Prelims Refresher Program: Day 24 (Test-7)

QUESTION 1:

With reference to the 'Integrated Farming System (IFS)', consider the following statements:

1. Crops, livestock, birds and trees are the major components of any IFS.
2. IFS can play an important role in environmental sustainability and protection.

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

Answer: (c)

Explanation

- The integrated farming system approach introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources.
- Integration of various agricultural enterprises viz., cropping, animal husbandry, fishery, forestry etc. have great potentialities in the agricultural economy.
- Components of Integrated Farming System (IFS)
  - **Crops, livestock, birds and trees are the major components of any IFS.**
  - Crops may have subsystems like monocrop, mixed/intercrop, multi-tier crops of cereals, legumes (pulses), oilseeds, forage etc.
  - Livestock components may be milch cow, goat, sheep, poultry, bees.
  - Tree components may include timber, fuel, fodder and fruit trees.
  - **Hence, statement 1 is correct.**
- **IFS will help in environmental sustainability and protection through effective recycling of waste from animal activities like piggery, poultry and pigeon rearing**
  - As IFS involves use of outputs of one enterprise component as inputs for other related enterprises wherever feasible, for example, cattle dung mixed with crop residues and farm waste can be converted into nutrient-rich vermi-compost. **Hence, statement 2 is correct.**

QUESTION 2:

Regarding National Mission for Sustainable Agriculture (NMSA), consider the following statements:

1. NMSA has been formulated for enhancing agricultural productivity especially in rainfed areas.
2. NMSA is established under the aegis of National Action Plan on Climate Change (NAPCC).
3. National Bamboo Mission (NBM) is one of the major programme components under NMSA.

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

Answer: (d)

Explanation

- National Mission for Sustainable Agriculture (NMSA) has been formulated **for enhancing agricultural productivity especially in rainfed areas** focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation. **Hence, statement 1 is correct.**

- **Mission Objectives:-**
  - To make agriculture more productive, sustainable, remunerative and climate resilient by promoting location specific Integrated/Composite Farming Systems;
  - To conserve natural resources through appropriate soil and moisture conservation measures;
  - To adopt comprehensive soil health management practices based on soil fertility maps, soil test based application of macro & micro nutrients, judicious use of fertilizers etc.;
  - To optimize utilization of water resources through efficient water management to expand coverage for achieving 'more crop per drop';
- The National Action Plan on Climate Change (NAPCC) was released on 30th June 2008. There are eight mission under the aegis of NAPCC:
  - National Solar Mission
  - National Mission for Enhanced Energy Efficiency
  - National Mission on Sustainable Habitat
  - National Water Mission
  - National Mission for Sustaining the Himalayan Ecosystem
  - National Mission for a "Green India"
  - **National Mission for Sustainable Agriculture (NMSA)**
  - National Mission on Strategic Knowledge for Climate Change. **Hence, statement 2 is correct.**
- **NMSA** has following five major programme **components** or activities:
  - Rainfed Area Development (RAD)
  - Sub-Mission on Agroforestry (SMAF)
  - **National Bamboo Mission (NBM)**
  - Soil Health Management (SHM)
  - Climate Change and Sustainable Agriculture: Monitoring, Modeling and Networking (CCSAMMN). **Hence, statement 3 is correct.**

QUESTION 3:

Consider the following pairs:

1. Allelopathy	Release of a chemical substance by one plant species that inhibits the growth of another species
2. Double-cropping	Practice of planting a second crop immediately following the harvest of a first crop
3. Relay intercropping	Different crops are planted at different times in the same field
4. Intercropping	Presence of two or more crops in the same field at the same time

Which of the pairs given above are correctly matched:

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

Answer: (d)

Explanation

- **Allelopathy is the release of a chemical substance by one plant species** that inhibits the growth of another species. It has been proven or is suspected to cause yield reductions when one crop follows another of the same family—for example, when corn follows wheat.
  - Technically, damage to a crop from following itself (such as corn following corn) is referred to as autotoxicity. **Hence, pair 1 is correctly matched.**

- **Double-cropping (also known as sequential cropping)** is the practice of planting a second crop immediately following the harvest of a first crop, thus harvesting two crops from the same field in one year.
  - This is a case of multiple cropping, which requires a season long enough and crops that mature quickly enough to allow two harvests in one year. **Hence, pair 2 is correctly matched.**
- **Relay intercropping is a technique in which different crops are planted at different times in the same field,** and both (or all) crops spend at least part of their season growing together in the field. **Hence, pair 3 is correctly matched.**
- **Intercropping is the presence of two or more crops in the same field** at the same time, planted in an arrangement that results in the crops competing with one another. **Hence, pair 4 is correctly matched.**
- **Strip cropping is the presence of two or more crops in the same field,** planted in strips such that most plant competition is within each crop rather than between crops. This practice has elements of both intercropping and monocropping, with the width of the strips determining the degree of each.

QUESTION 4:

Consider the following pairs:

1. Primitive Subsistence Farming	'Slash and burn' agriculture
2. Intensive Subsistence Farming	Practised in areas of high population pressure on land
3. Commercial Farming	Use of higher doses of modern inputs, e.g. high yielding variety (HYV) seeds

Which of the pairs given above are correctly matched:

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

Answer: (d)

Explanation

- **Primitive Subsistence Farming:** Primitive subsistence agriculture is practised on small patches of land with the help of primitive tools like hoe, dao and digging sticks, and family/community labour. This type of farming depends upon monsoon, natural fertility of the soil and suitability of other environmental conditions to the crops grown.
  - **It is a 'slash and burn' agriculture.** Farmers clear a patch of land and produce cereals and other food crops to sustain their family. When the soil fertility decreases, the farmers shift and clear a fresh patch of land for cultivation. Also known as Jhumming in many parts of India. **Hence, pair 1 is correctly matched.**
- **Intensive Subsistence Farming:** This type of farming is practised in **areas of high population pressure on land.** It is labour intensive farming, where high doses of biochemical inputs and irrigation are used for obtaining higher production. **Hence, pair 2 is correctly matched.**
- **Commercial Farming:** The main characteristic of this type of farming is the use of **higher doses of modern inputs, e.g. high yielding variety (HYV)** seeds, chemical fertilisers, insecticides and pesticides in order to obtain higher productivity.
  - The degree of commercialisation of agriculture varies from one region to another. For example, rice is a commercial crop in Haryana and Punjab, but in Odisha, it is a subsistence crop. **Hence, pair 3 is correctly matched.**

QUESTION 5:

Consider the following statements about the soil composition:

1. If the proportion of fine particles is relatively higher, then it is called loamy.
2. Clayey soil is the mixture of sand, clay and another type of soil particle known as silt.

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

Answer: (d)

Explanation

- Weathering of rocks produces small particles of various materials. These include sand and clay. **The mixture of rock particles and humus is called the soil**
- The soil is classified on the basis of the proportion of particles of various sizes.
  - If soil contains a greater proportion of big particles it is called **sandy soil.**
  - **If the proportion of fine particles is relatively higher,** then it is called **clayey soil.**
  - **If the amount of large and fine particles is about the same,** then the soil is called loamy. **Hence, statement 1 is not correct.**
- The best topsoil for growing plants is loam. **Loamy soil is a mixture of sand, clay and another type of soil particle known as silt.**
  - Silt occurs as a deposit in river beds. The size of the silt particles is between those of sand and clay. The loamy soil also has humus in it. It has the right water holding capacity for the growth of plants. **Hence, statement 2 is not correct.**

QUESTION 6:

Consider the following statements with reference to the cropping seasons:

1. A short season during the winter months is known as the Zaid season.
2. Sugarcane is only a tropical crop and thus grows well in hot and humid conditions.
3. Groundnut is a kharif crop and accounts for major oilseeds produced in India.

Which of the following statements given above is/are correct?

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

Answer: (b)

Explanation

- India has **three cropping seasons — rabi, kharif and zaid**
  - **Rabi crops** are sown in winter from October to December and harvested in summer from April to June
  - Kharif crops are grown with the onset of monsoon in different parts of the country and these are harvested in September-October
  - **In between the rabi and the kharif seasons, there is a short season during the summer months known as the Zaid season.** Some of the crops produced during 'zaid' are watermelon, muskmelon, cucumber, vegetables and fodder crops. **Hence, statement 1 is not correct.**

- **Sugarcane:** It is a **tropical as well as a subtropical crop.** It grows well in hot and humid climates with a temperature of 21°C to 27°C and an annual rainfall between 75cm. and 100cm. **Hence, statement 2 is not correct.**
  - Irrigation is required in the regions of low rainfall. It can be grown on a variety of soils and needs manual labour from sowing to harvesting.
  - India is the second largest producer of sugarcane only after Brazil.
- **Groundnut** is a kharif crop and accounts for about half of the major oilseeds produced in the country. Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Madhya Pradesh, Orissa, and Uttar Pradesh are the major groundnut growing states of India. **Hence, statement 3 is correct.**

QUESTION 7:

With reference to Honey Mission, consider the following statements:

1. The initiative is launched to promote beekeeping and associated activities.
2. The mission is undertaken by the Ministry of Agriculture and Farmers' Welfare.

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

Answer: (a)

Explanation

- The **Honey Mission** provides awareness, training and 'Bee Boxes' along with Bee Colonies to the farmers. The mission was launched in August 2017 in line with the 'Sweet Revolution'.
  - The **'Sweet Revolution'** was launched in 2016 to promote beekeeping and associated activities. **Hence, statement 1 is correct.**
- According to the **Khadi and Village Industries Commission (KVIC),** the Mission has created more than 10,000 new jobs, besides creating around 25,000 additional man-days through the fabrication of bee boxes and honey extractors.
- **KVIC** has established a separate department namely Directorate of Beekeeping in Mumbai and Central Bee Research and Training Institute at Pune and started beekeeping in the modern and scientific way throughout the country by establishing Field Observation Stations/Zonal Beekeeping Extension Centers and now with State Beekeeping Extension Centers in potential beekeeping states in the country.
  - **KVIC** is under the **Ministry of Micro, Small and Medium Enterprises. Hence, statement 2 is not correct.**

QUESTION 8:

With reference to 'Biofertilizers', which of the following statements is/are not correct?

1. They form a mutually beneficial or symbiotic relationship with host plants as they grow in the soil.
2. They increase the nitrogen and phosphorus available to plants more naturally than other fertilizers.
3. There is no need for adequate nutrients in the soil for biofertilizer organisms to thrive and work.

Select the correct answer using the code given below:

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

Answer. (b)

Explanation

- Biofertilizers consist of a carrier medium rich in live microorganisms. When applied to seed, soil or living plants they increase soil nutrients or make them biologically available. They form a mutually beneficial or symbiotic relationship with host plants as they grow in the soil and increase the nitrogen and phosphorus available to plants more naturally than other fertilizers. **Hence, statements 1 and 2 are correct.**
- Biofertilizers require special care for long-term storage because they are alive. They must be used before their expiration date. If other microorganisms contaminate the carrier medium or if growers use the wrong strain, they are not as effective.The soil must contain adequate nutrients for biofertilizer organisms to thrive and work. **Hence statement 3 is not correct.**

QUESTION 9:

With reference to 5G technology, consider the following statements:

1. It is the next-generation of mobile networks beyond Long Term Evolution (LTE) mobile networks.
2. It is designed to be the network for the Internet of Things (IoT).
3. It consumes more energy and emits more radiation.

Which of the statements given above is/are correct?

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

Answer: (1)

Explanation

- The term 5G is used to describe the next-generation of mobile networks beyond Long Term Evolution (LTE) mobile networks. **Hence, statement 1 is correct.**
- It is also designed to be the network for the Internet of Things (IoT), not only will people be connected to each other but so will utility machines, industrial equipment, automobiles, city infrastructure, public safety and more. **Hence, statement 2 is correct.**
- It is a mix of telecom technology delivering much higher data speeds on more extensive connectivity, **using much lower power, with extended battery life, and emitting less radiation. Hence, statement 3 is not correct.**

QUESTION 10:

Which among the following statements are correct regarding “WiFi 6 technology”?

1. It has higher data rates with peak gigabit speeds.
2. It provides a high-performance level in the densest environments.
3. It will consume more power than the earlier versions.
4. It offers increased capacity with reduced latency to support higher numbers of users and devices.

Select the correct answer using the code given below:

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

Answer: (c)

Explanation

The benefits of wifi 6 technology include:

- WiFi 6 provides the foundation for a host of existing and emerging uses from streaming ultra-high-definition movies, to mission-critical business applications requiring high bandwidth and low latency, to staying connected and productive while traversing large, congested networks in airports and train stations.

Features of WiFi 6:

- **Lower battery consumption** in WiFi 6 devices supported by WiFi 6 networks. **Hence, statement 3 is not correct.**
- **Higher data rates** with peak Gigabit speeds. **Hence, statement 1 is correct.**
- Increased capacity with reduced latency to support higher numbers of users and devices. **Hence, statement 4 is correct.**
- **High-performance levels in the densest environments. Hence, statement 2 is correct.**
- More robust outdoor network operations.
- Multi-user multiple inputs, multiple-output (MU-MIMO) allows more data to be transferred at one time, enabling access points (APs) to handle larger numbers of devices simultaneously.

QUESTION 11:

Which of the following statements is/are correct about a sonic boom? (q.98;1911)

1. It is an incredibly loud sound produced by a subsonic aircraft.
2. The pilot of the aircraft cannot hear the sonic boom.
3. Meteors can also produce sonic boom.

Select the correct answer using the code given below:

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

Answer: (b)

Explanation

- The sonic boom is an incredibly loud sound produced by an object or aircraft travelling at a speed greater than the speed of sound waves i.e. at supersonic speed. Subsonic speed is any speed which is less than the speed of sound. **Hence, statement 1 is not correct.**
- The pilot of an airplane cannot hear the sonic boom because the sound waves remain behind the plane when the plane travels at supersonic speed. **Hence, statement 2 is correct.**
- Large meteors generally enter the earth's atmosphere at a speed faster than the speed of the sound waves. This leads them to produce a sonic boom. **Hence, statement 3 is correct.**

QUESTION 12:

Regarding Accelerator Labs, which of the following statements is correct?

(a) These labs are being conceptualized under the Ministry of Science and Technology to enhance the scientific temper of youth in India.
(b) These labs are being created for school children in all government schools to enhance scientific temper and innovation under Atal Innovation Mission.
(c) These labs are being created under UNDP in India to address most critical issues like air pollution, sustainable water management.
(d) These are special labs being designed by ISRO for the astronauts, simulating space environment, for Mission Gaganyaan.

Answer: (c)

Explanation

- The **United Nations Development Programme (UNDP)** has launched its Accelerator Lab in India. The project has been launched in collaboration with the government's Atal Innovation Mission and will look to solve issues like air pollution and sustainable water management through innovative solutions. **Hence, option (c) is correct.**
- The vision is to make faster progress in meeting the ambitious Sustainable Development Goals (SDGs) of the U.N. by 2030.
- The Accelerator Lab is an innovative new initiative by the **UNDP, State of Qatar and the Federal Republic of Germany** to find 21st-century solutions to today's complex new challenges.
  - India's Accelerator Lab will be part of a network of 60 global labs covering 78 nations, that will test and scale new solutions to global challenges like climate change and inequality.
  - These Labs will identify grassroots solutions together with local actors and validate their potential to accelerate development.

QUESTION 13:

With reference to the Global Migration Report 2020, consider the following statements :

1. China is the largest country of origin of international migrants across the world.
2. The top destination country for international migrants is the United States.
3. India is the highest remittances recipient country in the world.

Which of the statements given above is/ are correct?

(a) 1 and 2 only

(b) 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

Answer: (c)

Explanation

- As per **International Organisation for Migration's (IOM)** latest report, **'Global Migration Report 2020',** India continues to be the largest country of origin of international migrants with a 17.5 million-strong diaspora across the world.
  - The top three countries of origin of international migrants – **India (17.5 million) >** Mexico (11.8 million) > China (10.7 million). **Hence, statement 1 is not correct.**
- India also received the highest remittance of $78.6 billion from Indians living abroad.
  - The international remittances increased to $689 billion in 2018.
  - The **top three remittance recipients were India ($78.6 billion) >** China ($67.4 billion) > Mexico ($35.7 billion).
  - The United States remained the **top remittance-sending country ($68 billion)** followed by the United Arab Emirates ($44.4 billion) and Saudi Arabia ($36.1 billion). **Hence, statement 3 is correct.**
- The top destination country remained the United States (50.7 million international migrants).
  - More than half of all international migrants (141 million) live in Europe and North America. **Hence, statement 2 is correct.**

QUESTION 14:

The 'Emissions Gap Report', often seen in the news, is released by

(a) United Nations Framework Convention on Climate Change (UNFCCC)

(b) United Nations Environment Programme (UNEP)

(c) United Nations Development Programme (UNDP)

(d) Intergovernmental Panel on Climate Change (IPCC)

Answer: (b)

Explanation

- **Emissions Gap Report is a flagship report** from the **United Nations Environment Programme (UNEP)** and it assesses the gap between anticipated emissions in 2030 and levels consistent with the 1.5°C and 2°C targets of the Paris Agreement. **Hence, option (b) is correct.**
- **The key points of the report are:**
  - The **world will fail to meet the 1.5°C temperature goal of the Paris Agreement** unless global greenhouse gas emissions fall by 7.6 per cent each year.
  - The **top four emitters (China, USA, EU and India)** contributed to over 55% of the total emissions over the last decade, excluding emissions from land-use change such as deforestation.
    - The rankings would change if land-use change emissions were included, with Brazil likely to be the largest emitter.
  - Sectors that are the largest emitters-
    Energy > Industry > Forestry > Transport > Agriculture > Building.
  - India is among a small group of countries that are on their way to achieve their self-declared climate targets under the Paris Agreement. However, the emissions largely depend on the growth of the economy of the country.

QUESTION 15:

The 'UNiTE campaign' sometimes seen in the news is related to

(a) Prevention of terrorist activities worldwide.

(b) Fight against climate change

(c) End Violence against women

(d) Wildlife conservation in the arctic region

Answer: (c)

Explanation

- **UNiTE to End Violence against Women campaign** was launched in 2008 by the then United Nations Secretary-General Ban Ki-moon. It is a multi-year effort aimed at preventing and eliminating violence against women and girls around the world.
- In 2019 and 2020, the UNiTE Campaign will align its advocacy activities under the umbrella of the UN Women's Generation Equality campaign that marks the 25th anniversary of the **Beijing Declaration and Platform for Action.**
  - A global blueprint for women's and girls' rights adopted unanimously by 189 Member States in 1995, the Beijing Platform for Action sets strategic objectives and actions in 12 critical areas of concern, including ending violence against women and girls. **Hence, option (c) is correct.**

QUESTION 16:

'Bougainville Island' which was recently seen in the news for a referendum to gain independence is located in

(a) Chile
(b) Australia
(c) Papua New Guinea
(d) Spain

Answer: (c)

Explanation

- The people of Bougainville (a small South Pacific island), voted for a referendum to gain independence from Papua New Guinea. Bougainville is currently a province of Papua New Guinea- one of the most populous Pacific island states. It forms the part of the Solomon Islands archipelago. **Hence, option (c) is correct.**
  - The **Panguna mine** (also known as the Bougainville Copper Mine) is the world's largest open-cut copper mine located in Bougainville, Papua New Guinea.

QUESTION 17:

In the Indian context, what is the implication of ratifying the 'Additional Protocol' with the 'International Atomic Energy Agency (IAEA)'? (2018)

(a) The civilian nuclear reactors come under IAEA safeguards.
(b) The military nuclear installations come under the inspection of IAEA.
(c) The country will have the privilege to buy uranium from the Nuclear Suppliers Group (NSG).
(d) The country automatically becomes a member of the NSG.

Answer: (a)

Explanation

- **International Atomic Energy Agency (IAEA),** created in 1957 as the world's 'Atoms for Peace Organisation' within the United Nations. It seeks to **promote peaceful use of nuclear energy,** and to restrain its use for any military purpose. It is headquartered in Vienna, Austria.

- IAEA safeguards are a system of inspection and verification of peaceful uses of nuclear materials as part of Nuclear Non-Proliferation Treaty (NPT). These safeguards mainly reiterate primacy to the IAEA in its central role in promotion of atomic energy for peaceful uses and prosperity of the mankind while maintaining its due support in safeguards. IAEA safeguard activities are undertaken by the Department of Safeguards, a separate department within the IAEA.
- An Additional Protocol to the Safeguards Agreement between the GoI and the IAEA for the Application of Safeguards to Civilian Nuclear Facilities entered into force on 25 July 2014. The Additional Protocol ratified by India has no bearing on the non-safeguarded facilities which are used for building weapons. **Hence, option (a) is correct.**

QUESTION 18:

Consider the following pairs: (2018)

	Terms sometimes seen in news	**Context/Topic**
1.	Belle II experiment	Artificial Intelligence
2.	Blockchain technology	Digital/Cryptocurrency
3.	CRISPR – Cas9	Particle Physics

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

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

Answer: (b)

Explanation

- The Belle II Experiment is a particle physics experiment designed to study the properties of B mesons (heavy particles containing a bottom quark). Belle II is the successor to the Belle experiment, and is currently being commissioned at the SuperKEKB accelerator complex at KEK in Tsukuba, Ibaraki Prefecture, Japan. **Hence, pair 1 is not correctly matched.**
- CRISPR-Cas9 is related to genetic engineering. It is a unique technology that enables geneticists and medical researchers to edit parts of the genome by removing, adding or altering sections of the DNA sequence. **Hence, pair 3 is not correctly matched.**
- In simple terms, blockchain is a time-stamped series of immutable records of data that is managed by cluster of computers not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain). Blockchain technology allows market participants to keep track of digital currency transactions without central record keeping. **Hence, pair 2 is correctly matched.**

QUESTION 19:

India is an important member of the 'International Thermonuclear Experimental Reactor'. If this experiment succeeds, what is the immediate advantage for India? (2016)

(a) It can use thorium in place of uranium for power generation
(b) It can attain a global role in satellite navigation
(c) It can drastically improve the efficiency of its fission reactors in power generation
(d) It can build fusion reactors for power generation

Answer: (d)

Explanation

- International Thermonuclear Experimental Reactor (ITER) is **a collaboration of 35 countries (including India) to build the world's largest Tokamak, a magnetic fusion device** designed to prove the feasibility of fusion as a source of large-scale and emissions-free energy. It is located in Southern France.
- If the experiment succeeds, it will open greater avenues for India to conduct research and development of fusion reactors for power generation. **Hence, option (d) is correct**

QUESTION 20:

Consider the following statements:

1. Climate and Clean Air Coalition (CCAC) to Reduce Short Lived Climate Pollutants is a unique initiative of G20 group of countries.
2. The CCAC focuses on methane, black carbon and hydrofluorocarbons.

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

Answer: (b)

Explanation

- The Climate and Clean Air Coalition is a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to improving air quality and protecting the climate through actions to reduce short-lived climate pollutants. **Hence, statement 1 is not correct.**
- The Coalition's initial focus is on methane, black carbon, and HFCs. The governments of Bangladesh, Canada, Ghana, Mexico, Sweden and the United States, along with the United Nations Environment Programme (UNEP), came together to initiate the first effort to treat these pollutants as a collective challenge. **Hence, statement 2 is correct.**
- India is not a partner country, but The Energy and Resources Institute (TERI) has been a partner NGO since 2015.

QUESTION 21:

With reference to 'Banni grassland', consider the following statements:

1. It lies on either side of the India-Pakistan border.
2. It is degrading rapidly due to invasion of Prosopis juliflora.

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

Answer: (c)

Explanation

- The Banni grassland of **Gujarat** is the largest natural grassland in the Indian subcontinent, and an area that is both **socio-culturally unique and ecologically valuable.** The Banni has a long history of migratory pastoralism going back at least 500 years, linking with a broader geographical landscape that included **Sindh in Pakistan and even extended into parts of Balochistan and Afghanistan.**

- In the local Kutchhi-Sindhi language there are four terms used for wetlands in Banni and **across the border in Pakistan,** they are **Kar** (smallest), **Chhachh** (bigger than Kar), **Thathh** (bigger than Chhach) and **Dhand** (the biggest of the wetlands). **Hence, statement 1 is correct.**
- **Introduction of P. juliflora to stop desertification in the initial years and lack of proper silvicultural practices led to the spread of this species as a weed.**
- Disintegration of traditional management practices, excessive pressure from livestock grazing and increased soil salinity leading to invasion of **Prosopis juliflora,** water scarcity, climate change and desertification are leading to rapid degradation of these grasslands. **Hence, statement 2 is correct.**

QUESTION 22:

Consider the following statements-

1. Makalu-Barun National Park is located in Nepal.
2. It is the world's only protected area with an elevation of more than 8,000 m.
3. It encloses both tropical rainforests as well as snow-capped peaks.

Which of the statements given above is/are correct?

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

Answer: (d)

Explanation

- **Makalu-Barun National Park** and Conservation Area, a 580-square-mile parkland is located in Nepal. **Hence, statement 1 is correct.**
- It consists of pristine ecosystems from **tropical rainforests to alpine tundra** above 8000 m . **Hence, statement 3 is correct.**
- Makalu Barun National Park lies in east Nepal bordering Sagarmatha National Park in the west and the Arun river in the east. The core area covers 150,000ha and is surrounded by 83,000ha of buffer zone.
- It is the world's **only protected area with an elevation gain of more than 8,000 m (26,000 ft).** The **fifth highest mountain peak in the world, Makalu (8463 m)** and the wild and comparatively uninhabited Barun valley lie in the park. **Hence, statement 2 is correct.**

QUESTION 23:

Consider the following pairs:

Ramsar sites	Location (State)
1. Chandertal Wetland	Himachal pradesh
2. Deepor beel	Assam
3. Bhoj wetland	Madhya Pradesh
4. Sambhar lake	Haryana

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

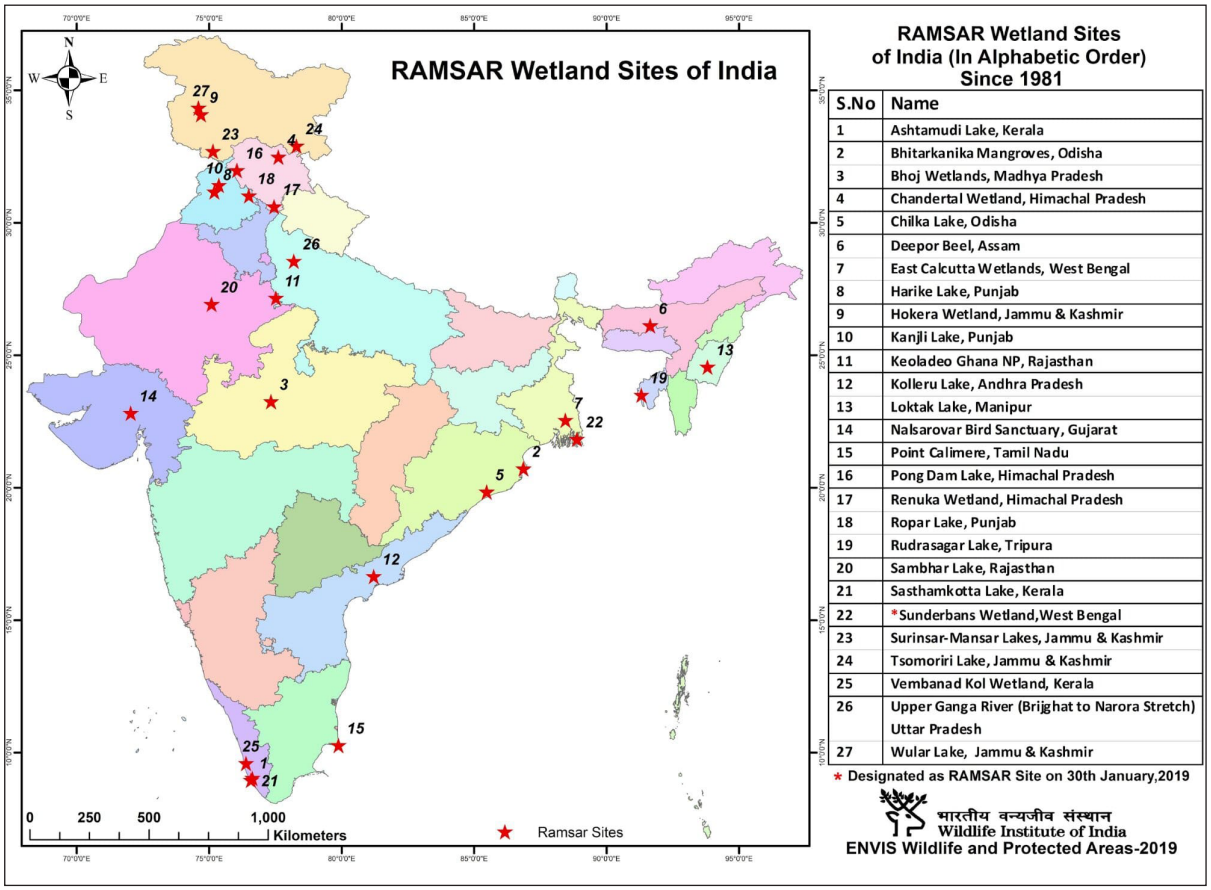
(a) 1 only
(b) 1 and 3 only
(c) 1, 2 and 3 only
(d) 2, 3 and 4 only

Answer: (c)

Explanation

Ramsar Convention

- The **Convention on Wetlands, called the Ramsar Convention,** is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.
- The Convention was adopted in the Iranian city of Ramsar in 1971 and came into force in 1975. Since then, almost 90% of UN member states, from all the world's geographic regions, have acceded to become "Contracting Parties".
- **India has recently added 10 more wetlands to sites protected by the Ramsar Convention.With this, a total of 37 sites in the country have been recognised under the international treaty.**



The 10 new ones are Nandur Madhameshwar, a first for Maharashtra; Keshopur-Miani, Beas Conservation Reserve and Nangal in Punjab; and Nawabganj, Parvati Agra, Saman, Samaspur, Sandi and Sarsai Nawar in Uttar Pradesh. The other Ramsar sites are in Rajasthan, Kerala, Odisha, Madhya Pradesh, Himachal Pradesh, Assam, West Bengal, Jammu and Kashmir, Andhra Pradesh, Manipur, Gujarat, Tamil Nadu and Tripura.

- 1, 2 and 3 are correctly matched. But, Sambhar lake lies in the state of Rajasthan. **Hence, option (c) is correct.**

QUESTION 24:

Consider the following statements about the Global Carbon Project (GCP):

1. It is a Global Research Project of the United Nations Environment Programme (UNEP).
2. GCP focuses on the global biogeochemical cycles which govern three greenhouse gases.

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

Answer: (b)

Explanation

- The Global Carbon Project is a **Global Research Project of Future Earth and a research partner of the World Climate Research Programme. Hence, statement 1 is not correct.**
  - It was formed to work with the international science community to establish a common and mutually agreed knowledge base to support policy debate and action to slow down and ultimately stop the increase of greenhouse gases in the atmosphere.
- The GCP has approached the challenge of climate change by focusing comprehensively on the global biogeochemical cycles which govern these three greenhouse gases- **carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O),** including their natural and human drivers, and opportunities for low carbon pathways. **Hence statement 2 is correct.**
- The Global Carbon Project was established in 2001 by a shared partnership between the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP) and Diversitas. This partnership constituted the Earth Systems Science Partnership (ESSP) which subsequently evolved into Future Earth.

QUESTION 25:

Which of the following Tiger Reserve is nearest to the location of the recently notified Ghodazari Wildlife Sanctuary?

(a) Tadoba-Andhari Tiger Reserve
(b) Kanha Tiger Reserve
(c) Mukundra Hills Tiger Reserve
(d) Dudhwa Tiger Reserve

Answer: (a)

Explanation

- The Maharashtra Government recently approved **Ghodazari in Chandrapur district** as a new wildlife sanctuary.
- The new sanctuary will include about 159 sq km area of Bramhapuri forest and the area is home to 10 to 15 tigers and 23 leopards.
- The wildlife sanctuary is located in the **North East of Tadoba-Andhari Tiger Reserve** and the area in the sanctuary is also an **important corridor for wild animals** moving from Tadoba-Andhari Tiger Reserve to Umred-Karhandla Wildlife Sanctuary and vice versa. **Hence, option (a) is correct.**

Tadoba-Andhari Tiger Reserve

- It is located in the Chandrapur district of Maharashtra state. It is notable as Maharashtra's oldest and largest national park. The reserve is home to Bengal Tiger,Indian leopards, sloth bears, gaur, nilgai, orange-headed thrush, Indian pitta, crested treeswift, etc.
- Spread across over 1,700 square kilometres, it includes 625 square kilometres of reserve forest.

QUESTION 26:

With reference to Persistent Organic Pollutants (POPs), consider the following statements: (q.69;1929)

1. They can biomagnify throughout the food chain.
2. The Stockholm Convention aims to eliminate or restrict the production of POPs globally.

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

Answer: (c)

Explanation

- **Persistent organic pollutants (POPs)** are a group of chemicals possessing the following characteristics:
  - They are highly toxic to humans and wildlife.
  - They can last for many years in the environment before degrading into less dangerous forms (persistence);
  - They bio-magnify throughout the food chain and bio-accumulate in organisms. The highest concentrations of POPs are thus found in organisms at the top of the food chain. Consequently, background levels of POPs can be found in the human body. **Hence, statement 1 is correct.**
  - They are transported over large distances through air and water and can be found worldwide (long-range transport).
  - POPs are regulated under the Stockholm Convention that was adopted in 2001. **Hence, statement 2 is correct.**
  - It aims to eliminate or restrict the production and use of all intentionally producedPOPs found in industrial chemicals and pesticides. India signed the Convention in May 2002 and ratified it in January 2006.
  - The most commonly encountered POPs are organochlorine pesticides, such as DDT, polychlorinated dibenzo-p- dioxins (PCDD) and dibenzofurans (PCDF), (PCDF), commonly known as 'dioxin'.

QUESTION 27:

Consider the following statements:

1. 'The Earth Summit' held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits.
2. Biopiracy refers to the appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals o r institutions that seek exclusive monopoly control over these resources and knowledge.

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

Answer: (c)

Explanation

- The historic Convention on Biological Diversity (The Earth Summit) held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits. **Hence, statement 1 is correct.**
- In a follow-up, the World Summit on Sustainable Development held in 2002 inJohannesburg, South Africa, 190 countries pledged their commitment to achieve by 2010, a significant reduction in the current rate of biodiversity loss at global, regional and local levels.
- With increasing resources put into 'bioprospecting' (exploring molecular, genetic and species-level diversity for products of economic importance), nations endowed with rich biodiversity can expect to reap enormous benefits.
- Biopiracy, a term originally coined by ETC Group, refers to the appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals or institutions that seek exclusive monopoly control (patents or intellectual property) over these resources and knowledge. **Hence, statement 2 is correct.**

QUESTION 28:

With reference to Wildlife Crime Control Bureau (WCCB), which of the following statements is/are correct?

1. It is a statutory body for enforcing Wildlife (Protection) Act, 1972.
2. It is responsible for implementation of obligations under various international conventions and protocols.

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

Answer: (c)

Explanation

- The Government of India constituted a statutory body, the Wildlife Crime Control Bureau on 6th June 2007, by amending the Wildlife (Protection) Act, .1972. **Hence, statement 1 is correct.**
- The bureau would complement the efforts of the state governments, primary enforcers of the Wildlife(Protection) Act, 1972 and other enforcement agencies of the country.
- **Functions**
  - Collection, collation of intelligence and its dissemination and establishment of a centralized Wildlife Crime data bank;
  - Coordination of actions by various enforcement authorities towards the implementation of the provisions of this Act.
  - Implementation of obligations under the various international Conventions and protocols. **Hence, statement 2 is correct.**
  - Assistance to concerned authorities in foreign countries and concerned international organizations to facilitate coordination and universal action for wildlife crime control;
  - Development of infrastructure and capacity building for scientific and professional investigation;
  - Advise the Government of India on issues relating to wildlife crimes having national and international ramifications, and suggest changes required in relevant policy and laws from time to time.

QUESTION 29:

Which of the following statements is/are correct?

1. Sodium is used as the coolant to remove the heat generated in the Fast Breeder Reactors.
2. India has limited reserves of thorium but fairly abundant reserves of uranium.
3. Nuclear Energy Conclave is organised by the International Atomic Energy Agency.

Select the correct answer using the code given below:

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

Answer: (a)

Explanation

- Sodium, because of its good heat transfer and nuclear properties, is used as the coolant to remove the heat generated in the reactor. **Hence, statement 1 is correct.**

- Exploration of atomic minerals in India, undertaken since the early fifties, has indicated that India has limited reserves of uranium (natural uranium consists of mostly 238U, with 0.7 % 235U), but fairly abundant reserves of thorium (232Th). **Hence, statement 2 is not correct.**
- The 11th Nuclear Energy Conclave was organized by the India Energy Forum and not the International Atomic Energy Agency. It was held in New Delhi on 18th October 2019. **Hence, statement 3 is not correct.**

QUESTION 30:

With reference to Section 3(d) of Indian Patent Act, 1970, consider the following statements:

1. It prevents the "ever-greening" of patents.
2. It allows governments to license third parties to produce a patented product without the consent of patent owners.

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

Answer: (a)

Explanation

- **Section 3(d) of Indian Patent Act, 1970 prevents the "ever-greening"** of patents. It means that the following inventions are not patentable for mere discovery of a new form of a known substance and which does not result in increased efficacy of that substance, mere discovery of any new property, new use for a known substance, mere use of a known process, machine or apparatus unless such process results in a new product. **Hence, statement 1 is correct.**
- **Compulsory Licensing (CL)** allows governments to license third parties (that is, parties other than the patent holders) to produce and market a patented product or process without the consent of patent owners. The conditions which need to be fulfilled in order for a compulsory licence to be granted are laid down under Sections 84 and 92 of the Act. **Hence, statement 2 is not correct.**

QUESTION 31:

Recovery programme for critically endangered species and habitats is aimed at protecting endangered species in India. Which of the following species is protected under the recovery programme?

1. Hangul
2. Asian Wild Buffalo
3. Malabar Civet
4. Swamp Deer
5. Red Panda

Select the correct answer using the code given below:

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

Answer: (d)

Explanation

- **The Recovery Programme for Critically Endangered species and habitats** is one of the three components of the centrally funded scheme, Integrated Development of Wildlife Habitats (IDWH).

- The National Board for Wildlife (NBWL) in the year 2018 added four species– the Northern River Terrapin, Clouded Leopard, Arabian Sea Humpback Whale, **Red Panda–** to a Recovery Programme for Critically Endangered Species.
- Before that, 17 species were included in the programme to protect them, and these are the Snow Leopard, Bustard(including Floricans), Dolphin, **Hangul,** Nilgiri Tahr, Marine Turtles, Dugongs, Edible Nest Swiftlet, **Asian Wild Buffalo,** Nicobar Megapode, Manipur Brow-antlered Deer, Vultures, **Malabar Civet,** Indian Rhinoceros, Asiatic Lion, **Swamp Deer** and Jerdon's Courser. **Hence, option (d) is correct.**

QUESTION 32:

Which among the following gases is/are not ozone depleting substances?

1. Chlorofluorocarbons
2. Carbon monoxide
3. Hydrobromofluorocarbons
4. Sulphur dioxide

Select the correct answer using the code given below:

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

Answer: (c)

Explanation

Ozone depleting substances include:

- **Chlorofluorocarbons (CFCs).**
- Hydrochlorofluorocarbons (HCFCs)
- **Hydrobromofluorocarbons (HBFCs)**
- Halons
- Methyl bromide
- Carbon tetrachloride
- Methyl chloroform
- **Sulphur dioxide (SO_2) and carbon monoxide (co)** are not ozone depleting substance. **Hence, option (c) is correct.**

They have been used as:

- refrigerants in commercial, home and vehicle air conditioners and refrigerators
- foam blowing agents
- components in electrical equipment
- industrial solvents
- solvents for cleaning (including dry cleaning)
- aerosol spray propellants
- fumigants.

QUESTION 33:

'Strandhogg' sometimes seen in news, is related to

(a) An Android system bug
(b) An island near Great Nicobar
(c) A newly discovered dwarf planet
(d) Indigenously developed drug to control Measles

Answer: (a)

Explanation

- StrandHogg is **a bug** which **poses a threat to the Android operating systems.** It allows **real-time malware applications** to pose as genuine applications and access user data of all kinds. **Hence, option (a) is correct.**

QUESTION 34:

With reference to National Population Register (NPR), consider the following statements:

1. NPR exercise will be undertaken alongside Census 2021 for the first time in India.
2. It will be conducted by the Office of the Registrar General of India (RGI) under the Home Ministry.

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

Answer: (b)

Explanation

- According to the Citizenship Rules (2003), an **National Population Register (NPR)** is the register containing details of persons usually residing in a village or rural area or town or ward or demarcated area (demarcated by the Registrar General of Citizen Registration).
  - According to Census of India, a "usual resident of the country" is one who has been residing in a local area for at least the last six months, or intends to stay in a particular location for the next six months.
- The data for the **NPR** was first collected in 2010 along with the house listing phase of Census 2011. **Hence, statement 1 is not correct.**
- NPR exercise will be conducted by the Office of the Registrar General of India (RGI) under the Home Ministry. **Hence, statement 2 is correct.**

QUESTION 35:

Consider the following pairs:

	Tiger Reserve		State
1.	Valmiki Tiger Reserve	—	Bihar
2.	Kamlang Tiger Reserve	—	Tripura
3.	Bandhavgarh Tiger Reserve	—	Chhattisgarh
4.	Panna Tiger Reserve	—	Madhya Pradesh

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

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

Answer: (a)

Explanation

- **Kamlang Tiger Reserve** is located in **Arunachal Pradesh.**
- **Bandhavgarh Tiger Reserve** is located in **Madhya Pradesh.**
- **Hence, pairs 1 and 4 are correctly matched.**

QUESTION 36:

Consider the following statements:

1. The National Pharmaceutical Pricing Authority (NPPA) is under the jurisdiction of the Ministry of Chemical and Fertilizers.
2. The National List of Essential Medicines (NLEM) is prepared by the Ministry of Health and Family Welfare.

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

Answer: (c)

Explanation

- India's drug pricing regulator, National Pharmaceutical Pricing Authority (NPPA), has allowed an increase in the maximum retail prices of 21 drugs currently under price control by as much as 50%.

- **National Pharmaceutical Pricing Authority (NPPA)** is an attached office of the Department of Pharmaceuticals (DoP), **Ministry of Chemicals & Fertilizers. Hence, statement 1 is correct.**
- The **Ministry of Health and Family Welfare** revises the National List of Essential Medicines (NLEM). **Hence, statement 2 is correct.**

QUESTION 37:

The "Red Data Books" published by the International Union for Conservation of Nature and Natural Resources (IUCN) contain lists of (2011)

1. Endemic plant and animal species present in the biodiversity hotspots.
2. Threatened plant and animal species.
3. Protected sites for conservation of nature and natural resources in various countries.

Select the correct answer using the codes given below:

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

Answer: (b)

Explanation

- The International Union for Conservation of Nature (IUCN) is a membership Union uniquely composed of both government and civil society organisations.
- It provides public, private and non-governmental organisations with the knowledge and tools that enable human progress, economic development and nature conservation to take place together.
- Created in 1948, IUCN has evolved into the world's largest and most diverse environmental network.
- It publishes **Red Data book which contains a list of 'Threatened species'** (vulnerable, endangered and critically endangered).
- Established in 1964, IUCN's Red List of Threatened Species has evolved to become the world's most comprehensive information source on the global conservation status of animal, fungi and plant species. **Hence, option (b) is correct.**

QUESTION 38:

'BioCarbon Fund Initiative for Sustainable Forest Landscapes' is managed by the

(a) Asian Development Bank
(b) International Monetary Fund
(c) United Nations Environment Programme
(d) World Bank

Answer: (d)

Explanation

- The BioCarbon Fund Initiative for Sustainable Forest Landscapes is a multilateral fund, supported by donor governments and managed by the World Bank.
- It promotes reducing greenhouse gas emissions from the land sector from deforestation and forest degradation in developing countries (REDD+), and by sustainable agriculture as well as smarter land-use planning, policies and practices. **Hence, option (d) is correct.**

QUESTION 39:

With reference to an initiative called 'The Economics of Ecosystems and Biodiversity (TEEB)', which of the following statements is/are correct?

1. It is an initiative hosted by UNEP, IMF and World Economic Forum.
2. It is a global initiative that focuses on drawing attention to the economic benefits of biodiversity.
3. It presents an approach that can help decision-makers recognize, demonstrate and capture the value of ecosystems and biodiversity.

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

Answer: (c)

Explanation

- TEEB is a global initiative focused on "making nature's values visible". Its principal objective is to mainstream the values of biodiversity and ecosystem services into decision-making at all levels. **Hence, statement 3 is correct.**
- It aims to achieve this goal by following a structured approach to valuation that helps decision-makers recognize the wide range of benefits provided by ecosystems and biodiversity, demonstrate their value in economic terms and, where appropriate, suggest how to capture those values in decision-making. **Hence, statement 2 is correct.**
- It is based in Geneva, Switzerland at the International Environment House. The TEEB office is hosted by the United Nations Environment Programme (UNEP) under the Biodiversity and Ecosystem Services Branch (BESB) of the Ecosystems Division. **Hence, statement 1 is not correct.**

QUESTION 40:

Consider the following pairs:

	Protected Area	Well-known For
1.	Bhitarkanika, Orissa	Salt Water Crocodile
2.	Desert National Park, Rajasthan	Great Indian Bustard
3.	Eravikulam, Kerala	Hoolak Gibbon

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

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

Answer: (b)

Explanation

- **Bhitarkanika National Park** is the core area of the Bhitarkanika Wildlife Sanctuary located in the Kendrapara district in the state of Odisha. It was designated as a national park in 1998 and as a Ramsar site by the state of Odisha in 2002.
  - The national park is **home to saltwater crocodile (Crocodylus porosus), Indian python, king cobra, black ibis, darters** and many other species of flora and fauna. It hosts a large number of mangrove species. The national park and wildlife sanctuary are inundated by the rivers Brahmani, Baitarani, Dhamra, Pathsala. **Hence, pair 1 is correctly matched.**

- **Desert National Park** is located in the Thar Desert and is situated near Jaisalmer. The major wildlife found in the park are **chinkara, desert fox, blackbuck, Bengal fox, spiny-tail lizard, sand fish, desert monitors, chameleons, etc.** The main attraction of the national park is the **Great Indian Bustard** which is an endangered bird species. **Hence, pair 2 is correctly matched.**
- **Eravikulam National Park,** located in Kerala, holds the largest viable population of the **endangered Nilgiri Tahr and is a famous habitat of Neelakurinji,** which blooms once in 12 years. Apart from Tahr, the park is an abode of other little known fauna such as nilgiri marten (endemic), ruddy mongoose, small clawed otter, dusky striped squirrel etc.
- **Hoolock Gibbons are found in several states of North-East** including Assam, Arunachal Pradesh, Manipur, Meghalaya, Tripura and Nagaland. They are also spotted in the Kaziranga National Park, Manas Wildlife Sanctuary and Namdhapha National Park. **Hence, pair 3 is not correctly matched.**

QUESTION 41:

Consider the following statements, regarding the use of Sugarcane

1. It protects the liver against infections and helps in keeping the bilirubin levels in control.
2. It is also a major biofuel crop when blended with petrol.
3. The production of sugarcane is limited to the northern states of India.

Which of the statements given above is/are correct?

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

Answer: (a)

Explanation

- Sugarcane juice is **a good source of glucose. It helps to rehydrate the human body** and gives it a boost of energy. The antioxidants in sugarcane juice help to fight infections and boost the immune system of the body. It also protects the liver against infections and helps in keeping the bilirubin levels in control. **Hence, statement 1 is correct.**
- Sugarcane is blended with petrol and it is a **beneficial biofuel because it returns roughly eight times more energy than is invested in it. Hence, statement 2 is correct.**
- The sugar industry has two major areas of concentration. One comprises Uttar Pradesh, Bihar, Haryana and Punjab in the north and the other that of Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh in the south. **Hence, statement 3 is not correct.**

QUESTION 42:

Consider the following statements:

1. The Cauvery river originates from the Brahmagiri range of Karnataka.
2. The entire catchment area of Cauvery receives rainfall from the South West Monsoon.

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

Answer: (a)

Explanation

- The Cauvery River rises at an elevation of 1,341 m at Talakaveri on the **Brahmagiri range near Cherangala village** of Kodagu (Coorg) district of **Karnataka. Hence, statement 1 is correct.**
- The total length of the river from origin to outfall is 800 km.
- Its **upper catchment area** receives rainfall during summer by the **south-west monsoon and the lower catchment area** during the winter season by the **retreating north-east monsoon. Hence, statement 2 is not correct.**
- Cauvery is therefore **almost a perennial river** with comparatively less fluctuations in flow and is very useful for irrigation and hydroelectric power generation.

QUESTION 43:

With reference to the summer solstice, consider the following statements:

1. In the northern hemisphere, the sun lies directly over the tropic of cancer.
2. The days and nights are of equal duration in the northern hemisphere.

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

Answer: (a)

Explanation

- In the Northern Hemisphere, the summer solstice occurs on June 21 with the **longest period of daylight.** The Northern Hemisphere is tilted towards the sun and the rays of the **sun fall directly on the Tropic of Cancer. Hence, statement 1 is correct.**
- As a consequence, areas exposed to sun rays receive extra heat and the areas near the poles get less heat (as the rays of the sun are slanting). As a large area of the Northern Hemisphere is receiving light from the sun, **it is summer in the regions north of the equator and longest day & the shortest night** at these places occur on 21st June. **Hence, statement 2 is not correct.**

QUESTION 44:

Consider the following statements:

1. The heatwave is considered when the maximum temperature of a station reaches at least 40°C for Plains and at least 30°C for Hilly regions.
2. The Heatwave is recognised as a natural disaster under the National Disaster Management Act, 2005.

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

Answer: (a)

Explanation

- According to IMD, heatwaves need not be considered until the maximum temperature of a station reaches at least 40°C for Plains and at least 30°C for Hilly regions. **Hence, statement 1 is correct.**

- When the actual maximum temperature remains 45°C or more irrespective of normal maximum temperature, heat waves should be declared.
- The government **doesn't recognise heat waves** as a natural disaster under the **National Disaster Management Act, 2005.** Only a few states and a handful of cities have developed their Heat Action Plan. **Hence, statement 2 is not correct.**

QUESTION 45:

With reference to Tropical Cyclones, consider the following statements:

1. The eye of a cyclone is characterised by a central region of clear skies, cold temperatures, and high atmospheric pressure.
2. In the Northern Hemisphere, the spin of the cyclone is counterclockwise.

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

Answer: (b)

Explanation:

- Cyclones are the formation of a very low-pressure system with very high-speed winds revolving around it. Factors like wind speed, wind direction, temperature and humidity contribute to the development of cyclones.
- Before cloud formation, water takes up heat from the atmosphere to change into vapour. When water vapour changes back to liquid form as raindrops, this heat is released to the atmosphere.
- The heat released to the atmosphere warms the air around. The air tends to rise and causes a drop in pressure. More air rushes to the centre of the storm. This cycle is repeated.
- The eye is a central region of clear skies, warm temperatures, and low atmospheric pressure. **Hence, statement 1 is not correct.**
- In the Northern Hemisphere the direction of the cyclone is counterclockwise, and in the Southern Hemisphere, it is clockwise. **Hence, statement 2 is correct.**

QUESTION 46:

With reference to El Nino, consider the following statements:

1. It refers to the unusual warming of the central and east-central equatorial Pacific Ocean.
2. It increases the upwelling of cold water, increasing the uplift of nutrients from the bottom of the ocean.
3. Strong El Nino brings heavy rains to India.

Which of the statements given above is/are correct?

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

Answer: (c)

Explanation:

- El Nino refers to the unusual warming of the central and east-central equatorial Pacific Ocean which affects global weather. **Hence, statement 1 is correct.**

- El Nino reduces the upwelling of cold water, decreasing the uplift of nutrients from the bottom of the ocean. This affects marine life and sea birds. The fishing industry is also affected. **Hence, statement 2 is not correct.**
- In India, the El Nino has usually been the harbinger of drought whereas La Nina is associated with good rain. **Hence, statement 3 is not correct.**

QUESTION 47:

Which of the following statements is/are correct regarding Solar Risk Mitigation Initiative (SRMI)?

1. It is an initiative for the deployment of solar energy in the poorest countries of the world.
2. SRMI was launched by the World Bank and Agence Française de Développement (AFD) to support International Solar Alliance goals.
3. The initiative was launched at the first International Solar Alliance (ISA) summit held in Delhi.

Select the correct answer using the code given below:

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

Answer: (d)

Explanation

- The **World Bank and Agence Française de Développement (AFD)** are developing a joint Global **Solar Risk Mitigation Initiative (SRMI),** an integrated approach to tackle policy, technical and financial issues associated with scaling up solar energy deployment, especially in some of the **world's poorest countries. Hence, statement 1 is correct.**
- The initiative will **support the International Solar Alliance (ISA) goal to reduce costs and mobilize $1,000 billion in public and private investments to finance 1,000 GW of global solar capacity by 2030. Hence, statement 2 is correct.**
- It was **Initiated in Delhi at the first International Solar Alliance (ISA) summit** in March 2018. **Hence, statement 3 is correct.**

QUESTION 48:

Consider the following statement regarding 'fuel cell technology'?

1. It is a device that converts chemical energy directly into electricity and heat.
2. The maintenance cost of the fuel cell is low as compared to the heat engines.
3. The supply of electricity is instantaneous, unlike the battery system.

Which of the statements given above is/are correct?

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

Answer: (d)

Explanation

- Fuel cells are **electrochemical devices that convert chemical energy from the reactants directly into electricity and heat.** The device consists of an electrolyte layer in contact with a porous anode and cathode on either side. **Hence, statement 1 is correct.**

- There are no moving parts in the fuel cell stack, which provides reliable, vibration-free operation. Nearly instantaneous recharge capability when compared to batteries. **Hence, statement 2 is correct.**
- The system of Heat engines involve **moving parts,** which implies that they **wear over time. Regular maintenance** of moving components is **required for proper operation of the mechanical components. Hence, statement 3 is correct.**

QUESTION 49:

Consider the following pairs:

	Communities/ Groups sometimes seen in news		**Country**
1.	Uighurs	—	Myanmar
2.	Houthi	—	Yemen
3.	Chakma	—	Bangladesh

Which of the pairs given above is/are correct?

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

Answer: (c)

Explanation

- **Uighurs** are a Turkic ethnic group predominantly found in **Central Asia.** They are not present in Myanmar. **Hence, statement 1 is not correct.**
- **Houthis** is an Islamic political and armed group that emerged in northern **Yemen. Hence, statement 2 is correct.**
- The **Chakma people** are the largest ethnic group residing in the Chittagong Hill Tracts region in southeastern **Bangladesh. Hence, statement 3 is correct.**

QUESTION 50:

Consider the following pairs:

	Desert	**Country**
1.	Great Basin Desert	Australia
2.	Atacama	Chile
3.	Sonoran	South Africa
4.	Patagonian Desert	Argentina

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

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

Answer: (c)

Explanation

- The **Great Basin Desert** is the largest desert in the **United States of America** and the 10th biggest one in the world. It covers an area of about 190,000 square miles. It is bordered by the **Rocky Mountains to the east, the Sierra Nevada range to the west,** and the **Columbia Plateau** in the north. **Hence, pair 1 is not correctly matched.**

- The **Atacama Desert** is a desert plateau in Chile (South America) covering a 1000-km strip of land on the Pacific coast, **west of the Andes mountains.** The Atacama desert is one of the driest places in the world. **Hence, pair 2 is correctly matched.**
- The **Sonoran Desert is a North American desert** which covers large parts of the Southwestern United States in **Arizona and California** and Northwestern Mexico. It is the hottest desert in Mexico. **Hence, pair 3 is not correctly matched.**
- The **Patagonian Desert** is the world's **eighth most extensive desert** and the largest one in **Argentina.** The Patagonian Desert is bordered by the Atlantic Ocean to the east and the Andes Mountains to the west. **Hence, pair 4 is correctly matched.**

QUESTION 51:

Consider the following statements with reference to the 'Budapest Convention':

1. It is the sole legally binding international multilateral treaty on cybercrime.
2. India is the latest signatory of the convention.

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

Answer: (a)

Explanation

- **The Convention on Cybercrime of the Council of Europe,** known as the **Budapest Convention,** is the **sole legally binding international multilateral treaty on cybercrime.** It coordinates cybercrime investigations between nation-states and criminalizes certain cybercrime conduct.
  - It serves as a guideline for any country developing comprehensive national legislation against Cybercrime and as a framework for international cooperation between State Parties to this treaty. **Hence, statement 1 is correct.**
- **Significance:** Almost all stakeholders agree that the current form of cross-border data sharing for **law enforcement through the Mutual Legal Assistance Treaty (MLAT)** is insufficient for the digital age.
  - However, there is an ongoing debate whether to revamp MLAT or form an entirely new system for cybercrimes in the form of this Convention.
- India still has not become a signatory to the Convention on Cybercrime. The Convention allows for transborder access to data and thus infringes on national sovereignty. **Hence, statement 2 is not correct.**
  - India's apprehension is that the regime of the Convention is not effective, "the promise of cooperation not firm enough," and there are grounds for refusal to cooperate.

QUESTION 52:

Regarding 'Quantum Computer', consider the following statements:

1. It makes direct use of distinctively quantum mechanical phenomena.
2. Such computers store information as bits.

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

Answer: (a)

Explanation

- A quantum computer is any device for computation that **makes direct use of distinctively quantum mechanical phenomena,** such as **superposition and entanglement,** to perform operations on data. **Hence, statement 1 is correct.**
- In a classical (or conventional) computer, information is stored as bits; in a **quantum computer, it is stored as qubits (quantum bits).**
  - They exploit the properties of quantum mechanics, the science that governs how matter behaves on the atomic scale.
  - In this scheme of things, **processors can be a 1 and a 0 simultaneously,** a state called quantum superposition. **Hence, statement 2 is not correct.**

QUESTION 53:

Danakil Depression is located in which of the following countries?

(a) Australia
(b) Yemen
(c) Ethiopia
(d) Russia

Answer:C

Explanation

- Danakil Depression is located in **Ethiopia,** at the northern end of the **Great Rift Valley,** and separated by live volcanoes from the Red Sea.
  - Danakil is one of the world's lowest places at 100 metres below sea level.
  - The plain was formed by the evaporation of an inland water body.
- All the water entering Danakil evaporates, and no stream flows out from its extreme environment.
- The Danakil Depression lies at the triple junction of three tectonic plates and has a complex geological history.
  - It has developed as a result of Africa and Asia moving apart, causing rifting and volcanic activity. Erosion, inundation by the sea, the rising and falling of the ground have all played their part in the formation of this depression

Hence, option (c) is correct.

QUESTION 54:

With reference to Inner Line Permit, which among the following statements is/are correct?

1. It was originally created by the British to safeguard their commercial interests.
2. It is not mandatory for Indian nationals who are visiting for tourism purposes.
3. It is implemented in the entire north-eastern region.

Select the correct answer using the code given below:

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

Answer: (b)

Explanation

- **Inner Line Permit (ILP)** is an official travel document issued by the Government of India to allow inward travel of an Indian citizen into a protected area for a limited period. It is **obligatory for Indian citizens from outside those states to obtain a permit for entering into the protected state.**
- This is an offshoot of the **Bengal Eastern Frontier Regulations, 1873,** which protected Crown's interest in the tea, oil and elephant trade by prohibiting "British subjects" from entering into these "Protected Areas". The ILP was **originally created by the British to safeguard their commercial interests,** it continues to be used in India, officially to protect tribal cultures in northeastern India. **Hence, statement 1 is correct.**
- There are different kinds of ILP, **one for tourists** and others for people who intend to stay for long-term periods, often for employment purposes. **Hence, statement 2 is not correct.**
- Currently, ILP is implemented in **Arunachal Pradesh, Nagaland, Mizoram and Manipur.** There are also ongoing demands for the introduction of ILP in Assam, and Meghalaya to regulate the entry of outsiders into the state.
    - The Inner Line Permit comes into effect in Manipur from January 1, 2020, making it the fourth northeastern state after Nagaland, Mizoram and Arunachal Pradesh to come under the ILP regime.
- Recently, the Meghalaya Cabinet has approved amendments to the Meghalaya Residents Safety and Security Act (MRSSA) 2016.
- This makes registration on entry mandatory for visitors who intend to spend more than 24 hours in the state of Meghalaya.
    - This will require non-resident visitors to register themselves on the lines of the Inner Line Permit (ILP) system of Arunachal Pradesh, Nagaland, Manipur and Mizoram.

  Hence, statement 3 is not correct.

QUESTION 55:

Fordow Plant, which was recently seen in the news, is located in?

(a) Russia
(b) North Korea
(c) India
(d) Iran

Answer: (d)

Explanation

- Recently, **Iran** has resumed **uranium enrichment** at its underground **Fordow plant** located near Tehran.

- **Fordow Fuel Enrichment Plant (FFEP)** is Iran's second pilot enrichment plant (the first is the Pilot Fuel Enrichment Plant at Natanz).
  - The site was originally a tunnel facility associated with Iran's paramilitary organization, the **Islamic Revolutionary Guards Corps (IRGC)** and is located buried in a mountain near the city of Qom. **Hence, option (d) is correct.**

QUESTION 56:

Consider the following statements:

1. Elephant bond is a bond in which people declaring undisclosed income are bound to invest a specified amount of the undisclosed amount into this security.
2. The proceeds from elephant bonds are utilized to finance infrastructure projects only.

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

Answer: (c)

Explanation

- An Elephant Bond is issued to those people who declare their previously undisclosed income and are then bound to invest 50% of that amount in these securities. **Hence, statement 1 is correct.**
  - One of the key features of the proposed mechanism is that those disclosing their black money will receive **immunity from all local laws** including those under foreign exchange, black money laws, and taxation laws.
- The fund gathered by the issuance of these bonds is utilized to finance **infrastructure projects** only. **Hence, statement 2 is correct.**

QUESTION 57:

What are the significance of a practical approach to sugarcane production known as 'Sustainable Sugarcane Initiative'?

1. Seed cost is very low in this compared to the conventional method of cultivation.
2. Drip irrigation can be practiced very effectively in this.
3. There is no application of chemical/inorganic fertilizers at all in this.
4. The scope for intercropping is more in this compared to the conventional method of cultivation.

Select the correct answer using the code given below:

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

Answer: (b)

Explanation

- Sustainable Sugarcane Initiative (SSI) is a practical approach to sugarcane production that seeks to reduce the inputs – water, fertilizer, seed material – while improving sugarcane production significantly
- The cost of seeds can be reduced by up to 75% of what it is in conventional methods of cultivation. **Hence, statement 1 is correct.**

- SSI includes water management using furrow or drip irrigation instead of inundation of water. **Hence, statement 2 is correct.**
- In SSI, the farmers are required to incorporate more organic manures, bio-fertilizers and follow biocontrol measures. However, the sudden switch over to organic cultivation is not advisable. Instead, it suggests a gradual reduction of inorganic and chemical fertilizers. **Hence, statement 3 is not correct.**
- In sugarcane, the scope for intercropping is more than conventional methods as there is a wider spacing between rows. **Hence, statement 4 is correct.**

QUESTION 58:

Which of the following practices can help in water conservation in agriculture? (2017)

1. Reduced or zero tillage of the land
2. Applying gypsum before irrigating the field
3. Allowing crop residue to remain in the field

Select the correct answer using the code given below:

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

Answer: (c)

Explanation

- When crop or pasture is grown from year to year without disturbing the soil through tillage, it is called as zero-tillage or reduced tillage of the land. Zero-tillage increases the amount of water that infiltrates into the soil. It also increases the organic matter retention and nutrient cycling in the soil. **Hence, statement 1 is correct.**
- Gypsum improves the ability of soil to drain and not become waterlogged due to a combination of high sodium, swelling clay and excess water. When gypsum is applied to the soil, it allows water to move into the soil and allows the crop to grow well. But gypsum does not necessarily help in water conservation. **Hence, statement 2 is not correct.**
- The more crop residues are left on the field, the more nutrients stay in the soil and less of water loss due to run off, and so it also helps with water conservation. **Hence, statement 3 is correct.**

QUESTION 59:

Which of the following is/are the advantage/advantages of practising drip irrigation? (2016)

1. Reduction in weed
2. Reduction in soil salinity
3. Reduction in soil erosion

Select the correct answer using the code given below:

(a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) None of the above is an advantage of practising drip irrigation

Answer: (c)

Explanation

- Drip irrigation is the watering method in which water is supplied directly to the root zone of cultivated plants and regulated in small portions using a dispenser-dropper.

- Benefits of drip irrigation include efficient use of water, reduction in soil erosion, controlling of weed growth among others. **Hence, statements 1 and 3 are correct.**
- Reduction in soil salinity is not the advantage of drip irrigation. Hence, statement 2 is not correct.

QUESTION 60:

Which of the following is/are the aim/aims of "Digital India" Plan of the Government of India? (2018)

1. Formation of India's own Internet companies like China did.
2. Establish a policy framework to encourage overseas multinational corporations that collect Big Data to build their large data centres within our national geographical boundaries.
3. Connect many of our villages to the Internet and bring Wi-Fi to many of our schools, public places and major tourist centres.

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

Answer: (b)

Explanation

- Digital India was launched by the Union Government on August 7, 2014. It is to be implemented by the different ministries and units of governments at all levels with overall coordination being done by the **Ministry of Electronics and Information Technology (MeitY).**

Aims of "Digital India" Plan

- **Digital Infrastructure as a Core Utility to Every Citizen**
  - Availability of high speed internet as a core utility for delivery of services to citizens; **Hence, statement 3 is correct.**
  - Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen.
  - Mobile phone and bank account enabling citizen participation in digital and financial space.
  - Easy access to a Common Service Centre.
  - Shareable private space on a public cloud .
  - Safe and secure cyberspace.
- **Governance and Services on Demand**
  - Seamlessly integrated services across departments or jurisdictions
  - Availability of services in real time from online and mobile platforms
  - All citizen entitlements to be portable and available on the cloud
  - Digitally transformed services for improving ease of doing business
  - Making financial transactions electronic and cashless
  - Leveraging Geospatial Information Systems (GIS) for decision support systems and development
- **Digital Empowerment of Citizens**
  - Universal digital literacy
  - Universally accessible digital resources
  - Availability of digital resources/services in Indian languages
  - Collaborative digital platforms for participative governance
  - Citizens not required to physically submit Govt. documents/certificates
- Digital empowerment of citizens by universal digital literacy.
- There is no provision of establishing own internet companies and policy framework to encourage overseas multinational corporations that collect Big Data to build large data centres within our national geographical boundaries. **Hence, statements 1 and 2 are not correct.**

- **Pillars of Growth under Digital India**
  - Broadband Highways
  - Universal Access to Mobile Connectivity
  - Public Internet Access Programme
  - e-Governance: Reforming Government through Technology
  - e-Kranti – Electronic Delivery of Services
  - Information for All
  - Electronics Manufacturing
  - IT for Jobs and Early Harvest Programmes

QUESTION 61:

Consider the following statements:

1. The Central Pollution Control Board (CPCB) is a statutory organization constituted under the Water (Prevention and Control of Pollution) Act.
2. CPCB is entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act.

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

Answer: (c)

Explanation

- Central Pollution Control Board (CPCB) is a **statutory organization** that was constituted in September 1974 under the **Water (Prevention and Control of Pollution) Act, 1974. Hence, statement 1 is correct.**
- CPCB is entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981. Hence, statement 2 is correct.**
- **Principal functions of the CPCB are:**
  - to promote cleanliness of streams and wells in different areas of the States through prevention, control, and abatement of water pollution, and
  - to improve the quality of air and to prevent, control or abate air pollution in the country.
- It also provides technical services to the **Ministry of Environment, Forest and Climate Change** regarding the provisions of the **Environment (Protection) Act, 1986.**

QUESTION 62:

With reference to the 'Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)', which of the following statements is/are correct?

1. Its secretariat is administered by the International Union for Conservation of Nature (IUCN) and is located in Geneva, Switzerland.
2. The convention is legally binding on the Parties and it takes the place of national laws.
3. Appendix I of the convention includes species threatened with extinction.

Select the correct answer using the code given below:

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

Answer: (c)

Explanation

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat is administered by **UNEP (The United Nations Environment Programme)** and is located in **Geneva, Switzerland. Hence, statement 1 is not 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.
  - It plays a **coordinating, advisory and servicing role** in the working of the Convention (CITES). **Hence, statement 2 is not correct.**
- The species covered by CITES are listed in **three Appendices,** according to the degree of protection they need.
- **Appendix I**
  - It lists species that are the most endangered among CITES-listed animals and plants.
  - Examples include gorillas, sea turtles, most lady slipper orchids, and giant pandas. Currently 931 species are listed.
  - They are **threatened with extinction** and CITES prohibits international trade in specimens of these species except when the purpose of the import is not commercial, for instance for scientific research.
  - In these **exceptional cases, trade may take place provided** it is authorized by the granting of both an import permit and an export permit (or re-export certificate). **Hence, statement 3 is correct.**
- **Appendix II**
  - It lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled.
  - Most CITES species are listed in this Appendix, including American ginseng, paddlefish, lions, American alligators, mahogany and many corals. Currently 34,419 species are listed.
  - It also includes so-called "look-alike species", i.e. species whose specimens in trade look like those of species listed for conservation reasons.
  - International trade in specimens of Appendix-II species may be authorized by the granting of an export permit or re-export certificate.
  - No import permit is necessary for these species under CITES (although a permit is needed in some countries that have taken stricter measures than CITES requires).
  - Permits or certificates should only be granted if the relevant authorities are satisfied that certain conditions are met, above all that trade will not be detrimental to the survival of the species in the wild.
- **Appendix III**
  - It is a list of species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation.
  - Examples include map turtles, walruses and Cape stag beetles. Currently 147 species are listed.
  - International trade in specimens of species listed in this Appendix is allowed only on presentation of the appropriate permits or certificates.

QUESTION 63:

With reference to 'Minamata Convention', which of the following statements is/are not correct?

1. It is a global treaty to protect human health and the environment from the adverse effects of arsenic and its compounds.
2. India has not ratified the Minamata Convention.

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

Answer: (c)

Explanation

- The **Minamata Convention** on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury and its compounds. Controlling the **anthropogenic releases of mercury** throughout its lifecycle is one of the key obligations under the Convention. **Hence, statement 1 is not correct.**
- The Minamata Convention entered into force on 16 August 2017, on the 90th day after the date of deposit of the 50th instrument of ratification, acceptance, approval or accession. By February 2020, about 118 countries including **India have ratified the Convention. Hence, statement 2 is not correct.**

QUESTION 64:

Consider the following statements:

1. The United Nations Convention to Combat Desertification (UNCCD) is the outcome of the 1992 Rio Earth Summit.
2. The financial mechanism of the UNCCD is managed by the Global Environment Facility.
3. SDG 10 deals with the issue of desertification.

Which of the statements given above is/are correct?

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

Answer: (b)

Explanation

- The **1992 Rio Earth Summit** gave rise to the three Rio Conventions:
  - Convention on Biological Diversity (CBD);
  - United Nations Framework Convention on Climate Change (UNFCCC);
  - **United Nations Convention to Combat Desertification (UNCCD). Hence, statement 1 is correct.**
- The **Global Environment Facility (GEF)** became a financial mechanism of the UNCCD in May 2010, when the GEF instrument was amended by its Fourth Assembly. The GEF directly contributes to the implementation of the Convention, including its **UNCCD 2018-2030 Strategic Framework** adopted at UNCCD COP13 in Ordos, China. **Hence, statement 2 is correct.**
- **Goal 15 of Sustainable Development Goals (SDG)** declares that "we are determined to protect the planet from **degradation,** including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations". **Hence, statement 3 is not correct.**

QUESTION 65:

With reference to the "Nationally Determined Contributions" (NDCs) of Paris Agreement, which of the following is/are included in India's first NDC?

1. To reduce the emissions intensity of its GDP by 33-35% from 2005 levels by 2030.
2. To achieve about 40% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
3. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.

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

Answer: (d)

Explanation

- The 21st session of the **Conference of the Parties (COP21)** of the United Nations Framework Convention on Climate Change (UNFCCC) was held in Paris in 2015.
- 195 participating countries negotiated and adopted the Paris Agreement, which includes objectives to peak greenhouse gas emissions as soon as possible, to limit the **global average temperature increase above pre-industrial levels to well below 2°C, and to pursue efforts to limit the increase to 1.5°C.**
- The Paris Agreement requires Parties to put forward their best efforts through **"nationally determined contributions" (NDCs).** These NDCs represent targets and actions for the post-2020 period. India ratified its contribution on the 2 of October 2016.
- **India's first NDC includes commitments:**
  - to reduce the emissions intensity of its GDP by 33-35% **from 2005 levels by 2030. Hence, statement 1 is correct.**
  - to achieve about **40 percent cumulative electric power installed capacity** from **non-fossil fuel-based energy resources by 2030** with the help of transfer of technology and low cost international finance including from **Green Climate Fund (GCF). Hence, statement 2 is correct.**
  - to create an **additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent** through additional forest and tree cover by 2030. **Hence, statement 3 is correct.**
  - to better adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management.

QUESTION 66:

Regarding National Biodiversity Authority, consider the following statements:

1. National Biodiversity Authority is a statutory body.
2. National Biodiversity Authority notifies an area as Biodiversity Heritage Site (BHS).

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

Answer: (a)

Explanation

- The **National Biodiversity Authority (NBA)** was established in 2003 by the Central Government to implement India's Biological Diversity Act (2002).
  - **It is a Statutory body** that performs facilitative, regulatory and advisory functions for the Government of India on the issue of Conservation, sustainable use of biological resources and fair equitable sharing of benefits of use. **Hence, statement 1 is correct**
- At state level, **State Biodiversity Board (SBBs)** focus on advice the State Governments, subject to any guidelines issued by the Central Government, on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits arising out of the utilization of biological resources
- And the **Local Level Biodiversity Management committees (BMCs)** are responsible for promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivators, domesticated stocks and breeds of animals and microorganisms besides chronicling of knowledge relating to biological diversity.
- **The State Government may in consultation with the local bodies,** notify in the Official Gazette, areas of biodiversity importance as **Biodiversity Heritage Sites (BHS)** under Biological Diversity Act, 2002. **Hence, statement 2 is not correct.**

QUESTION 67:

Consider the following pairs:

	Convention/ Protocol		**Purpose**
1.	Cartagena Protocol on Biosafety	—	To prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species.
2.	Ramsar Convention	—	To conserve and sustainable use of wetlands.
3.	Convention on Biological Diversity	—	To protect biological diversity from the potential risks posed by Living Modified Organisms.

Which of the pairs given above is/are correct?

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

Answer: (c)

Explanation

- **Cartagena Protocol on Biosafety** seeks to protect biological diversity from the potential risks posed by **Living Modified Organisms** resulting from modern biotechnology. **Hence, pair 1 is not correctly matched.**
- The **Ramsar Convention on Wetlands** of International Importance is an **international treaty for the conservation and sustainable use of wetlands.**
- The Convention was adopted in the Iranian city of Ramsar in 1971 and came into force in 1975. Since then, almost 90% of UN member states, from all the world's geographic regions, have acceded to become "Contracting Parties".
  - India has 37 Ramsar Sites which are the Wetlands of International importance.
  - **Hence, pair 2 is correctly matched.**
- Convention on Biological Diversity (CBD) calls on parties to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species. **Hence, pair 3 is not correctly matched.**

QUESTION 68:

With reference to the 'Clean Seas Campaign', consider the following statements:

1. It was launched by the United Nations Environment Programme (UNEP) to fight marine plastic pollution.
2. India is not a member of this campaign.

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

Answer: (a)

Explanation

- The Clean Seas Campaign was **launched by the United Nations Environment Programme (UNEP)** to galvanize communities across the World to fight marine plastic pollution.
- The campaign pledges to cut back on single-use plastics, protect national waters and encourage more recycling.
- The campaign now represents the world's largest global alliance for combatting marine plastic pollution with commitments covering more than 60 per cent of the world's coastlines. **Hence, statement 1 is correct.**
- According to the Clean Seas campaign at least 8 million tonnes of plastic leaks into the ocean each year. This has had a severe impact on aquatic life, found to be literally dying due to ingestion.
- In collaboration with the United Nations Environment Programme (UNEP), **India was the global host of the World Environment Day (5th June) in 2018 with its theme as 'Beat Plastic Pollution'.**
- India joined the 'Clean Seas Campaign' on this World Environment Day. It made a bold commitment to address plastic pollution upstream by banning all single-use plastics by 2022. **Hence, statement 2 is not correct.**
- According to the government of India's official data, about 25,000 tonnes of plastic waste is generated every year in India and of this, only 60 per cent is recycled.

QUESTION 69:

Why does the food cooked in a pressure cooker take less time and consume a lesser amount of water than other conventional cooking methods?

(a) Pressure cooker represents an isolated system in thermodynamics that allows no mass and heat to be transferred out of the system.
(b) The pressure inside the pressure cooker is higher due to which the boiling point of water decreases.
(c) Latent heat of sublimation increases inside the pressure cooker.
(d) The boiling point of water increases inside the pressure cooker due to higher pressure.

Answer: (d)

Explanation

- A pressure cooker is a pot with a special lid that seals. The sealing ring, typically a rubber gasket, prevents steam and air from escaping as they expand. This causes the pressure in the vessel (Pressure Cooker) to build as the temperature rises.
- Increase in pressure increases the boiling point of water. Resultantly, a greater amount of heat transfer can occur inside the cooker before the water gets boiled and gets converted to gas.
- This higher amount of heat transfer to water and then to food inside the cooker is responsible for fast cooking of food and lesser amount of water being required. **Hence, option (d) is correct.**

- Pressure cooker represents a closed system and not an isolated system in thermodynamics. Closed system allows no transfer of mass out of the system but heat or energy can be transferred out from it.

QUESTION 70:

With reference to Radio Frequency Identification (RFID) technology, consider the following statements:

1. RFID tags can have both read and write capabilities.
2. Active RFID tags do not rely on external power sources.

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

Answer: (c)

Explanation

Radio Frequency Identification (RFID) is the **use of radio waves to read and capture information stored** on a tag attached to an object. At a basic level, each RFID tag works in the same way:

- Data stored within an RFID tags microchip waits to be read.
- The tag's antenna receives electromagnetic energy from an RFID reader's antenna.
- Using power from its internal battery or power harvested from the reader's electromagnetic field, the tag sends radio waves back to the reader.
- The reader picks up the tag's radio waves and interprets the frequencies as meaningful data.
- Active, semi-passive and passive RFID tags are making RFID technology more accessible and prominent in our world. These tags are less expensive to produce, and they can be made small enough to fit on almost any product.
- **Active and semi-passive RFID tags use internal batteries to power their circuits.** An active tag also uses its battery to broadcast radio waves to a reader, whereas a semi passive tag relies on the reader to supply its power for broadcasting. Because these active tags contain more hardware than passive RFID tags, they are more expensive. Thus Active RFID tags do not rely on external power sources. **Hence, statement 2 is correct.**

RFID tags have three storage types:

- **Read-Write tags** have the ability to add additional data or be overwritten. **Hence, statement 1 is correct.**
- **Read-Only tags** cannot be added to or overwritten, they contain only the data that is stored in them when they were made.
- **Write once, Read many (WORM) tags** can have additional data added once, but they cannot be overwritten.

QUESTION 71:

With reference to the Genetic Engineering Appraisal Committee (GEAC), consider the following statements:

1. It is an autonomous body and does not have any statutory status.
2. It regulates manufacturing, use and import, export of genetically engineered organisms and cells in the country.

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

Answer: (b)

Explanation

- **Genetic Engineering Appraisal Committee (GEAC)** is a **statutory body** under the Environment Protection Act 1986 of the Ministry of Environment & Forests (MoEF). **Hence, statement 1 is not correct.**
- GEAC, the apex body regulates manufacturing, use, import, export and storage of hazardous micro-organisms or genetically engineered organisms and cells in the country. **Hence, statement 2 is correct.**

QUESTION 72:

The Codex Alimentarius Commission is seen frequently in the news. It is associated with–

(a) Food and Agriculture Organization
(b) World Trade Organization
(c) International Monetary Fund
(d) International Maritime Organisation

Answer: (a)

Explanation

- The **Codex Alimentarius** international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade.
- Codex standards are based on sound science provided by independent international risk assessment bodies or ad-hoc consultations organized by FAO and WHO. **Hence, option (a) is correct.**

QUESTION 73:

Consider the following statements:

1. The Office of the Chief Justice of India (CJI) is not a 'public authority' under the Right to Information Act, 2005.
2. While appointing the Supreme Court Judges, the President of India has to consult the Chief Justice of India.

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

Answer: (b)

Explanation

- **Public Authority** under the Right to Information Act, 2005 includes the **body constituted by or under the Constitution. Article 124** of the Constitution deals with the **establishment of the Supreme Court** of India.
- The **Supreme Court** has ruled that the office of the Chief Justice of India (CJI) is a **public authority** under the **Right to Information (RTI) Act, 2005.** The Office of the Chief Justice of India (CJI) is a 'public authority' under the Right to Information (RTI) Act. **Hence, statement 1 is not correct.**
- The judges of the Supreme Court are appointed by the President in consultation with the Chief Justice of India. **Hence, statement 2 is correct.**

QUESTION 74:

'Liberhan Commission', which was recently seen in news, is related to:

(a) Tax Reforms
(b) Ayodhya Land Dispute
(c) Digital Payments
(d) Inter-State River Dispute

Answer: (b)

Explanation

- Liberhan Commission of Inquiry was **appointed on 16th December, 1992,** 10 days after the demolition of the Babri Masjid.
- It was assigned the **task** of probing the sequence of events that led to the occurrences at the Ram Janmabhoomi-Babri Masjid complex on 6th December, 1992.
- The **Supreme Court in its judgement** in Ayodhya land dispute case affirmed the conclusion of the Liberhan Commission that demolition of the Babri Masjid was planned. **Hence, option (b) is correct.**

QUESTION 75:

With reference to the 'International Seed Treaty', consider the following statements:

1. It aims to conserve and sustainably use plant genetic resources for food and agriculture.
2. India is not a signatory to the treaty.

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

Answer: (a)

Explanation

- **International Treaty on Plant Genetic Resources for Food and Agriculture,** also known as the International Seed Treaty aims to **conserve and sustainably use plant genetic resources** for food and agriculture, and fair and equitable sharing of the benefits arising out of their use, in harmony with the **Convention on Biological Diversity. Hence, statement 1 is correct.**
- India is a signatory to the treaty. India enacted "Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001" to protect Farmers' Rights and breeder's rights. **Hence, statement 2 is not correct.**

QUESTION 76:

SAANS Campaign, recently in the news, is related to:

(a) Air Purification
(b) Asthma
(c) Pneumonia
(d) Reduction of CO_2 worldwide

Answer: (c)

Explanation

- The **Ministry of Health and Family Welfare** has launched a campaign in Gujarat named **Social Awareness and Action to Neutralise Pneumonia Successfully (SAANS).**
- The aim is to **reduce child mortality due to pneumonia,** which contributes to around 15% of deaths of children under the age of five annually. **Hence, option (c) is correct.**

QUESTION 77:

Consider the following statements: (2019)

1. Under the Ramsar Convention, it is mandatory on the part of the Government of India to protect and conserve all the wetlands in the territory of India.
2. The Wetlands (Conservation and Management) Rules, 2010 were framed by the Government of India based on the recommendations of Ramsar Convention.
3. The Wetlands (Conservation and Management) Rules, 2010 also encompass the drainage area or catchment regions of the wetlands as determined by the authority.

Which of the statements given above is/are correct?

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

Answer: (b)

Explanation

- Under the Ramsar Convention, it is not mandatory on the part of the contracting parties to protect and conserve **all the wetlands** in their territory. **Hence, statement 1 is not correct.**
- Clause 3 of the Wetlands (Conservation and Management) Rules, 2010, states that **the wetlands categorised as Ramsar Wetlands of International Importance under the Ramsar Convention** as specified in the Schedule shall be regulated under these rules. **Hence, statement 2 is correct.**
- Under the Wetlands (Conservation and Management Rules), 2010, 'Wetland' means an area of marsh, peatland or water, natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters and includes all inland waters such as lakes, reservoir, tanks, backwaters, lagoon, creeks, estuaries and man-made wetland and the zone of direct influence on wetlands that is to say the drainage area or catchment region of the wetlands as determined by the authority, but does not include main river channels, paddy fields and the coastal wetland covered under the GoI notification. **Hence, statement 3 is correct**

QUESTION 78:

Which of the following are in Agasthyamala Biosphere Reserve?

(a) Neyyar, Peppara and Shendurney Wildlife Sanctuaries; and Kalakad Mundanthurai Tiger Reserve
(b) Mudumalai, Sathyamangalam and Wayanad Wildlife Sanctuaries; and Silent Valley National Park
(c) Kaundinya, Gundla Brahmeswaram and Papikonda Wildlife Sanctuaries; and Mukurthi National Park
(d) Kawal and Sri Venkateswara Wildlife Sanctuaries; and Nagarjunasagar-Srisailam Tiger Reserve

Answer: (a)

Explanation

- The **Agasthyamalai Biosphere Reserve is located in the Western Ghats on the border of the districts of Kollam and Thiruvananthapuram.** Consisting mostly of tropical forest, the site is home to 2,254 species of higher plants, including about 400 that are endemic.
- It is also a unique genetic reservoir of cultivated plants, in particular cardamom, jamun, nutmeg, pepper and plantain.
- **Three Wildlife Sanctuaries – Shendurney, Peppara and Neyyar, and the Kalakad Mundanthurai Tiger Reserve are located on the site. Hence, option (a) is correct.**

QUESTION 79:

Consider the following pairs:

1. Dampa Tiger Reserve : Mizoram
2. Gumti Wildlife Sanctuary : Sikkim
3. Saramati Peak : Nagaland

Which of the above pairs is/are correctly matched?

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

Answer: (c)

Explanation

- Dampa Tiger Reserve cum Wildlife Sanctuary is situated in Western Mizoram. It has tropical forest with unique and endangered wild animals. It harbours Tiger, Bison (Indian Gaur), Elephant, Peacock pheasant, Red jungle fowl, Python, Monitor lizard, etc. **Hence, pair 1 is correctly matched.**
- Gumti Wildlife Sanctuary is situated in the southeast corner of Tripura. It is home to many animals like elephants, sambar, buffalo, and numerous reptiles. **Hence, pair 2 is not correctly matched.**
- Having an altitude of 3841 m, Saramati is the highest peak in the State of Nagaland. The peak is located on the Nagaland-Myanmar border. **Hence, pair 3 is correctly matched.**

QUESTION 80:

Photochemical smog is a resultant of the reaction among

(a) NO_2, O_3 and peroxyacetyl nitrate in the presence of sunlight
(b) CO, O_2 and peroxyacetyl nitrate in the presence of sunlight
(c) CO, CO_2 and NO_2 at low temperature
(d) high concentration of NO_2, O_3 and CO in the evening

Answer: (a)

Explanation

- Photochemical smog is a type of smog produced **when ultraviolet light from the Sun reacts with Oxides of Nitrogen in the atmosphere.** It is visible as a brown haze, and is most prominent during the morning and afternoon, especially in densely populated and warm cities.
- **Stages of formation of photochemical smog:**
  - Sunlight causes the photo-dissociation of Nitrogen and Oxygen to yield Ozone and Oxygen atoms.
  - Oxygen atoms react with water to form Hydroxyl radicals (OH–).
  - Hydroxyl radicals oxidize hydrocarbons to form Hydrocarbon radicals.
  - Hydrocarbons oxidize to form a class of chemicals known as aldehydes.
  - Aldehydes oxidize to form Aldehyde Peroxides and Aldehyde Peroxyacids, which are the pollutants that create most of the health problems.
  - Nitric Oxide (NO) and Nitrogen Dioxide (NO_2) are emitted from the combustion of fossil fuels, along with being naturally emitted from things such as volcanoes and forest fires.
  - When exposed to ultraviolet radiation, NO_2 goes through a complex series of reactions with hydrocarbons to produce the components of photochemical smog—a mixture of Ozone, Nitric Acid, Aldehydes, Peroxyacetyl Nitrates (PANs) and other secondary pollutants. **Hence, option (a) is correct.**

QUESTION 81:

With reference to predators, consider the following statements:

1. Predators in nature are 'prudent'.
2. Herbivores are the predators for plants.
3. Calotropis growing in abandoned fields produces highly nutritious leaves on which goats and cattles feed.
4. Phytophagous are organisms which feed on plant sap and other parts of plants.

Which of the statements given above are correct?

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

Answer: (c)

Explanation

- If a predator is too efficient and over exploits its prey, then the prey might become extinct and following it, the predator will also become extinct for lack of food. This is the reason why predators in nature are 'prudent'. **Hence, statement 1 is correct.**
- Prey species have evolved various defenses to lessen the impact of predation. Some species of insects and frogs are cryptically-coloured (camouflaged) to avoid being detected easily by the predator. Some are poisonous and therefore avoided by the predators.
- The Monarch butterfly is highly distasteful to its predator(bird) because of a special chemical present in its body. Interestingly, the butterfly acquires this chemical during its caterpillar stage by feeding on a poisonous weed.
- For plants, herbivores are the predators. **Hence, statement 2 is correct.**
- Nearly 25 percent of all insects are known to be phytophagous (feeding on plant sap and other parts of plants). The problem is particularly severe for plants because, unlike animals, they cannot run away from their predators. **Hence, statement 4 is correct.**
- Plants therefore have evolved an astonishing variety of morphological and chemical defences against herbivores. Thorns (Acacia, Cactus) are the most common morphological means of defence.
- Many plants produce and store chemicals that make the herbivore sick when they are eaten, inhibit feeding or digestion, disrupt its reproduction or even kill it.
- Calotropis growing in abandoned fields is a plant that produces highly poisonous cardiac glycosides and that is why no cattle or goats browse on this plant. **Hence, statement 3 is not correct.**

QUESTION 82:

Which of the following are the examples of commensalism?

1. An orchid growing as an epiphyte on a mango branch
2. Barnacles growing on the back of a whale
3. Cattle egret and grazing cattle
4. Sea anemone and the clown fish

Select the correct answer using the code given below:

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

Answer: (d)

Explanation

- Commensalism is the interaction in which **one species benefits and the other is neither harmed nor benefited.**
- An **orchid growing as an epiphyte on a mango branch, and barnacles growing on the back of a whale benefit** while neither the mango tree nor the whale derives any apparent benefit,the cattle egret and grazing cattle in close association, are the classic examples of commensalism. **Hence, statements 1 and 2 are correct.**
- The **egrets always forage close to where the cattle are grazing** because the cattle, as they move, stir up and flush out from the vegetation insects that otherwise might be difficult for the egrets to find and catch. **Hence, statement 3 is correct.**
- Another example of commensalism is the interaction between sea anemone that has stinging tentacles and the clown fish that lives among them.
  - The fish gets protection from predators which stay away from the stinging tentacles. The anemone does not appear to derive any benefit by hosting the clown fish. **Hence, statement 4 is correct.**

QUESTION 83:

A particular state in the country has following characteristics:

1. It is located on the same latitude which passes through Northern Gujarat.
2. Amongst the States, it has the highest forest cover as percentage of total geographical area as per "India State of Forest Report 2019".
3. Tribal population constitutes more than 60% of its total population.

Which among the following states has all the above stated characteristics?

(a) Madhya Pradesh
(b) Mizoram
(c) Arunachal
(d) Jharkhand

Answer: (b)

Explanation

According to the India State of Forest Report (ISFR) 2019,

- India has **24.56% of land area under forest and tree cover,** even though it accounts for 2.4 % of the world surface area and sustains the needs of about 17% of the human and 18% livestock population.
- As per the State-wise break-up, three states - Karnataka, followed by Andhra Pradesh and Kerala have shown the maximum increase in forest cover.
- Madhya Pradesh has the largest forest cover in the country in terms of area, followed by Arunachal Pradesh and Chhattisgarh.
- In terms of percentage of forest cover with respect to the total geographical area, top 5 states are: **Mizoram (85.41%) > Arunachal Pradesh (79.63%) > Meghalaya (76.33%) > Manipur (75.46%) > Nagaland (75.31%).**
- Mizoram is also located on the same latitude which passes through northern Gujarat. Tropic of cancer also passes through both these states.
- Lakshadweep, Mizoram, Nagaland, Meghalaya, Arunachal Pradesh, Dadra & Nagar Haveli, are predominantly tribal States/Union territories where Scheduled Tribes population constitutes more than 60% of their total population.

Hence, option (b) is correct.

QUESTION 84:

Which of the following are considered as water contaminants?

1. Fluoride
2. Arsenic
3. Iron
4. Salinity
5. Nitrate

Select the correct answer using the codes given below:

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

Answer: (d)

Explanation

- As per the Central Pollution Control Board (CPCB), Common Groundwater Contaminants are:
  - **Nitrates:** Dissolved nitrate is the most common contaminant in groundwater. High levels can cause blue baby disease (Methemoglobinemia) in children, may form carcinogens & can accelerate eutrophication in surface waters. Sources of nitrates include sewage, fertilizers, air pollution, landfills & industries;
  - **Pathogens:** bacteria & viruses that cause water borne diseases such as typhoid, cholera, dysentery, polio, and hepatitis.
  - **Trace metals:** include Lead, Mercury, Cadmium, Copper, Chromium & Nickel. These metals can be toxic & carcinogenic. Sources include industrial & mine discharges, fly ash from thermal power plants either due to fall out or disposal in ash ponds. Industrial solid waste dumping and leaching into groundwater through rainwater;
  - **Inorganic Constituents:** Inorganic dissolved salts accumulation such as SO_4, Chloride, etc.
  - **Organic compounds:** include volatile & semi-volatile organic compounds like petroleum derivatives, PCBs pesticides. Sources include agricultural activities, street drainages, sewage landfills, industrial discharges, spills, vehicular emissions fall out etc.
- According to the Central Ground Water Board (CGWB) the quality of groundwater has undergone a change to an extent that the use of such water could be hazardous. Increase in overall salinity of the ground water and/or presence of high concentrations of fluoride, nitrate, iron, arsenic, total hardness and few toxic metal ions have been noticed in large areas in several states of India.
  - A study of quality affected habitations by category of contaminants shows that as many as 4.07 crore rural population are suffering from water contamination that varies from **fluoride, arsenic, iron, salinity, nitrate, heavy metals, etc.**
  - **Hence, option (d) is correct.**

QUESTION 85:

Which of the following best describes 'Zai technique'?

(a) It is a traditional water conservation technique.
(b) It is a traditional farming technique that is used in water stressed regions.
(c) It is an initiative under the Gokul Mission to promote animal husbandry.
(d) A technique used for marine fish cultivation.

Answer: (b)

Explanation

- **'Zai technique'** has been used to restore thousands of hectares of dryland and in doing so reduced hunger in **Burkina Faso and Niger.**
- **Yacouba Sawadogo,** a farmer from **Burkina Faso** won **Sweden's Right Livelihood Award,** also labelled **"alternative Nobel prize"** for popularising a traditional farming technique to reverse desertification.
- The technique involves planting crops in small pits 20 cm wide and deep. These pits trap runoff and aid collection of nutrients, allowing crops to withstand drought. **Hence, option (b) is correct.**

QUESTION 86:

Consider the following statements:

1. Keystone species are selected for conservation-related decisions because the conservation and protection of these species indirectly affect the conservation and protection of other species within their ecosystem.
2. Umbrella Species helps in defining an entire ecosystem. Without them, the ecosystem would be dramatically different or cease to exist altogether.
3. The key distinction between umbrella species and keystone species is that the value of an umbrella species is tied to its geographic species range.

Which of the statements given above is/are correct?

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

Answer: (d)

Explanation

- **Umbrella Species** (and NOT Keystone species) are species that are selected for conservation-related decisions because the conservation and protection of these species indirectly affect the conservation and protection of other species within their ecosystem. **Hence, statement 1 is not correct.**
- **Keystone species** (and NOT Umbrella species) help define an entire ecosystem. Without its keystone species, the ecosystem would be dramatically different or cease to exist altogether. **Hence, statement 2 is not correct.**
- **Umbrella species** are often conflated with keystone species. Both terms describe a single species on which many other species depend. The key distinction between umbrella species and keystone species is that the value of an umbrella species is tied to its geographic species range. **Hence, statement 3 is correct.**

QUESTION 87:

Which among the following are bioindicators:

1. Dragonfly
2. Lichens
3. Frogs
4. Algae Blooms

Select the correct answer using the codes given below:

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

Answer: (d)

Explanation

- **Bioindicators** are living organisms such as plants, plankton, animals, and microbes, which are used to **assess the health of the natural ecosystem** in the environment.
- Examples of Bioindicators:
  - **Lichens** are powerful Bioindicators of air quality.
  - **Frogs** are basically influenced by changes that take place in their freshwater and terrestrial habitats.
  - **Algae blooms** are often used to indicate large increases of nitrates and phosphates in lakes and rivers.
  - **Dragonflies** act as important bio-indicators of the ecological health of an area.
  - **Hence, option (d) is correct.**

QUESTION 88:

Which of the following best describes the 'SARMA system'?

(a) It is a system that helps in climate-resilient rainwater management through a pond system.
(b) It is a method of wildlife preservation using geo-tagging technology.
(c) It is a new mechanism used by RBI to check non-performing assets.
(d) It is an initiative of MoHRD to increase enrollment of students in higher education.

Answer: (a)

Explanation

- To derive its hydrological benefit along with others, a rain water harvesting system has been designed to have benefited from its multiple applications coupled with scientific management of the available water. This has been designed in a way that people can derive its benefit in a sustainable manner. The system is named as **Sustainable Approach of Rain Water Management and Application (SARMA).** Irrigation through recirculation, microclimate moderation, runoff reduction and groundwater recharge are some of the benefits that this pond system can provide. **Hence, option (a) is correct.**

QUESTION 89:

Consider the following statements:

1. Eutrophication is characterized by excessive plant and algal growth due to the increased availability of sunlight, carbon dioxide, and nutrient fertilizers.
2. Cultural eutrophication accelerates the rate of growth of plants and algae.

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

Answer: (c)

Explanation

- **Eutrophication** is characterized by excessive plant and algal growth due to the increased availability of one or more limiting growth factors needed for photosynthesis, such as sunlight, carbon dioxide, and nutrient fertilizers. **Hence, statement 1 is correct.**
- Eutrophication occurs naturally over centuries as lakes age and are filled in with sediments. However, human activities have accelerated the rate and extent of eutrophication through both point-source discharges and non-point loadings of limiting nutrients, such as nitrogen and phosphorus, into aquatic ecosystems (i.e., **cultural eutrophication**). **Hence, statement 2 is correct.**

- The most conspicuous effect of cultural eutrophication is the creation of dense blooms of noxious, foul-smelling phytoplankton that reduce water clarity and harm water quality .
- Algal blooms limit light penetration, reducing growth and causing die-offs of plants in littoral zones while also lowering the success of predators that need light to pursue and catch prey.

QUESTION 90:

With reference to the 'Kole wetlands', consider the following statements:

1. It is located in Madhya Pradesh.
2. It is designated as an Important Bird and Biodiversity Area (IBA).

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

Answer: (b)

Explanation

- Located in Thrissur and Malappuram districts of **Kerala,** it is part of the Vembanad Kol Wetland. **Hence, statement 1 is not correct.**
- It is the **largest brackish, humid tropical wetland ecosystem** on the southwest coast of India, fed by 10 rivers and typical of large estuarine systems on the western coast.
- Over 90 species of resident birds and 50 species of migratory birds including **waterfowl** are found in the **Kol area.**
- **It is a Ramsar site and IBA (Important Bird and Biodiversity Area). Hence, statement 2 is correct.**
- Mining & quarrying of sand and clay mining, granite quarry and Fishing & harvesting aquatic resources are some of the threats to the Kole wetlands.

QUESTION 91:

Consider the following statements:

1. Despite the high humidity, the area does not receive rainfall.
2. The landmass is covered with heavy fog on the coastal side.
3. This region lies in the shadow zone of the Andes Mountains.

On the basis of above geographical features, identify the location from the options given below:

(a) Patagonian desert
(b) Atacama desert
(c) The Death Valley
(d) Colorado plateau

Answer: (b)

Explanation

- The Atacama Desert, on the **Pacific shores of Chile,** is a **coastal desert.** Some areas of the Atacama are often covered by **fog.** But the region can go for decades without rainfall. In fact, the **Atacama Desert is the driest place on Earth.**
- **Cold ocean currents** contribute to the formation of coastal deserts. Air blowing toward shore, chilled by contact with cold water, **produces a layer of fog.** This heavy fog drifts onto land. Although the humidity is high, the atmospheric changes that normally cause rainfall are not present. A coastal desert may be almost totally rainless, yet damp with fog.

- The Atacama is tucked in the shadow of the **snow-capped Andes Mountains,** which **blocks rainfall from the east.** To the west, the upwelling of cold water from deep in the Pacific Ocean promotes atmospheric conditions that hamper the evaporation of seawater and prevent the formation of clouds and rain. **Hence, option (b) is correct.**

QUESTION 92:

Consider the following statements:

1. Dragonfly is a mission of NASA to fly a drone copter to Saturn's moon Titan.
2. Titan is the largest natural satellite in the solar system.
3. The surface of Titan contains rivers and lakes of frozen water.

Which of the statements given above is/are correct?

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

Answer: (c)

Explanation

- The **National Aeronautics and Space Administration's (NASA) Dragonfly mission,** (which will be launched in 2026 and land in 2034) plans to fly a drone copter to Saturn's moon Titan in search of the building blocks of life. **Hence, statement 1 is correct.**
- Titan's diameter is 50 percent larger than Earth's Moon, making it among the largest natural satellites in the solar system. **Hence, statement 2 is correct.**
- The composition of Titan is known to be water ice over a rocky interior. Its **surface has liquid hydrocarbon lakes** and the vents of cryovolcanoes, distributed among areas of bright and dark terrain that show evidence of some impact cratering. **Hence, statement 3 is not correct.**

QUESTION 93:

With reference to the Piezoelectric effect, consider the following statements:

1. It is an ability of certain materials to generate an electric charge in response to applied mechanical stress.
2. The process of the piezoelectric effect is a reversible process.
2. Quartz, ceramic are the most common piezoelectric materials.

Which of the statements given above is/are correct?

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

Answer: (d)

Explanation

- **The piezoelectric generator** works on the principle of converting structural vibrations in the form of an accumulated charge over the solid (produced by mechanical stress) into electricity. Piezoelectric effect can be seen in the solid crystal which when subjected to external pressure will generate Alternating Current(AC). **Hence, statement 1 is correct.**

- One of the **unique characteristics** of the piezoelectric effect is that **it is reversible,** meaning that materials exhibiting the direct piezoelectric effect (the generation of electricity when stress is applied) also exhibit the converse piezoelectric effect (the generation of stress when an electric field is applied). **Hence, statement 2 is correct.**
- Most common piezoelectric materials are **Quartz, ceramic and salts.** Application of piezoelectric effect can be seen in Inkjet printing, generation of high voltages, cigarette lighters etc. **Hence, statement 3 is correct.**

QUESTION 94:

'Operation Clean Art' recently seen in the news is related to?

(a) A crackdown on illegal trade in mongoose hair

(b) A cleanliness drive under Swachh Bharat Abhiyan

(C) An initiative to support artists under Pradhan Mantri Kaushal Vikas Yojana

(d) An exhibition of recycled products

Answer: (a)

Explanation

- Operation Clean Art is the **first pan India operation to crackdown on the smuggling of mongoose hair** in the country. It was conceived by **Wildlife Crime Control Bureau (WCCB)** with the singular aim of ensuring that the mongoose hair brush trade should be closed down across the country. **Hence, option (a) is correct.**
- Brushes made of mongoose hair are preferred because they are superior and hold colour better.
- Mongoose is listed in Schedule II Part 2 of the **Wildlife Protection Act, 1972** and any smuggling or possession of its body part is a non-bailable offence.
- **IUCN Red List status-** Least Concerned.
- All six species are listed on CITES Appendix III with a zero quota for commercial trade.
- There are six species of mongoose found in India- Indian grey mongoose, Small Indian mongoose, Ruddy mongoose, Crab-eating mongoose, Stripe-necked mongoose and Brown mongoose.
    - The Indian grey mongoose is the most commonly found species and also the most hunted

QUESTION 95:

The 'INSTEX' which was recently seen in news, refers to:

(a) A commodity swap mechanism recently adopted by the United States (US).

(b) A trade mechanism established by some European countries to circumvent US sanctions against trade with Iran.

(c) A mechanism on exchange of goods and services recently adopted by the World Trade Organization (WTO).

(d) India's new scheme to support barter trade among small industries.

Answer: (b)

Explanation

- A trade mechanism **'Instrument in Support of Trade Exchanges (INSTEX)'** was established by France, Germany and the United Kingdom in January 2019 to **allow European entities to maintain trade with Iran.**
- The mechanism has been designed to circumvent **U.S. sanctions against trade with Iran** by avoiding the use of the dollar.
- The mechanism allows Iran to sell oil and import other products or services in exchange. **Hence, option (b) is correct.**

QUESTION 96:

Which of the following is correct regarding the 'Torrefaction' process ?

(a) Antibiotic to eliminate Anaemia
(b) Technology for water purification
(c) Thermal process to convert biomass into a coal-like material
(d) Chemical process to refine petroleum products

Answer: (c)

Explanation

- Torrefaction is a thermal process to convert biomass into a coal-like material, which has better fuel characteristics than the original biomass.
- The process involves heating up straw, grass, sawmill residue and wood biomass to 250 degrees celsius - 350 degrees celsius.
- This changes the elements of the biomass into 'coal-like' pellets. These pellets can be used for combustion along with coal for industrial applications like steel and cement production.

Hence, option (c) is correct.

QUESTION 97:

With reference to 'Indian Ocean Dipole (IOD)' sometimes mentioned in the news while forecasting Indian monsoon, which of the following statements is/are correct?

1. IOD phenomenon is characterised by a difference in sea surface temperature between tropical Western Indian Ocean and tropical Eastern Pacific Ocean.
2. An IOD phenomenon can influence an El Nino's impact on the monsoon.

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

Answer: (b)

Explanation

- **The Indian Ocean Dipole (IOD)** is an **atmosphere-ocean coupled phenomenon** in the tropical Indian Ocean (like the El Nino is in the tropical Pacific), characterised by a difference in Sea-Surface Temperatures (SST).
- A **'positive IOD'** is associated with cooler than normal sea-surface temperatures in the eastern equatorial Indian Ocean and warmer than normal sea-surface temperatures in the western tropical Indian Ocean.
- The opposite phenomenon is called a **'negative IOD',** and is characterised by warmer than normal SSTs in the eastern equatorial Indian Ocean and cooler than normal SSTs in the western tropical Indian Ocean.
- **Also known as the Indian Nino,** it is an irregular oscillation of sea-surface temperatures in the Indian Ocean in which the western Indian Ocean becomes alternately warmer and colder than the eastern part of the Indian Ocean. **Hence, statement 1 is not correct.**
- The IOD is one aspect of the general cycle of global climate, interacting with similar phenomena like the El Nino-Southern Oscillation (ENSO) in the Pacific Ocean. An IOD can either aggravate or weaken the impact of El Nino on Indian monsoon. If there is a positive IOD, it can bring good rains to India despite an El Nino year. **Hence, statement 2 is correct.**

QUESTION 98:

Consider the following pairs:

	Regions sometimes	Country mentioned in news
1.	Catalonia	Spain
2.	Crimea	Hungary
3.	Mindanao	Philippines
4.	Oromia	Nigeria

Which of the pairs given above are correctly matched?

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

Answer: (c)

Explanation

- Catalonia is in Spain. It is an autonomous region in North-east Spain with a distinct history dating back almost 1,000 years. It initiated a referendum for independence from Spain in October 2017 and unilaterally declared independence. **Hence, pair 1 is correctly matched.**
- Crimea was a Ukranian territory which was annexed by Russia in 2014. **Hence, pair 2 is not correctly matched.**
- Mindanao is the second largest island in the Philippines. Hundreds of pro-Islamic State militants seized parts of the predominantly Islamic city of Marawi in Mindanao in May 2017. Hence, pair 3 is correctly matched.
- The Oromia region is inhabited primarily by the Oromo ethnic group, the largest ethnic group in Ethiopia. There were clashes between Oromo and Somali ethnic groups in December 2016 following territorial disputes between the two communities in Ethiopia. **Hence, pair 4 is not correctly matched.**

QUESTION 99:

With reference to India's satellite launch vehicles, consider the following statements:

1. PSLVs launch satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors; and the second and fourth stages using liquid rocket engines.

Which of the statements given above is/are correct?

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

Answer: (a)

Explanation

- **PSLV** is the third generation launch vehicle of India. It is the first Indian launch vehicle to be equipped with liquid stages. It is used mainly for delivering various satellites in Low Earth Orbits, **particularly the Indian Remote Sensing series of satellites.** It can take up to 1,750 kg of payload to Sun-Synchronous Polar Orbits of 600 km altitude.

- **GSLV** is designed mainly to deliver Indian National Satellite System, or **INSAT,** which is a series of multipurpose geo-stationary satellites launched by ISRO to **fulfil the needs of telecommunications, broadcasting, meteorology, and search and rescue operations.** It places satellites to the highly elliptical Geosynchronous Transfer Orbit (GTO). **Hence, statement 1 is correct.**

- The satellites in the geosynchronous orbits appear to remain permanently fixed in the same position in the sky. **Hence, statement 2 is not correct.**
- **GSLV-Mk III is a fourth generation, three stage launch vehicle** with four liquid strap-ons. The indigenously developed Cryogenic Upper Stage (CUS), which is flight proven, forms the third stage of GSLV Mk III.
  - It is capable of lifting 4-5 tonne satellites into Geosynchronous Transfer Orbit (GTO). The rocket has three-stages with two solid motor strap-ons (S200), a liquid propellant core stage (L110) and a cryogenic stage (C-25). **Hence, statement 3 is not correct.**

QUESTION 100:

Consider the following statements:

1. The Earth's magnetic field has reversed every few hundred thousand years.
2. When the Earth was created more than 4000 million years ago, there was 54% oxygen and no carbon dioxide.
3. When living organisms originated, they modified the early atmosphere of the Earth.

Which of the statements given above is/are correct?

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

Answer: (c)

Explanation

- Earth's Magnetic Field is a magnetic dipole, tilted 11° from the Earth's axis of rotation. The magnetic North Pole is a point on Ellesmere Island in North Canada, while the magnetic South Pole is off the coast of Antarctica between Adelie Land and Wilkes Land.
- Magnetic fingerprints locked in ancient rocks show that over the last 20 million years, magnetic North and South have flipped roughly every 200,000 to 300,000 years. The last of these major reversals occurred about 780,000 years ago, although the Poles do wander around in between these larger flips. **Hence, statement 1 is correct.**
- When the Earth formed 4.6 billion years ago from a hot mix of gases and solids, it had almost no atmosphere. The surface was molten. As the Earth cooled, an atmosphere formed mainly from gases spewed from volcanoes. It included Hydrogen Sulphide, Methane, and 10 to 200 times as much Carbon Dioxide as today's atmosphere. **Hence, statement 2 is not correct.**
- Around 2.5 million years ago, the amount of Oxygen available in the atmosphere started to rise due to the evolution of photosynthetic organisms that produced oxygen. These organisms were oceanic cyano-bacteria. Over time, aerobic organisms evolved and consumed some of the oxygen produced. **Hence, statement 3 is correct.**