except Antarctica. The largest proved reserves are found in the United States, Russia, China, Australia, and India. Some of the major areas of Coal deposits continent-wise are -:
  - **Asia**
  - India – Damodar valley, Raniganj, Bokaro, Jharia, Singareni. Pakistan - Quetta, Kalabagh and Thar coalfields
  - China – Shanxi, Fushun, Inner Mongolia, Kansu

- Japan – Chikugo coalfield, Ishikari coalfield

- **Europe**
  - Moscow -Tula coalfields
  - Kuznetsk coal basin
  - Karaganda basin. It is located in the area of Karaganda and in the centre of the Karaganda oblast of Kazakhstan. The terrain of the basin is mainly steppes and bare hills and has huge coal deposits. Silesia coalfieldsRuhr Valley of Germany
- **North America**
  - Pennsylvania anthracite field
  - Appalachian bituminous field
  - Eastern Illinois field – Illinois, Indiana, and Kentucky
  - Western interior field – Iowa, Missouri, Oklahoma
- **Africa**
  - Transvaal and Natal – Middleburg, Vereeniging and Witbank
  - Zimbabwe – Wankie
  - Zaire – Luena
  - Mozambique – Maniamba
- **South America**
  - Brazil – Santa Catarine and Rio grande de sul
  - Chile – Concepcion
  - Columbia – Cauca valley coalfield

**Q 94. D**

- **Recent Context: In recent years, the Arabian Sea Mini Warm Pool (MWP)** has become an important focus in the study of monsoonal dynamics, **particularly for understanding the variability and onset of the Indian Summer Monsoon. Climatologists and meteorologists have highlighted its role in influencing weather patterns over the Indian subcontinent.**
- The **Arabian Sea Mini Warm Pool refers to a distinct, recurrent area of unusually high sea surface temperatures (SST) in the southeastern Arabian Sea, often near the Kerala coast forming just prior to the onset of the southwest monsoon.** This feature is closely linked to the processes that trigger and sustain the monsoon, as well as to the inter-annual variability of rainfall in India. **Hence statements 1, 2 and 3 are not correct.**
- **Physical Characteristics**: A 'warm pool' is defined by elevated sea surface temperatures, typically above 28°C, and is associated with enhanced moisture and convection.
- **Role in Monsoon Dynamics**: The presence of the warm pool increases the evaporation and atmospheric moisture, creating favorable conditions for convection and monsoon onset.
- **Climatological Importance**: These pools periodically influence regional climate, storm formation, and rainfall intensity over peninsular India.
- **Broader Impact**: Studying warm pools aids the prediction of monsoon variability and supports early warning systems for agricultural and water resource management.

**Q 95. C**

- **Tibetan High is a warm anticyclone** (in this wind are changing in a clock-wise direction in the Northern Hemisphere and it will have always outflow of winds) located over Tibetan Plateau

(centre latitude at 28ºN, longitude 98ºE) in the middle/upper troposphere during the monsoon period. **Hence, statement 1 is correct.**

- It is marked at 300 hPa level with centre 30ºN, 90ºE and extends 70ºE-110ºE. The outflow of winds from Tibetan High as the easterly flow concentrates into **jet stream centred near about the latitude of Chennai** at 150 hPa in July.
- The jet stream runs from the east coast of Vietnam to the west coast of Africa. Thus, the location of the Easterly Jetstream seems to influence the pattern of monsoon rainfall. Shifting its position east or west causes variation in monsoon activity over India.
- The Tibetan 'High' may sometimes shift much to the west of its usual position. In such a situation, the monsoon may extend further westward into **Pakistan and in extreme cases into north Iran,** though such a westward position of the Tibetan 'High' would be against its origin in the heating effect of the Tibetan Plateau. **Hence, statement 2 is correct.**

**Q 96. A**

- **The anti-greenhouse effect is a mechanism** with the consequence of **cooling the surface temperature of a planet.**
- The gases and dust particles that are thrown into the atmosphere during volcanic eruptions have influences on climate. **Most of the particles spewed from volcanoes cool the planet by shading incoming solar radiation.**
- **Stratospheric sulfur aerosols** are sulfur-rich particles which exist in the stratosphere region of the Earth's atmosphere. The layer of the atmosphere in which they exist is known as the Junge layer or stratospheric aerosol layer. These particles consist of a mixture of sulfuric acid and water. They are created naturally, such as by photochemical decomposition of sulfur-containing gases. **When present in high levels they produce a cooling effect, by reflecting sunlight, and by modifying clouds as they fall out of the stratosphere.** This cooling may persist for a few years before the particles fall out.
- **HFCs or hydrofluorocarbons are super greenhouse gases**, manufactured for use in refrigeration, air conditioning, foam blowing, aerosols, fire protection and solvents. **HFCs unlike most other greenhouse gases are not waste products but are intentionally produced.** HFCs were developed as alternatives to ozone-depleting substances that are being phased-out under the Montreal Protocol. Unfortunately, HFCs have a global warming potential 1000 to 3000 times that of carbon dioxide.
- **Hence option (a) is the correct answer**.

**Q 97. C**

- **Recent Context:** The **"Vital Statistics of India 2023" report, released by the Registrar-General of India under the Civil Registration System (CRS)**, showed India's demographic transition and post-pandemic normalization in population dynamics.
  - In 2023, India enacted **amendments to the Registration of Births and Deaths Act, 1969 to modernize and strengthen the Civil Registration System (CRS), introducing digital processes and centralised data management for birth and death registrations.** The CRS continues to be a vital tool for demographic and health planning and administrative governance at national, state, and local levels. **Hence statement 1 is correct.**
  - The **Civil Registration System (CRS) is a unified system established across India for the continuous, permanent, compulsory, and universal recording of vital events such as births, deaths, and stillbirths.** Effective civil registration provides reliable data for planning, policy making, and ensuring legal identity and entitlements for citizens.

- The CRS derives its **legal authority from the Registration of Births and Deaths Act, 1969, mandating compulsory recording of births, deaths, and stillbirths across India. The system is administered by the Office of the Registrar General of India under the Ministry of Home Affairs.**
- CRS operations are decentralized, functioning through a network of local registrars at the village, town, and urban local body levels. Amendments adopted recently have enhanced digital registration, with central and state-level electronic databases developed for streamlined registration, updating, and retrieval of records.
- The CRS is limited to the registration of births, deaths, and stillbirths as per the Act, and **does not include events like marriages and divorces which are recorded under separate legal provisions and mechanisms. Hence statement 3 is correct.**
- The **2023 amendment strengthened digital registration provisions, created a legal basis for online systems, and enabled national and state population databases, improving ease of access, certification, and planning. Hence statement 2 is not correct.**

**Q 98. C**

- **Perform Achieve and Trade (PAT) scheme is a flagship program of the Bureau of Energy Efficiency under the National Mission for Enhanced Energy Efficiency (NMEEE).** NMEEE is one of the eight national missions under the National Action Plan on Climate Change (NAPCC) launched by the Government of India in the year 2008.
- **PAT scheme is a market-based compliance mechanism to accelerate improvements in energy efficiency in energy-intensive industries.** The energy savings achieved by notified industries is converted into tradable instruments called Energy Saving Certificates (ESCerts). The ESCerts after issuance by the Bureau of Energy Efficiency are traded at Power Exchanges.
- **Hence, option (c) is the correct answer.**

**Q 99. A**

- Global reserves of the following minerals are as follows:
  - Gold - 42 Metric Tons (Mt)
  - Silver - 780 Mt
  - Tin - 5930 Mt
  - Titanium - 2,88,600 Mt

**Table 4.2: Minerals : World Reserves, Uses and Major Producers**

| *Mineral Resources* | *Uses* | *World Reserves (Metric Tons)[a]* | *Major Producing Countries* |
|---|---|---|---|
| Bauxite | Ore of aluminium | 21,559,000 | Australia, Guinea, Jamaica, Brazil |
| Chromium | Alloys, electroplating | 418,900 | South Africa, CIS[b], India, Turkey, Zimbabwe |
| Copper | Alloys, electric wires | 3,21,000 | Chile, USA, Canada, CIS |
| Gold | Jewellery, circuitry in computers, communications equipment, dentistry | 42 | South Africa, USA, CIS, Australia, Canada |
| Iron ore | Iron and steel | 64,648,000 | CIS, Brazil, Australia, China, Canada, Venezuela, Mauritania |
| Lead | Storage batteries, solder, pipes | 70,440 | CIS, USA, Mexico, Canada, Peru |
| Manganese | Iron and steel production | 812,800 | CIS, South Africa, Gabon, Australia, Brazil, France. |
| Nickel | Stainless steel | 48,660 | CIS, Canada, New Caledonia, Norway, Dominican Republic |
| Silver | Jewellery, photography, dentistry | 780 | Mexico, USA, Peru, CIS, Canada |
| Tin | Coating on metal, tin cans, alloys, solder | 5,930 | China, Brazil, Indonesia, Malaysia |
| Titanium | Alloys; white pigment in paint, paper, and plastics | 288,600 | Australia, Norway, CIS |
| Zinc | Iron and steel, alloys, rubber products, medicines | 143,910 | Canada, Australia, CIS, China, Peru, Mexico, Spain |

**Q 100. A**

- **Recent Context:** India has rapidly strengthened its legal and regulatory frameworks to address the threat posed by deepfakes and synthetic media. Government actions have focused on data protection enforcement, digital platform accountability, and safeguarding democratic processes from AI-generated misinformation, especially during elections.
- **Deepfakes—sophisticated audio, video, or visual content generated or modified using artificial intelligence**—pose a growing challenge for personal privacy, election integrity, and social stability. The **Indian government has deployed a multi-pronged strategy involving updated IT rules, new data protection legislation, and institutional frameworks for detection, reporting, and removal of such content.**
- **Data Protection and Penalties**: The **Digital Personal Data Protection Act, 2023 mandates that any misuse of personal data**—such as **creating or circulating deepfakes without the individual's consent—can lead to investigation and substantial penalties.** This is especially important if the deepfake results in harm or privacy violation. **Hence statement 1 is correct.**
- **Cyber Crime Monitoring and Takedown**: The **Indian Cyber Crime Coordination Centre (I4C) is empowered to facilitate swift removal or disabling of access to deepfake and other unlawful content online, using powers under the IT Act and its Rules.** This supports a centralized response to emerging cyber threats. **Hence statement 2 is correct.**
- **Election-Time Protocols**: Special advisories for elections require political parties and their official digital channels to ensure that **any manipulated content (including deepfakes) is clearly labeled and, if found problematic, is taken down within a specified short window (e.g., within 3 hours of detection or reporting). Hence statement 3 is not correct.**

- **Broader Regulatory Mechanisms**: India has also integrated deepfake regulation into its digital ethics code, cybercrime reporting portals, and digital personal data protection enforcement to ensure a robust, multi-level defense.

**7.** The International Union for Conservation of Nature (IUCN) 'Green Status of Species' provides a

(a) tool to assess species recovery and conservation impact alongside extinction risk
(b) certification for sustainable forest management only
(c) legal instrument for regulating wildlife trade
(d) genetic barcoding standard for species identification

**8.** Consider the following statements regarding Alliance to End Plastic Waste:

1. It is an alliance of governmental and non-governmental organizations working under the aegis of the United Nations.
2. It is a founding strategic partner of the World Business Council for Sustainable Development.

Which of the statements given above is/are correct?

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

**9.** Consider two countries X and Y having equal amount of net cultivated area and equal population size. Farming in country X is highly mechanised and it has lesser number of agricultural population compared to country Y. In this context consider the following statements:

1. Physiological density in country X is higher than country Y.
2. Agricultural density in country X is higher than country Y.

Which of the statements given above is/are correct?

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

**10.** Which of the following factors can affect the rotational speed of Earth?

1. Tides
2. Mean sea level
3. Wind patterns

Select the correct answer using the code given below.

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

**11.** 'Human beings can conquer nature by obeying it' is a concept proposed under which of the following?

(a) Environmental determinism
(b) Possibilism
(c) Neodeterminism
(d) Humanism

**12.** Consider the following statements about AstroSat:

1. It is India's first mission dedicated exclusively to radio astronomy.
2. It operates only in the optical band and not in the X-ray or ultraviolet regions.
3. It was placed in a geostationary orbit to continuously observe the same region of the sky.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) None

**13.** Which of the following shapes of an age-sex pyramid is/are correctly matched with population growth trends?

| ***Shape of the Pyramid*** | | ***Population Growth Trend*** |
|---|---|---|
| 1. Bell-shaped | : | Constant population |
| 2. Triangular shaped | : | Expanding population |
| 3. Inverted Pyramid | : | Declining population |

Select the correct answer using the code given below.

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

**14.** Consider the following statements regarding the Online Gaming Authority framework:

1. The Authority regulates online games and maintains a registry.
2. Both social games and e-sports must register and obtain a certificate of registration.
3. Violations under the rules are only civil in nature and not criminalized.

Which of the statements given above is/are correct?

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

**15.** The WTO Agreement on Fisheries Subsidies prohibits subsidies linked to

(a) artisanal fishing within territorial seas
(b) illegal, unreported and unregulated fishing
(c) aquaculture in landlocked states
(d) domestic cold-chain development

**16.** *"The tribes are nomadic herders and food gatherers roaming around in Kalahari Desert with weapons like spear, bows and poisoned arrows to safeguard themselves and hunt their prey. They do not domesticate animals nor do they engage in agricultural activities."*

The above passage best describes which of the following tribes?

(a) Bushmen
(b) Bindibu
(c) Bedouin
(d) Tuaregs

**17.** Consider the following services provided by Ecosystem:

1. Recreation and Tourism
2. Production of Food
3. Carbon Sequestration
4. Maintenance of Genetic Diversity

How many of the above can be classified under "Supporting Services" provided by Ecosystem?

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

**18.** Which among the following best defines the purpose of "Agenda 21" of Rio Summit?

(a) Sustainable development of the Earth resources into the 21st century.
(b) Commitment to curb Green House Gases (GHGs) emissions by 2020.
(c) Technology transfer mechanisms for 21 developing countries to produce clean-energy.
(d) To mitigate climate change and plan for adoption of climate smart agriculture by 2020.

**19.** Which of the following are the salient features of the National Clean Air Programme (NCAP)?

1. It sets annual targets for curbing PM 2.5 and PM10 pollution.
2. It is a pan India mission involving all the cities of India.
3. It is a multi-stakeholder programme which involves coordination among various ministries and civil societies.
4. It lays emphasis on awareness and capacity building initiatives.

Select the correct answer using the code given below:

(a) 1, 2, 3 and 4
(b) 2, 3 and 4 only
(c) 3 and 4 only
(d) 1 and 2 only

**20.** Global Methane Tracker Report is published by

(a) International Energy Agency (IEA)
(b) United Nations Environment Programme (UNEP)
(c) World Economic Forum (WEF)
(d) Intergovernmental Panel on Climate Change (IPCC)

**21.** Which of the following bases were used in the enumeration of migration in Census 2011?

1. Rail Traffic Data
2. Place of birth
3. Place of residence

Select the correct answer using the code given below.

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

**22.** With reference to regulatory T cells (Tregs) and the FOXP3 gene, which of the following statements is/are correct?

1. FOXP3 controls the development of regulatory T cells.
2. Mutations in FOXP3 can cause the autoimmune condition known as IPEX.
3. Regulatory T cells help prevent autoimmunity by suppressing self-reactive T cells.

Select the correct answer using the code given below:

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

**23.** Consider the following statements with respect to Census in India:

1. The first complete Census was conducted in the first decade of the 20th century.
2. Population in India has steadily and continuously increased in the last century.

Which of the statements given above is/are correct?

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

**24.** Which of the following statements best describes the roles of Anabolism and Catabolism in ecological processes?

(a) Anabolism is the synthesis of complex organic compounds from simpler forms, while catabolism is the breakdown of complex organic compounds into simpler forms.

(b) Anabolism refers to the process of breakdown, whereas catabolism refers to the process of growth.

(c) Anabolism involves the conversion of solar energy into chemical energy, while catabolism is the release of stored energy through photosynthesis.

(d) Anabolism is responsible for energy storage in ecosystems, while catabolism is the release of energy during the production of organic matter.

**25.** Consider the following statements about the United Nations Convention against Cybercrime:

1. UN Office on Drugs and Crime (UNODC) served as secretariat during the negotiations which were held recently.
2. It aims to provide victims compensation and the removal of illicit content according to the standard rules made under this convention which applies to all the member States.
3. Recently, India has signed this convention.

Which of the statements given above are correct?

(a) 1 and 3 only

(b) 1 only

(c) 2 and 3 only

(d) 1, 2 and 3

**26.** With reference to Kunming-Montreal Global Biodiversity Framework (GBF), consider the following statements:

1. The framework has 23 targets to address the loss of biodiversity and restore natural ecosystems by 2030.
2. The GBF aims to protect at least 30% of the planet by 2030 and reverse ecosystem degradation.
3. The Global Environment Facility has been requested to establish a Special Trust Fund to support the implementation of the Framework.

Which of the following statements given above are correct?

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1, 2 and 3

(d) 1 and 3 only

**27.** The term "Acoustic Vehicle Alerting System (AVAS)", recently seen in the news, refers to

(a) A satellite-based alert mechanism for tracking electric vehicle (EV) movement in real time.

(b) A system designed to generate artificial sound in electric vehicles moving at low speeds to alert pedestrians and road users.

(c) An AI-enabled traffic management software to detect noise pollution near electric vehicle charging stations.

(d) A mobile application launched by the Ministry of Road Transport to report vehicle emissions.

**28.** With reference to Compressed Natural Gas (CNG), consider the following statements:

1. It is a mixture of hydrocarbons consisting of approximately 80 to 90 percent methane in gaseous form.
2. It is lead-free and lighter than air.

Which of the statements given above is/are correct?

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

**29.** Which of the following Himalayan peaks are found in India?

1. Nanda Devi
2. Nanga Parbat
3. Annapurna
4. Dhaulagiri
5. Kamet

Select the correct answer using the code given below.

(a) 1, 3, 4 and 5 only
(b) 2 and 3 only
(c) 1, 2 and 5 only
(d) 1, 2, 3, 4 and 5

**30.** Consider the following statements regarding Classical and Photochemical smog:

1. Classical smog occurs in dry and sunny climate.
2. Photochemical smog occurs in cool and humid climate.
3. While classical smog is called as reducing smog, photochemical smog is oxidising in nature.

Which of the statements given above is/are correct?

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

**31.** Arrange the following in terms of the decreasing order of albedo?

1. Snow cover
2. Sand
3. Grassland
4. Water

Select the correct answer using the code given below.

(a) 1-2-3-4
(b) 2-4-1-3
(c) 1-4-2-3
(d) 4-1-3-2

**32.** Consider the following statements with reference to the climate feedback mechanism:

1. A negative feedback has a warming effect, while positive feedback has a cooling effect.
2. Ice albedo feedback is a strong negative feedback process.

Which of the statements given above is/are correct?

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

**33.** Which of the following statements is correct regarding 'acidic lava'?

(a) These are the hottest lava and are highly fluidic.
(b) They are dark coloured, rich in iron and magnesium but poor in silica.
(c) The rapid cooling of acidic lava results in loud explosions throwing out many volcanic bombs or pyroclasts.
(d) The resultant volcano is gently sloping with a wide diameter and forming a flattened shield or dome.

**34.** Consider the following statements with respect to Koeppen's scheme of classification of Indian climatic regions:

1. It classified India into ten major climatic regions.
2. It classified the Coromandel coast of Tamil Nadu as a 'Monsoon with dry summer' climatic region.

Which of the statements given above is/are ***not*** correct?

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

**35.** Consider the following places:

1. Three Mile Island
2. Chernobyl
3. Fukushima
4. Deepwater Horizon (Gulf of Mexico)

How many of the above given places are associated with nuclear accidents?

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

**36.** Consider the following statements regarding the Central Asian Mammals Initiative (CAMI):

1. It was launched in 2014 to coordinate conservation efforts for all mammal species in Central Asia.
2. It works under the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

Which of the statements given above is/are ***not*** correct?

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

**37.** Consider the following statements regarding Ecotones:

1. An ecotone is a transitional area between two different ecosystems.
2. It often contains species not found in the overalapping communities.
3. This tendency for increased biodiversity within the ecotone is referred to as adaptation

How many statements given above are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

**38.** In the context of human geography, *Sherms* and *Wurlies* are:

(a) local winds providing relief from extreme weather conditions.
(b) tea varieties cultivated across the world.
(c) milk yielding buffalo varieties.
(d) places of shelters made by tribes.

**39.** Consider the following statements regarding tropical cyclones:

1. In the Arabian Sea, most of the storms do not sustain due to high divergence created by the EL Niño Modoki.
2. When a pair of tropical cyclones form on each side of the equator, they are called as hybrid cyclones.
3. The Madden-Julian Oscillation can influence tropical cyclone numbers and strengths in nearly all ocean basins.

Which of the statements given above is/are correct?

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

**40.** Consider the following pairs:

| *Ramsar Site* | | *State* |
|---|---|---|
| 1. Wadhwana Wetland | : | Gujarat |
| 2. Bhindawas Wildlife Sanctuary | : | Uttar Pradesh |
| 3. Haiderpur Wetland | : | Andhra Pradesh |
| 4. Thol Lake Wildlife Sanctuary | : | Punjab |

Which of the pairs given above is/are correctly matched?

(a) 1 only
(b) 2 and 3 only
(c) 1, 3 and 4 only
(d) 4 only

**41.** Consider the following events:

1. Ocean formation
2. Process of photosynthesis
3. Solar winds remove hydrogen and helium from the atmosphere
4. Process of degassing

Which of the following is the correct chronological sequence of the above events?

(a) 1-3-2-4
(b) 3-4-2-1
(c) 3-4-1-2
(d) 1-3-4-2

**42.** Which of the following is/are the components of fly ash?

1. Iron Oxide
2. Potassium Oxide
3. Aluminium Oxide
4. Titanium Dioxide

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 2 only
(c) 4 only
(d) 1, 2, 3 and 4

**43.** Consider the following statements:

Statement-I: Biological oxygen demand (BOD), is the amount of dissolved oxygen needed by aerobic biological organisms to break down organic material present in a given water body.

Statement-II: The waterbody with low Biological oxygen demand (BOD) is considered highly polluted.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I.
(c) Statement-I is correct but Statement-II is incorrect.
(d) Statement-I is incorrect but Statement-II is correct.

**44.** With reference to the 'Early Warnings for All' (EW4ALL) initiative, consider the following statements:

1. It aims to ensure universal protection through multi-hazard early warning systems.
2. It is a United Nations backed programme.

Which of the statements given above are correct?

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

**45.** Consider the following statements with reference to Green India Mission:

1. It aims to enhance forest cover and forest-based livelihood income of households.
2. It is a mission under the National Action Plan on Climate Change (NAPCC).
3. It is implemented on both public as well as private lands.

Which of the statements given above is/are correct?

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

**46.** Consider the following statements:

1. Glaciers are not found in tropical regions.
2. The Siberian climate is not found in the southern hemisphere.
3. Cyclones do not originate in polar regions.

Which of the statements given above is/are correct?

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

**47.** Consider the following:

1. Light
2. Rainfall
3. Temperature
4. Atmosphere
5. Altitude
6. Presence of organic compounds

Which of the above can be limiting factors in the determination of the range of an organism ?

(a) 1, 2, 3 and 6 only
(b) 2, 4 and 5 only
(c) 1, 3, 4, 5 and 6 only
(d) 1, 2, 3, 4, 5 and 6

**48.** Consider the following pairs:

| ***Dam Projects*** | | ***Rivers*** |
|---|---|---|
| 1. Indirasagar | : | Beas |
| 2. Krishnarajasagar | : | Krishna |
| 3. Mettur | : | Kaveri |

Which of the pairs is/are correctly matched?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) None

**49.** Consider the following statements:

Statement-I: The national song has been accorded status alongside the national anthem.

Statement-II: The Constituent Assembly declared equal status for both at adoption.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation of Statement-I
(b) Both Statement-I and Statement-II are correct but Statement-II is not the correct explanation of Statement-I
(c) Statement-I is correct but Statement-II is incorrect
(d) Statement-I is incorrect but Statement-II is correct

**50.** Which of the following statements is ***not*** correct regarding the sub-tropical high-pressure belts?

(a) This zone of high pressure is called as horse latitude.
(b) Surface air spreads outwards from this zone.
(c) Most of the deserts are present along this belt, in both the hemispheres.
(d) It is a thermally induced pressure belt.

**51.** Consider the following statement with reference to ocean currents:

1. Ocean currents are essentially the movement of energy along the surface of the oceans with no flow of water.
2. All ocean currents follow the clockwise direction in the northern hemisphere.
3. Cold currents always move from the poles to the equator.

Which of the statements given above are correct?

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

**52.** Consider the following statements:

Statement-I: India's new Antarctic station 'Maitri II' is planned as a green research base.

Statement-II: It will utilize renewable energy and house automated instruments.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation of Statement-I
(b) Both Statement-I and Statement-II are correct but Statement-II is not the correct explanation of Statement-I
(c) Statement-I is correct but Statement-II is incorrect
(d) Statement-I is incorrect but Statement-II is correct

**53.** With reference to The Biodiversity Finance Initiative (BIOFIN), consider the following statements:

1. It assists countries to better mobilize and align domestic and international finance for biodiversity.
2. It is an initiative by the UNDP.
3. India currently does not implement BIOFIN methodology.

Which of the statements given above is/are correct?

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

**54.** Which of the following statements is/are correct regarding interior structure of the earth?

1. Moho"s discontinuity forms the boundary between Mantle and Core of the Earth.
2. Lithosphere is the main source of magma that erupts as lava in Volcano.
3. Outer core is liquid while the inner core is solid.

Select the correct answer using the code given below.

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

**55.** In the context of environmental protection, the Waigani Convention deals with

(a) Ocean acidification
(b) Ozone-depleting substances
(c) Wildlife Protection
(d) Hazardous Wastes

**56.** President of India inaugurated the observance of the Mahasamadhi centenary of Sree Narayana Guru at Kerala. In this context, consider the following statements:

1. He launched the Aruvipuram movement for equal rights to temple entry.
2. He established an organization called the Sri Narayana Dharma Paripalana Yogam for upliftment of Ezhava community.
3. He emphasized the principle of "One caste, One Religion, One God for all human beings."

Which of the statements given above are correct?

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

**57.** With reference to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), consider the following statements:

1. It aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
2. It was adopted under the aegis of United Nations Framework Convention on Climate Change.
3. It is legally binding on the Parties.

Which of the statements given above is/are correct?

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

**58.** Which of the following atmospheric layers exhibit increase in temperature with increasing altitude?

1. Troposphere
2. Stratosphere
3. Mesosphere
4. Thermosphere

Select the correct answer using the code given below.

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 2 and 3 only
(d) 2, 3 and 4 only

**59.** With reference to environment and ecology, the term *'leachate'* refers to:

(a) the loss of water-soluble plant nutrients from the soil, due to rain and irrigation.
(b) the process of making renewable energy from solid waste.
(c) a contaminated liquid that percolates downward through the solid waste material.
(d) the process of enzymatic decomposition of organic matter.

**60.** Consider the following statements regarding Global Footprint Network:

1. It was established by the World Summit on Sustainable Development in 2002.
2. It is responsible for hosting and calculating Earth Overshoot Day.

Which of the statements given above is/are correct?

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

**61.** Which of the following settlement types reflects discrimination prevalent in rural areas with people of lower strata?

(a) Clustered Settlements
(b) Dispersed Settlements
(c) Unified Settlements
(d) Semi-Clustered Settlements

**62.** Consider the following statements regarding Synthetically Generated Information (SGI) under proposed IT Rules amendments:

1. It covers only text responses from AI chatbots.
2. Visual SGI labels need not occupy any minimum portion of the content and may remain only in hidden metadata.
3. Intermediaries are required to remove labels or identifiers attached to SGI to avoid user confusion.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 2 and 3 only
(d) None

**63.** Consider the following statements about tobacco control in India:

1. The Cigarettes and Other Tobacco Products Act (COTPA), 2003 prohibits the sale of tobacco products to minors.
2. The Prohibition of Electronic Cigarettes Act, 2019 permits regulated retail sale of e-cigarettes through licensed outlets.

Which of the statements given above is/are correct?

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

**64.** Which of the following is a characteristic feature of the Steppe type of Climate?

1. In the northern hemisphere, only continental climatic type of grasslands are found.
2. Regions in Southern Hemisphere experiences precipitation all throughout the year due to maritime influence.

Select the correct answer using the code given below.

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

**65.** Consider the following statements regarding Reducing emissions from deforestation and forest degradation (REDD+):

1. It offers incentives for developing countries for investing in low-carbon paths to sustainable development.
2. It is a mechanism developed by IUCN.
3. Its implementation is voluntary and depends on the national circumstances, capacities and capabilities of each developing country and the level of support received.

Which of the statements given above is/are correct?

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

**66.** In the context of the Global Forest Resources Assessment 2025, consider the following statements:

1. GFRA 2025 is published annually by the Food and Agriculture Organisation to evaluate global forest conditions comprehensively.
2. India has moved up to its position globally in terms of total forest area as per GFRA 2025.

Which of the statements given above is/are correct?

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

**67.** With respect to the Bonn Challenge, consider the following statements:

1. It was launched by the World Wide Fund for Nature.
2. Its goal is to bring 350 million hectares of degraded and deforested landscapes into restoration by 2030.

Which of the statements given above is/are correct?

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

**68.** Evolutionarily Distinct and Globally Endangered (EDGE) species are animal species which have a high 'EDGE score', a metric combining endangered conservation status with the genetic distinctiveness of the particular taxon. In this context, which of the following species has the highest score of any EDGE species?

(a) Largetooth Sawfish
(b) Chinese Pangolin
(c) Asiatic Cheetah
(d) Sumataran Rhino

**69.** Arrange the following rivers of the Indus river system from north to south direction.

1. Ravi
2. Jhelum
3. Satluj
4. Chenab

Select the correct answer using the code given below.

(a) 2-4-3-1
(b) 4-2-1-3
(c) 2-4-1-3
(d) 4-2-3-1

**70.** Consider the following statements regarding National Afforestation and Eco-Development Board (NAEB):

1. It is a statutory body set up under the Forest Conservation Act, 1980.
2. It has a special focus on degraded areas and ecologically fragile areas.
3. It is the nodal agency for the implementation of Green India Mission at national level.

Which of the statements given above is/are correct?

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

**71.** Eco-Sensitive zones are areas that act as "shock absorbers" for the protected areas against any non-forest activity. Which of the following activities are strictly prohibited in Eco-Sensitive Zones?

1. Commercial use of firewood
2. Establishment of major hydroelectricity power projects
3. Movement of vehicular traffic at night
4. Rainwater harvesting

Select the correct answer using the code given below.

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

**72.** Which of the following funds are managed/ administered by Global Environment Facility?

1. Special Climate Change Fund
2. Least Developed Countries Fund
3. Adaptation Fund

Select the correct answer using the code given below.

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

**73.** Which of the following greenhouse gases are covered under the Kyoto Protocol for emission control to reduce global warming?

1. Carbon dioxide (CO2)
2. Nitrogen dioxide (NO2)
3. Hydrofluorocarbons (HFCs)
4. Nitrus Oxide (N2O)
5. Methane (CH4)

Select the correct answer using the code given below.

(a) 2, 3 and 4 only
(b) 1, 2, 3 and 5 only
(c) 1, 3, 4 and 5 only
(d) 1, 2, 4 and 5 only

**74.** Consider the following statements about the DNA-based Synchronous All India Population Estimation of Elephants (SAIEE):

1. It is India's first DNA-based synchronous estimation of elephants.
2. It was conducted by the Wildlife Institute of India under Project Elephant.
3. Wild Asian elephants in India occur across multiple landscapes including Himalayan foothills and the Western/ Eastern Ghats.

Which of the statements given above are correct?

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

**75.** Which of the following statements best describes the Malthusian view of population growth and development?

(a) Population growth is potentially exponential while the growth of the resources is linear.
(b) In the absence of capitalist system, population growth should lead to greater wealth.
(c) Populations grow along predictable phases in line with economic development of a country.
(d) The problems arising out of population growth can be solved by investing in Research and Development.

**76.** Consider the following statements regarding the mineral resources:

1. Khetri and Bhilwara are famous for Copper mines.
2. Amarkantak and Koraput are famous for Bauxite extraction.

Which of the statements given above is/are correct?

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

**77.** PM Dhan Dhaanya Krishi Yojana is designed as a

(a) standalone input subsidy for a single crop
(b) state-specific procurement-led intervention
(c) credit guarantee scheme for agri-startups only
(d) convergence platform integrating multiple agriculture-related schemes

**78.** Which of the following statements are correct regarding the ozone layer?

1. Ozone layer present in the stratosphere acts as a protective layer against harmful ultraviolet rays.
2. The polar stratospheric clouds prevent the spread of the ozone hole.
3. The thickness of the ozone layer is measured in terms of Dobson units (DU).

Which of the statements given above is/are correct?

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

**79.** Which of the following parameters of a population is/are an indicator of its socio-economic development?

1. Literacy rate
2. Occupational structure
3. Rural-urban composition

Select the correct answer using the code given below.

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

**80.** Consider the following statements about Waste Minimization Circle (WMC) programme in India:

1. It aims to prevent pollution from small scale industries.
2. It is being executed by the National Productivity Council.
3. It is being assisted by the World Bank.

Which of the statements given above is/are correct?

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

**81.** Which of the following organizations is/are involved in the exploration of minerals?

1. Geological Survey of India (GSI)
2. Oil and Natural Gas Commission (ONGC)
3. National Mineral Development Corporation (NMDC)
4. Nuclear Power Corporation of India (NPCI)

Select the correct answer using the code given below.

(a) 1 and 4 only
(b) 1, 2 and 3 only
(c) 3 only
(d) 1, 2, 3 and 4

**82.** With reference to Seafloor spreading, consider the following statements:

1. Seafloor spreading is the result of convection in the molten outer core.
2. Seafloor spreading occurs only at divergent plate boundaries.
3. Slowly spreading ridges form taller and narrower cliffs than the rapidly spreading ridges.

Which of the statements given above are correct?

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

**83.** Arrange the following events in the chronological order:

1. Establishment of the first modern cotton mill in India.
2. Introduction of railways in India.
3. The establishment of the first jute mill at Rishra, West Bengal.

Select the correct answer using the code given below.

(a) 1-3-2
(b) 2-1-3
(c) 3-1-2
(d) 1-2-3

**84.** Consider the following statements:

1. Temperate Grasslands of the mid-latitude region are best-suited climatic regions for the production of wheat.
2. The harvesting of wheat is most advantageous during warm and sunny summer.

Which of the statements given above is/are correct?

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

**85.** Which of the following are the impacts of light pollution?

1. Impacts bird migration and foraging
2. Impacts astronomical research
3. Diabetes in human beings
4. Light induced collisions

Select the correct answer using the code given below.

(a) 1, 2 and 4 only
(b) 2 and 4 only
(c) 1 and 3 only
(d) 1, 2, 3 and 4

**86.** Which of the following volcanoes is known as the 'Lighthouse of the Mediterranean'?

(a) Mt. Chimborazo
(b) Mt. Stromboli
(c) Mt. Fuji
(d) Mt. Vesuvius

**87.** Which of the following most appropriately defines quinary activities?

(a) Contracting of work to an outside agency to improve efficiency and to reduce costs.
(b) Activities focussing on the creation, re-arrangement and interpretation of new and existing ideas.
(c) Illegitimate underground activities directed at data theft and cyber frauds.
(d) Highly classified intelligence activities specially designed for military surveillance.

**88.** Which one of the following statements best describes the term 'global dimming'?

(a) It is the process of reducing the amount of solar radiation reaching the earth's atmosphere causing a drop in temperatures around the globe.
(b) It is the process of increasing positive climate forcings at higher levels of the atmosphere with the help of an increasing amount of atmospheric water vapour.
(c) It is the process of reducing global warming impact by reducing aerosol pollution from anthropogenic activities.
(d) It is the process of stabilising the temperature in the Arctic region for reducing the impact of melting glaciers in the region.

**89.** Consider the following statements:

1. The Hindu-Kush Himalayan region spans over five countries only.
2. The Rockies (mountain range) is spread over three countries only.
3. The Andes (mountain range) is spread over four countries only.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 1, 2, and 3
(d) None

**90.** In the context of an earthquake, consider the following statements regarding body waves and surface waves:

1. Body waves are generated at the focus and move in all directions.
2. Surface waves are more destructive than body waves.
3. The velocity of waves is higher denser material.

Which of the statements given above are correct?

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

**91.** United Nations Framework Classification for Resources (UNFC) deals with:

(a) classification of greenhouse gases based upon their global warming potential.

(b) Classification of biotic resources for access and benefit sharing.

(c) identification and monitoring of endemic diseases like ebola.

(d) classification and management of global mineral and various energy resources.

**92.** With reference to the applications of Metal–Organic Frameworks (MOFs), which of the following statements is/are correct?

1. They can be used for water harvesting from dry air.
2. They can reduce spoilage of fruits by absorbing ethylene gas in packaging.
3. They are being explored for recovery of rare-earth elements from wastewater.

Select the correct answer using the code given below.

(a) 1 and 2 only

(b) 3 only

(c) 1, 2 and 3

(d) None of the above statements is correct

**93.** Karaganda basin, Damodar valley and Shanxi valley are famous for which of the following mineral deposits?

(a) Coal

(b) Petroleum

(c) Gold

(d) Bauxite

**94.** Consider the following statements regarding the Arabian Sea Mini Warm Pool (MWP):

1. It forms in the Bay of Bengal near the Andhra coast.
2. It cools the sea surface before the onset of the Indian Summer Monsoon.
3. A warm pool is characterised by very low sea surface temperatures.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All the three

(d) None

**95.** With reference to Indian Monsoons, consider the following statements regarding Tibetan High:

1. Tibetan High is a warm anticyclone located over Tibetan Plateau in the troposphere during the monsoon period.
2. The westward shift of Tibetan High leads to an extension of monsoon in Pakistan and in extreme cases into north Iran.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

**96.** Which among the following can contribute to the anti-greenhouse effect?

1. Volcanic ash
2. Stratospheric sulfur aerosols
3. Hydrofluorocarbons (HFC)

Select the correct answer using the code given below.

(a) 1 and 2 only

(b) 1 only

(c) 1 and 3 only

(d) 2 and 3 only

**97.** Consider the following statements about the Civil Registration System (CRS):

1. It is governed by the Registration of Births and Deaths Act, 1969.
2. The recent amendment removed provisions for digital registration at the national level.
3. CRS records births, deaths and stillbirths, while excluding marriages and divorces.

Which of the statements given above is/are correct?

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

**98.** Consider the following statements about Perform Achieve and Trade (PAT) scheme:

1. It is a flagship program of the Bureau of Energy Efficiency (BEE) under the National Mission for Enhanced Energy Efficiency (NMEEE).
2. It is being implemented under the National Mission for Enhanced Energy Efficiency (NMEEE).

Which of the statements given above is/are correct?

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

**99.** Arrange the following minerals in increasing order of their total global reserves.

1. Gold
2. Silver
3. Titanium
4. Tin

Select the correct answer using the code given below.

(a) 1-2-4-3
(b) 1-2-3-4
(c) 3-4-1-2
(d) 3-1-2-4

**100.** Consider the following statements regarding Indian initiatives against deepfakes:

1. The Digital Personal Data Protection Act, 2023 enables penalties when personal data is misused for deepfakes without consent.
2. The Indian Cyber Crime Coordination Centre can facilitate removal of unlawful content including deepfakes under the IT Act and Rules.
3. Political parties and their official digital channels have to ensure that any manipulated content (including deepfakes) if found problematic, is taken down within 15 days.

Which of the statements given above are correct?

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