



Sleepy Classes

Awakening Toppers

Pre-Mix

(Environment)

Compilation
(September to December 2022)

Questions for Today

1. It is the species whose presence or absence or abundance reflects the environmental condition. They serve as early warning mechanism or signals because they are sensitive to environmental conditions. This is the best description of which species:

- A. Keystone Species
- B. Flagship Species
- C. Foundation Species
- D. Sentinel Species

2. With reference to Biopiracy, consider the following statements:

- 1. Biopiracy as a term refers to the exploration of biodiversity for commercially valuable genetic resources and biochemicals.
- 2. National Biodiversity Authority (NBA) checks the biopiracy and protects the indigenous and traditional genetic resources.
- 3. To check biopiracy, State governments can notify biodiverse areas as National heritage Sites.

Which of the statements given above is/are correct?

- A. 2 and 3 only
- B. 1 and 3 only
- C. 2 only
- D. All are incorrect.

3. Consider the following statements on Intergovernmental Science-policy Platform on Biodiversity and Ecosystem services (IPBES):

- 1. It examines scientific literature on biodiversity.
- 2. It is often described as the "IPCC for biodiversity".

3. It prepared the Global Assessment Report on Biodiversity and Ecosystem Services report.

Which of the statements given above is/are correct?

- A. Only one statement is correct.
- B. Only two statements are correct.
- C. All statements are correct.
- D. All statements are incorrect.

4. Which of the following Invasive species are posing threat to the Biodiversity of the Western Ghats:

- 1. Eucalyptus
- 2. Acacia
- 3. Wattle
- 4. Lantana
- 5. Parthenium Hysterophorous

Select the correct code from below:

- A. 1, 2, 4 and 5 only
- B. 2, 3, 4 and 5 only
- C. 2, 3 and 4 only
- D. 1, 2, 3, 4 and 5

5. Which of the following can be threats to the biodiversity of a geographical area?

- 1. Global warming
- 2. Fragmentation of habitat
- 3. Invasion of alien species
- 4. Promotion of vegetarianism

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. 2 and 3 only
- C. 1 and 4 only
- D. 1, 2, 3 and 4

Answer With Explanation

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1. It is the species whose presence or absence or abundance reflects the environmental condition. They serve as early warning mechanism or signals because they are sensitive to environmental conditions. This is the best description of which species:

- A. Keystone Species
- B. Flagship Species
- C. Foundation Species
- D. Sentinel Species

Answer : D

Explanation

Indicator/Sentinel Species

- It is the one who's presence or absence or abundance reflects the environmental condition.
- They serve as early warning mechanism or signals because they are sensitive to environmental conditions.
- Also Known as Sentinel Species.
- Eg. Frogs, lichens, salmon

Keystone species

- Keystone species is a species whose addition to or loss from an ecosystem leads to major changes in the occurrence of at least one other species.
- Certain species in an ecosystem is considered more important in determining the presence of many other species in that ecosystem.
- All top predators (Tiger, Lion, Crocodile, Elephant) are considered as keystone species because they regulate all other animal population indirectly.

- Hence top predators are given much consideration in conservation.
- If keystone species is lost, it will result in the degradation of the whole ecosystem.
- For example, certain plant species (ebony tree, Indian-laurel) exclusively depends upon bats for its pollination. If the bat population is reduced, then regeneration of particular plants becomes more difficult.

Foundation species

- Foundation species is a dominant primary producer in an ecosystem both in terms of abundance and influence.
- Example: kelp in kelp forests and corals in coral reefs.

Flagship species

- A flagship species is a species chosen to represent an environmental cause, such as an ecosystem in need of conservation.
- These species are chosen for their vulnerability, attractiveness or distinctiveness in order to engender support and acknowledgement from the public at large.
- Example: Indian tiger, African elephant, giant panda of China, the leatherback sea turtle, etc.

2. With reference to Biopiracy, consider the following statements:

1. Biopiracy as a term refers to the exploration of biodiversity for commercially valuable genetic resources and biochemicals.
2. National Biodiversity Authority (NBA) checks the biopiracy and protects the indigenous and traditional genetic resources.

3. To check biopiracy, State governments can notify biodiverse areas as National heritage Sites.

Which of the statements given above is/are correct?

- A. 2 and 3 only
- B. 1 and 3 only
- C. 2 only
- D. All are incorrect.

Answer : A

Explanation

- **Statement 1 is incorrect.** Bioprospecting as a term refers to the exploration of biodiversity for commercially valuable genetic resources and biochemicals.
- Bioprospecting as an activity refers to deriving products of economic importance by nations endowed with rich biodiversity by exploring their molecular, genetic, and species-level diversity.
- Some in the west pass off biopiracy as bioprospecting.
- Biopiracy occurs when "genetic resources and traditional knowledge is taken from biodiverse developing countries without permission."
- Moreover, the stolen traditional knowledge is used to benefit the non-indigenous people through a patent or product with no compensation or gain received by the indigenous people.
- Biopiracy of India's "genetic resources and traditional knowledge" by advanced economies and large corporations is a matter of great concern.
- **Statement 2 is correct.** National Biodiversity Authority (NBA), set up under Biological Diversity Act, 2002, checks the biopiracy and protects the

indigenous and traditional genetic resources.

- **Statement 3 is correct.** There is provision for notifying National Heritage Sites important from standpoint of biodiversity by State Governments in consultation with local self-government.

3. Consider the following statements on Intergovernmental Science-policy Platform on Biodiversity and Ecosystem services(IPBES):

- 1. It examines scientific literature on biodiversity.
- 2. It is often described as the "IPCC for biodiversity".
- 3. It prepared the Global Assessment Report on Biodiversity and Ecosystem Services report.

Which of the statements given above is/are correct?

- A. Only one statement is correct.
- B. Only two statements are correct.
- C. All statements are correct.
- D. All statements are incorrect.

Answer : C

Explanation

- UN-sponsored Global Assessment Report on Biodiversity and Ecosystem Services 2019 report is prepared by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), based in Bonn, Germany.
- IPBES comprises 130 member countries, including India.
- IPBES examines scientific literature on biodiversity.
- Hence, IPBES is often described as the "IPCC for biodiversity".

4. Which of the following Invasive species are posing threat to the Biodiversity of the Western Ghats:

1. Eucalyptus
2. Acacia
3. Wattle
4. Lantana
5. Parthenium Hysterophorous

Select the correct code from below:

- A. 1, 2, 4 and 5 only
- B. 2, 3, 4 and 5 only
- C. 2, 3 and 4 only
- D. 1, 2, 3, 4 and 5

Explanation

- The Shola vegetation is tropical montane forests found in the Western Ghats separated by rolling grasslands in high altitudes (upper Nilgiris with peaks and plateaus ranging from 1,700 to 2,600 metres).
- Owing to the altitude, the Shola patches occur only in the folds of the mountains that receive the least fog.
- Invasive species like eucalyptus, tea plantations, wattle (acacia), Lantana, and naturalized alien species like Parthenium hysterophorus in the Nilgiris are wiping out Shola forests.
- Frost traditionally restricted the forests in the Nilgiris from expanding as it freezes the groundwater and stops the sapling from sprouting in new areas. Over the years, the nights have become warmer, and the amount of frost has reduced in the Nilgiris. This has allowed the acacia plantations to move beyond the Shola forests and enter the grasslands.
- This change in vegetation is resulting in loss of water sources, causing massive landslides and have deprived

the original habitat of endangered species like Nilgiri Tahr (EN).

5. Which of the following can be threats to the biodiversity of a geographical area?

1. Global warming
2. Fragmentation of habitat
3. Invasion of alien species
4. Promotion of vegetarianism

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. 2 and 3 only
- C. 1 and 4 only
- D. 1, 2, 3 and 4

Answer : A

Explanation

- Biodiversity refers to every living thing, including plants, bacteria, animals, and humans.

Loss of Biodiversity:

- In general, loss of biodiversity in a region may lead to-
 - the decline in plant production,
 - lowered resistance to environmental perturbations such as drought,
 - increased variability in certain ecosystem processes such as plant productivity, water use, and pest and disease cycles.

Threats to biodiversity:

- The accelerated rates of species extinctions that the world is facing now are largely due to human activities.
- There are four major causes:

Habitat loss and fragmentation:

- This is the most important cause driving animals and plants to extinction.
- The most dramatic examples of habitat loss come from tropical rainforests.
- Once covering more than 14 percent of the earth's land surface, these rain forests now cover no more than 6 percent. They are being destroyed fast.
- The Amazon rain forest (it is so huge that it is called the 'lungs of the planet') harbouring probably millions of species is being cut and cleared for cultivating soya beans or for conversion to grasslands for raising beef cattle..
- Besides total loss, the degradation of many habitats by pollution also threatens the survival of many species. Hence, **Option 2 is correct.**
- When large habitats are broken up into small fragments due to various human activities, mammals and birds requiring large territories and certain animals with migratory habits are badly affected, leading to population declines.

Over-exploitation:

- Humans have always depended on nature for food and shelter, but when 'need' turns to greed', it leads to overexploitation of natural resources.
- Many species extinctions in the last 500 years (Steller's sea cow, passenger pigeon) were due to overexploitation by humans.
- Presently many marine fish populations around the world are over-harvested, endangering the continued existence of some commercially important species.

Alien species invasions:

- When alien species are introduced unintentionally or deliberately for whatever purpose, some of them turn invasive and cause the decline or

extinction of indigenous species, **Hence, Option 3 is correct.**

- The Nile perch introduced into Lake Victoria in east Africa led eventually to the extinction of an ecologically unique assemblage of more than 200 species of cichlid fish in the lake.
- You must be familiar with the environmental damage caused and the threat posed to our native species by invasive weed species like carrot grass (Parthenium), Lantana and water hyacinth (Eichhornia). The recent illegal introduction of the African catfish *Claris gariepinus* for aquaculture purposes is posing a threat to the indigenous catfishes in our rivers.

Co-extinctions:

- When a species becomes extinct, the plant and animal species associated with it in an obligatory way also become extinct.
- When a host fish species becomes extinct, its unique assemblage of parasites also meets the same fate.
- Another example is the case of a coevolved plant-pollinator mutualism where the extinction of one invariably leads to the extinction of the other.
- Global warming can contribute to habitat loss, habitat fragmentation, invasion of alien species. **Hence, Option 1 is correct.**
- Promotion of vegetarianism is not a threat to the biodiversity of a geographical area. **Option 4 is incorrect.**

Questions

1. Vultures which used to be very common in Indian countryside some years ago are rarely seen nowadays. This is attributed to

- A. The destruction of their nesting sites by new invasive species.
- B. A drug used by cattle owners for treating their diseased cattle.
- C. Scarcity of food available to them.
- D. A widespread, persistent and fatal disease among them.

2. A sandy and saline area is the natural habitat of an Indian animal species. The animal has no predators in that area but its existence is threatened due to the destruction of its habitat. Which one of the following could be that animal?

- A. Indian wild buffalo
- B. Indian wild ass
- C. Indian wild boar
- D. Indian gazelle

3. Consider the following animals:

- 1. Sea cow
- 2. Sea horse
- 3. Sea lion

Which of the above is/are mammal/mammals?

- A. 1 only
- B. 1 and 3 only
- C. 2 and 3 only
- D. 1, 2 and 3

4. In which of the following States is lion-tailed macaque found in its natural habitat?

- 1. Tamil Nadu
- 2. Kerala
- 3. Karnataka
- 4. Andhra Pradesh

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. 2 only
- C. 1, 3 and 4 only
- D. 1, 2, 3 and 4

5. Other than poaching, what are the possible reasons for the decline in the population of Ganges River Dolphins?

- 1. Construction of dams and barrages on rivers
- 2. Increase in the population of crocodiles in rivers.
- 3. Getting trapped in fishing nets accidentally
- 4. Use of synthetic fertilizers and other agricultural chemicals in crop-fields in the vicinity of rivers.

Select the correct answer using the code given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1, 3 and 4 only
- D. 1, 2, 3 and 4

Answers With Explanations

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1. Vultures which used to be very common in Indian countryside some years ago are rarely seen nowadays. This is attributed to

- A. The destruction of their nesting sites by new invasive species.
- B. A drug used by cattle owners for treating their diseased cattle.
- C. Scarcity of food available to them.
- D. A widespread, persistent and fatal disease among them.

Answer : B

Explanation

- Vultures are on the verge of extinction in India because a banned drug being used illegally to treat suffering cattle. Diclofenac, an anti-inflammatory drug used by farmers to ease pain in cattle, is deadly to vultures.
- The endangered birds eat the remains of the drugged animals and suffer kidney failure and visceral gout, which is usually fatal.

2. A sandy and saline area is the natural habitat of an Indian animal species. The animal has no predators in that area but its existence is threatened due to the destruction of its habitat. Which one of the following could be that animal?

- A. Indian wild buffalo
- B. Indian wild ass
- C. Indian wild boar
- D. Indian gazelle

Answer : B

- Indian Wild Ass is only found in the Little Rann of Kutch in Gujarat.
- It is protected under Schedule I of the Wildlife (Protection) Act 1972, India and included on Appendix I of the

Convention on International Trade in Endangered Species (CITES), making international trade in this species illegal.

3. Consider the following animals:

- 1. Sea cow
- 2. Sea horse
- 3. Sea lion

Which of the above is/are mammal/mammals?

- A. 1 only
- B. 1 and 3 only
- C. 2 and 3 only
- D. 1, 2 and 3

Answer : B

Explanation

- Sea cow and Sea lion are mammals who give birth to live ones.
- Sea horse is a fish.

4. In which of the following States is lion-tailed macaque found in its natural habitat?

- 1. Tamil Nadu
- 2. Kerala
- 3. Karnataka
- 4. Andhra Pradesh

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. 2 only
- C. 1, 3 and 4 only
- D. 1, 2, 3 and 4

Answer : A

Explanation

- Lion-tailed macaque is not found naturally in Andhra Pradesh. It is endemic to Western Ghats and its habitat is mostly restricted to Evergreen Forests of the Ghats.

5. Other than poaching, what are the possible reasons for the decline in the population of Ganges River Dolphins?

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2. Increase in the population of crocodiles in rivers.
3. Getting trapped in fishing nets accidentally
4. Use of synthetic fertilizers and other agricultural chemicals in crop-fields in the vicinity of rivers.

Select the correct answer using the code given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1, 3 and 4 only
- D. 1, 2, 3 and 4

Answer : C

Explanation

- The habitat of the Ganges river dolphin is within one of the most densely populated areas of the world. Ganges river dolphins and people both favour areas of the river where fish are plentiful and the water current is slower. This has led to fewer fish for people and more dolphins dying as a result of accidentally being caught in fishing nets, also known as bycatch.
- The Ganges river dolphin is hunted for meat and oil, which are both used medicinally. The oil is also used to attract catfish in net fishery.

- Each year, 9,000 tons of pesticides and 6 million tons of fertilizers are used in the vicinity of the river - High levels of pollution can directly kill prey species and dolphins.
- The construction of dams and barrages has adversely affected the population of Ganges River Dolphin.
- The increase in the population of the crocodile in the river is nothing to do with the decline in the Ganges River Dolphins. Hence Statement 2 is Not Correct.
- The Ganges river dolphin has dwindled abysmally to less than 2000 during the last century owing to direct killing, habitat fragmentation by dams and barrages, and indiscriminate fishing.
- The Gangetic river dolphin is India's national aquatic animal and is popularly known as 'Susu'. The declaration was made in 2009 in the National Ganga River Basin Authority's (NGRBA) first meeting.

Questions for Today

1. Consider the following:

1. Black-necked crane
2. Cheetah
3. Flying squirrel
4. Spider Monkey

Which of the above is/are naturally found in India?

- A. 1, 3 and 4 only
- B. 1 and 3 only
- C. 2 and 4 only
- D. 1, 2, 3 and 4

2. If you walk through countryside, you are likely to see some birds stalking alongside the cattle to seize the insects disturbed by their movement through grasses. Which one of the following is/are such bird/birds?

1. Painted Stork
2. Common Myna
3. Black-necked Crane

Select the correct answer using the code given below.

- A. 1 and 2 only
- B. 2 only
- C. 2 and 3 only
- D. 3 only

3. Consider the following pairs:

<i>Wildlife</i>	<i>Naturally found in</i>
1. Blue-finned Mahseer	
	Cauvery River
2. Irrawaddy Dolphin	Chambal
	River
3. Rusty-spotted Cat	Eastern
	Ghats

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

4. Consider the following statements with reference to Recovery Programme for Critically Endangered Species:

1. The National Board for Wildlife adds species to Recovery Programme for Critically Endangered Species
2. Red Panda and Caracal are protected under this programme.

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

5. Consider the following statements with reference to the 'Ashwagandha':

1. It is grown in subtropical and tropical climates.
2. India and the UK have collaborated to conduct a study on 'Ashwagandha' for promoting recovery from Covid-19.
3. It is used as an immunity enhancer.

Select the correct answer using the code given below:

- A. Only 1 statement
- B. Only 2 statements
- C. All 3 statements
- D. None of the above

Answers With Explanations

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2. Cheetah
3. Flying squirrel
4. Spider Monkey

Which of the above is/are naturally found in India?

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- B. 1 and 3 only
- C. 2 and 4 only
- D. 1, 2, 3 and 4

Explanation

- Cheetah inhabits most of Africa and parts of Middle East. Due to large scale hunting, the cheetah was declared extinct from India in 1952.
- Spider monkey- Spider monkeys are New World monkeys. They are found in tropical forests of Central and South America, from southern Mexico to Brazil.

Additional Information

- Star tortoise, Monitor lizard and Pygmy hog and Caracal are naturally found in India.

2. If you walk through countryside, you are likely to see some birds stalking alongside the cattle to seize the insects disturbed by their movement through grasses. Which one of the following is/are such bird/birds?

1. Painted Stork
2. Common Myna
3. Black-necked Crane

Select the correct answer using the code given below.

- A. 1 and 2 only

- B. 2 only
- C. 2 and 3 only
- D. 3 only

Answer : B

Explanation

- **Common Myna** is an opportunistic feeder on insects, disturbed by grazing cattle. It is an omnivorous open woodland bird with a strong territorial instinct. In 2000, it was declared as one of the world's most invasive species by the IUCN.
- It has adapted extremely well to urban environments.
- **Painted Stork** is a fish eating bird found near water bodies such as wetlands, marshes, and flooded agricultural fields. Painted Stork does not feed on insects.
- **Black-necked Crane** is found in the Trans-Himalayan region. They are found around Arunachal Pradesh and Ladakh. So it is unlikely to find it while walking through the "countryside" in all states and places.

3. Consider the following pairs:

<i>Wildlife</i>	<i>Naturally found in</i>
1. Blue-finned Mahseer	Cauvery River
2. Irrawaddy Dolphin	Chambal River
3. Rusty-spotted Cat	Eastern Ghats

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 : C

Explanation

- In the river Cauvery, the Mahseer community comprises a "blue-finned" and an *orange-finned, hump-backed" fish.
- While it is not yet known whether these are distinct species or 2 different phenotypes, evidence suggests that the hump-backed phenotype is endemic to the river, whereas the blue-finned phenotype was introduced in the 1980s. Hence, statement 1 is correct.
- Recently, the International Union for Conservation of Nature (IUCN) has moved Blue-finned Mahseer or Tor Khudree from Endangered to the Least Concern' status on its Red List.
- **Pair 2 is in correct. Irrawaddy Dolphin** is not found in Chambal River. It is usually found near sea coasts and in estuaries and rivers in parts of the Bay of Bengal and Southeast Asia. It is found in Chilika Lake (Odisha).
- They are found in coastal areas in South and Southeast Asia, and in three rivers: the Ayeyarwady (Myanmar), the Mahakam (Indonesian Borneo) and Mekong.
- These are aquatic mammals.
- **Pair 3 is correct. Rusty Spotted Cat** is one of the world's smallest feline.
- In India, it was long thought to be confined to the south, but records have established that it is found over much of the country.
- It was observed in eastern Gujarat's Gir National Park, in Maharashtra's Tadoba-Andhari Tiger Reserve and along India's Eastern Ghats.

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1. The National Board for Wildlife adds species to Recovery Programme for Critically Endangered Species
2. Red Panda and Caracal are protected under this programme.

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

Recovery Programme for Critically Endangered Species program: It is one of the three components of the Integrated Development of Wildlife Habitats(IDWH).

IDWH: It was started in 2008-09 as a Centrally sponsored Scheme. It is meant for providing support to protected areas (national parks, wildlife sanctuaries, conservation reserves and community reserves except tiger reserves), protection of wildlife outside protected areas and recovery programmes for saving critically endangered species and habitats.

- **Statement 1 is correct.** The **National Board for Wildlife** adds species to **Recovery Programme for Critically Endangered Species** on the recommendation of a Standing Committee.
- **22 wildlife species under the recovery programme:** 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, Jerdon's Courser, Northern River Terrapin, Clouded Leopard, Arabian Sea Humpback Whale, Red Panda and Caracal.

5. Consider the following statements with reference to the 'Ashwagandha':

1. It is grown in subtropical and tropical climates.
2. India and the UK have collaborated to conduct a study on 'Ashwagandha' for promoting recovery from Covid-19.
3. It is used as an immunity enhancer.

Select the correct answer using the code given below:

- A. Only 1 statement
- B. Only 2 statements
- C. All 3 statements
- D. None of the above

Answer : C

Explanation

Statement 1 is correct: Ashwagandha is globally distributed in Africa, Mediterranean to India and Sri Lanka.

- This species grows in subtropical and tropical climates and prefers dry weather for successful growth.
- Within India, it is distributed in the sub-Himalayan tracts, ascending upto an altitude of 1000 m.
- It is found throughout the drier parts (subtropical) of India like Rajasthan, Punjab, Haryana, Uttar Pradesh, Gujarat, Maharashtra and Madhya Pradesh.
- **Statement 2 is correct.** Recently, India and the UK have collaborated to conduct a study on 'Ashwagandha (AG)' for promoting recovery from Covid-19.

- After the trial's success, 'Ashwagandha' will be a proven medicinal treatment to prevent infection and be recognised by the scientific community worldwide.
- This is the first time that the Ministry of Ayush has collaborated with a foreign institution to investigate its efficacy on Covid-19 patients.
- **Statement 3 is correct.** Ashwagandha (*Withania somnifera*) is a medicinal herb. It is reputed as an immunity enhancer.
- **Ashwagandha is one of the most widespread tranquillisers used in India.**

Additional Information

- It is classified as an adaptogen, which means that it can help the body to manage stress.
- Ashwagandha also boosts brain function and lowers blood sugar and helps fight symptoms of anxiety and depression.

Questions for Today

1. Consider the following pairs:

Tiger reserve	State
1. Pilbhit	Uttar Pradesh
2. Tadoba-Andheri	Maharashtra
3. Mukundara	Rajasthan

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

- A. 1 and 2 only
- B. 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

2. "Secure Himalaya" project is associated with the conservation efforts of which of the following species?

- A. Hangul
- B. Himalayan Serow
- C. Snow Leopard
- D. Bharal

3. Consider the following pairs:

Vulture species	IUCN Status
1. White rumped vulture	Critically-endangered
2. Egyptian Vulture	Near threatened
3. Red headed vulture	Endangered

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

- A. 1 only
- B. 2 and 3 only
- C. 2 only
- D. 1, 2 and 3

4. Which of the following plants are mentioned under Schedule VI of The Wildlife Protection Act, 1972:

- 1. Blue Vanda
- 2. Kuth
- 3. Pitcher plant
- 4. Red Vanda

Select the correct answer using the code given below.

- A. 1 and 2 only
- B. 2, 3 and 4 only
- C. 1 and 3 only
- D. 1, 2, 3 and 4

5. What is/are unique about 'Kharai camel', a breed found in India?

- 1. It is capable of swimming up to three kilometres in seawater.
- 2. It survives by grazing on mangroves.
- 3. It lives in the wild and cannot be domesticated.

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

Answers With Explanations

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

- A. 1 and 2 only
- B. 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Answer : D



2. "Secure Himalaya" project is associated with the conservation efforts of which of the following species?

- A. Hangul
- B. Himalayan Serow
- C. Snow Leopard
- D. Bharal

Answer : C

Explanation

The SECURE Himalaya project is a part of "Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development" (Global Wildlife Program) funded by the Global Environment Facility (GEF).

- The project promotes sustainable management of alpine pastures and forests in the high range Himalayan ecosystems to secure conservation of globally significant wildlife, including endangered snow leopard and their habitats to ensure sustainable livelihoods and socio-economic benefits for communities in the selected high altitude landscapes in the Trans- and Greater Himalayan regions.
- It contributes to the Global Snow Leopard Ecosystem Protection Program (GSLEP), a joint initiative of 12 range country governments, international agencies, civil society, and the private sector.
- Secure Himalaya project was launched to ensure conservation of locally and globally significant biodiversity, land and forest resources in high Himalayan ecosystem spread over four states. It includes Changthang (Jammu and Kashmir), Lahaul – Pangi and Kinnaur (Himachal Pradesh), and Gangotri – Govind and Darma – Byans Valley in Pithoragarh (Uttarakhand)

and Kanchenjunga Upper Teesta Valley (Sikkim).

Achievements

- Snow Leopard Population Assessment in India (SPAI) launched for accurate estimate the Snow Leopard population;
- Trained 2,000 frontline forest staff and community members in monitoring of wild habitats;
- Augmented skills of 1,000 women and youth in areas like adventure and nature-based tourism;
- Inspiring innovation and youth participation through SECURE Himalaya Hackathon to develop technology-based solutions for conservation;
- Developed a Virtual Reality experience to highlight the importance of snow leopards among the general public and encourage policy initiatives aimed at conservation of the critically endangered species.

Additional Information

- A Himalayan serow has been **sighted for the first time in the Himalayan cold desert region** (Spiti, Himachal Pradesh).

3. Consider the following pairs:

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1. White rumped vulture	Critically-endangered
2. Egyptian Vulture	Near threatened
3. Red headed vulture	Endangered

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

- A. 1 only
- B. 2 and 3 only
- C. 2 only
- D. 1, 2 and 3

Answer : A

Explanation

As per IUCN

- White rumped vulture (Critically Endangered)
- Slender billed vulture (Critically Endangered)
- Long billed vulture (Critically Endangered)
- Red headed vulture (Critically Endangered)
- Egyptian vulture (Endangered)
- Himalayan Griffon (Near Threatened)
- Cinereous vulture (Near Threatened)
- Bearded vulture (Near Threatened)
- Griffon Vulture (Least Concern).
- **CITES: Appendix II**
- **Wildlife Protection Act, 1972: Schedule I**

4. Which of the following plants are mentioned under Schedule VI of The Wildlife Protection Act, 1972:

1. Blue Vanda
2. Kuth
3. Pitcher plant
4. Red Vanda

Select the correct answer using the code given below.

- A. 1 and 2 only
- B. 2, 3 and 4 only
- C. 1 and 3 only
- D. 1, 2, 3 and 4

Answer : D

Explanation

The Wildlife (Protection) Act, 1972 has divided the protection status of various plants and animals under the following six schedules:

- If a particular plant species is placed under Schedule VI of The Wildlife Protection Act, 1972, then No person is allowed to cultivate the specified plant, except with a licence granted by the Chief Wild Life Warden. The specified endemic plants in Schedule VI are prohibited from cultivation and planting, except with a granted license.
- Plants protected under Schedule VI include:
 - Beddome's cycad (Native to India)
 - Blue Vanda (Blue Orchid)
 - Red Vanda (Red Orchid)
 - Kuth (Saussurea lappa)
 - Slipper orchids (Paphiopedilum spp.)
 - Pitcher plant (Nepenthes khasiana)

- Kharai camels are known for their mangrove diet and swimming for long hours. Gujarat is the only State in India which is home to Kharai Camels. It grazes on mangrove trees and can swim up to three kilometres into the sea in search of their primary food mangroves.
- These animals live in wild and cannot be domesticated, though they live around a few nomadic tribes.

5. What is/are unique about 'Kharai camel', a breed found in India?

1. It is capable of swimming up to three kilometres in seawater.
2. It survives by grazing on mangroves.
3. It lives in the wild and cannot be domesticated.

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 : D

Explanation

Questions

1. Consider the following statements with reference to the Habitat and Environment:

1. A habitat always has life in it, whereas the environment does not necessarily have life in it.
2. A habitat contains only a few trophic levels whereas environment contains all trophic levels.

Which of the statement given above is/are correct?

- 1 only
- 2 only
- both the statements
- none of the above

2. Consider the following pairs:

Mangroves	Location
Vellar Coleroon wetland mangroves	Andhra Pradesh
Muthu pet mangroves	Tamil nadu
Kannur mangroves	Maharashtra

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

- 1 and 2 only
- 3 only
- 2 only
- 1, 2 and 3

3. Which of the following Invasive species have been recently found in the water bodies of Kerala:

1. Mikania
2. Nila grass
3. Siam Weed
4. Lantana
5. Giant salvinia

Select the correct code from below:

- 1, 2, 4 and 5 only
- 2, 3, 4 and 5 only
- 2, 3 and 4 only
- 1, 2, 3, 4 and 5

4. Consider the following pairs regarding "biotic interactions" in an ecosystem:

Biotic Interaction	Examples
Commensalism	large tree shades a small plant
Mutualism	Pollination
Amensalism	cow providing cow dung to beetles

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

- 2 only
- 1 and 2 only
- 2 and 3 only
- 1, 2 and 3

5. Consider the following kinds of organisms:

1. Bacteria
2. Fungi
3. Flowering plants

Some species of which of the above kinds of organisms are employed biopesticides?

- 1 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Answers with Explanations

Click [here](#) to watch the following topics on YouTube

1. Consider the following statements with reference to the Habitat and Environment:

1. A habitat always has life in it, whereas the environment does not necessarily have life in it.
2. A habitat contains only a few trophic levels whereas environment contains all trophic levels.

Which of the statement given above is/are correct?

- A. 1 only
- B. 2 only
- C. both the statements
- D. none of the above

Answer: - C

Explanation

- The environment is everything that surrounds us. This environment around us constitutes a life support system. Through a process of natural selection and elimination, it is the environment only that has caused the evolution of the biological spectrum.
- On the other hand, a habitat is a particular space in the environment where a certain species formed their own home. Habitat and environment are interrelated. But there are few differences between them.

Content	Habitat	Environment
Meaning	The habitat means to live or to inhabit.	The environment to 'encircle' or 'surround'.
Definition	Habitat is the natural home of a plant, animal, or another organism.	The environment is the state in which the organic, inorganic, and cultural elements interact to protect the birth, growth, existence, etc. of an

		organism.
Consist of	The habitat consists of many ecological niches.	The environment consists of many biotic and abiotic factors.
Number of species	Different types of species can live in one habitat.	Numerous species of organisms and non-living objects are present in an environment.
Area	The area of habitat ranges from a few square centimeters to a million square kilometers.	The area of an environment is bigger than the habitat's area. Environment extends from a few hundred million square kilometers to a thousand million square kilometers.
Life cycle of species	A species can occupy more than one habitat. Eg. Habitat of hilsa fish can be both freshwater and marine water.	There are different types of species that can occupy an environment. The environment is the place where all these creatures are born and grow. This is where their life cycle ends.
Represent	It represents the address of an organism.	An environment represents the address of organisms, plants, and various non-living substances.
Presence of living and non-living things	Living things are only present in a habitat. A habitat always has life (biotic component) in it	On the other hand, both living and non-living things are present in the environment. Environment does not necessarily have life in it.

Species survive	A certain species can survive a certain habitat.	Various species can survive in more than one environment.
Number of trophic levels	Since a certain species lives in a habitat, it contains only a few trophic levels.	There are different types of organisms present in the environment. So it contains all the trophic levels.
Indicates	Habitat indicates the interaction between an organism or a community of organisms who naturally live and grow in the habitat.	It indicates the interaction between physical, chemical, and biological components.

2. Consider the following pairs:

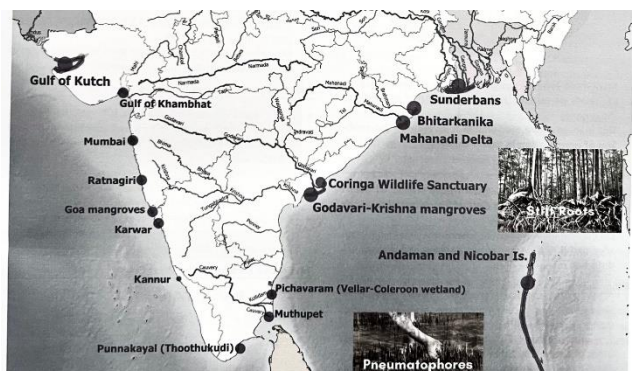
Mangroves	Location
Vellar Coleroon wetland mangroves	Andhra Pradesh
Muthupet mangroves	Tamil nadu
Kannur mangroves	Maharashtra

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

- 1 and 2 only
- 3 only
- 2 only
- 1, 2 and 3

Answer: - C

Mangrove sites in India



3. Which of the following Invasive species have been recently found in the water bodies of Kerala:

- Mikania
- Nila grass
- Siam Weed
- Lantana
- Giant salvinia

Select the correct code from below:

- 1, 2, 4 and 5 only
- 2, 3, 4 and 5 only
- 2, 3 and 4 only
- 1, 2, 3, 4 and 5

Answer: - D

Explanation

- Floods and landslides in Kerala have brought several alien invasive species of plants into the State's water bodies, posing a threat to native biodiversity and the aquatic environment.
- The physical routes and paths formed due to landslides and the overflow of rivers had paved the way for the establishment of primary colonies of invasive species like **Nila grass** (*Mimosa diplotricha*), **Mikania** (*Mikania micrantha*), **Lantana** (*Lantana camara*) and **Siam weed** (*Chromolaena odorata*).
- The survey revealed that invasive species like the water hyacinth (*Eichhornia crassipes*) and giant salvinia (*Salvinia molesta*), present in the backwaters of the Kuttanad region, had started colonising paddy fields, cultivated lands and other isolated water bodies in nearby areas.
- In Thrissur district's Kole wetlands, notified under the Ramsar Convention, invasive plants, especially grass species, such as matamat (*Rhynchospora corymbosa*), desho grass (*Pennisetum pedicellatum*), giant salvinia and water

hyacinth were reportedly establishing a beach-head, using available soil resources. This may lead to the conversion of marshy wetlands into dry land, Dr. Hrideek said.

4. Consider the following pairs regarding “biotic interactions” in an ecosystem:

Biotic Interaction	Examples
Commensalism	large tree shades a small plant
Mutualism	Pollination
Amensalism	cow providing cow dung to beetles

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

- A. 2 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3

Answer: - A

Explanation

- **Pair 1 is incorrectly matched.** In Commensalism, one species benefits and the other is unaffected. The interaction between a cow providing cow dung to beetles, is a type of commensalism. Here cow dung provides food and shelter to dung beetles. The beetles have no effect on the cows.
- **Pair 2 is correctly matched.** In Mutualism, both species benefit. For example, in pollination mutualisms, the pollinator gets food, and the plant has its pollen transferred to other flowers for cross-fertilization.
- **Pair 3 is incorrectly matched.** In Amensalism, one species is harmed and the other is unaffected.
- For example, when a large tree shades a small plant, it retards the growth of the small plant. But the small plant in turn has no effect on the large tree.

5. Consider the following kinds of organisms:

1. Bacteria
2. Fungi
3. Flowering plants

Some species of which of the above kinds of organisms are employed biopesticides?

- A. 1 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Answer: - D

Explanation

- All of the above are employed as biopesticides.
- Biopesticides include naturally occurring substances that control pests (biochemical pesticides), microorganisms that control pests (microbial pesticides), and pesticidal substances produced by plants containing added genetic material (plant-incorporated protectants) or PIPs.
- Bacteria and Fungi are more targeted in their activity than conventional chemicals. For example, a certain fungus might control certain weeds, and another fungus might control certain insects. The most common microbial biopesticide is *Bacillus thuringiensis*.

Questions for Today

1. Consider the following statements with reference to the Global Forest Resources Assessment report:

1. It is published by United Nations Environment Programme.
2. According to the report, India is amongst the top 3 countries that have recorded the maximum average annual net gains in forest area during 2010-2020.

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

2. Consider the following statements:

1. As per law, the Compensatory Afforestation Fund Management and Planning Authority exists at both National and State levels.
2. People's participation is mandatory in the compensatory afforestation programmes carried out under the Compensatory Afforestation Fund Act, 2016.

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

3. Consider the following statements regarding the colonial legacy of forest policies in India:

1. Demand for Indian teak for ship building and railways was the reason behind the development of forest policy by the Britishers.

2. Indian forest policy 1894 gave priority to agriculture over forests.

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

4. If you travel through the Himalayas, you are likely to see which of the following plants naturally growing there? [UPSC CSE Pre. 2014]

1. Oak
2. Rhododendron
3. Sandalwood

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

5. In terms of the forest cover area wise, arrange the following states in the ascending order:

1. Madhya Pradesh
2. Maharashtra
3. Chhattisgarh
4. Arunachal Pradesh

Select the correct code using the option given below:

- A. 2-3-4-1
- B. 2-3-1-4
- C. 3-2-1-4
- D. 3-2-4-1

Answers with Explanations

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1. It is published by United Nation Environment Programme.
2. According to the report, India is amongst the top 3 countries that have recorded the maximum average annual net gains in forest area during 2010-2020.

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

Global Forest Resources Assessment 2020

- India has ranked 3rd among the top 10 countries that have gained in forest areas in the last decade, according to the latest Global Forest Resources Assessment (GFRA) 2020.
- Global Forest Resources Assessment 2020 (FRA 2020) is released by Food & Agriculture Organization (FAO) of the United Nations.
- FAO has brought out this comprehensive assessment every five years since 1990.

Findings of the Report

- The Top 3 countries that have recorded the maximum average annual net gains in forest area during 2010-2020 are:
 - China
 - Australia
 - India

- India accounts for 2% of total global forest area.
- The Asian continent reported the highest net gain in forest area in 2010-2020.
- India reported 0.38 per cent annual gain in forest, or 266,000 ha of forest increase every year at an average.

TABLE 8. Top ten countries for average annual net gain in forest area, 2010–2020

Ranking	Country	Annual net change	
		1 000 ha/yr	%
1	China	1 937	0.93
2	Australia	446	0.34
3	India	266	0.38
4	Chile	149	0.85
5	Viet Nam	126	0.90
6	Turkey	114	0.53
7	United States of America	108	0.03
8	France	83	0.50
9	Italy	54	0.58
10	Romania	41	0.62

Note: The rate of change (%) is calculated as the compound annual change rate.

TABLE 3. Top ten countries for forest area, 2020

Ranking	Country	Forest area		
		1 000 ha	% of world forest area	% cumulative
1	Russian Federation	815 312	20	20
2	Brazil	496 620	12	32
3	Canada	346 938	9	41
4	United States of America	309 795	8	49
5	China	219 978	5	54
6	Australia	134 005	3	57
7	Democratic Republic of the Congo	126 155	3	60
8	Indonesia	92 133	2	63
9	Peru	72 330	2	64
10	India	72 160	2	66

GFRA & India

- The FRA 2020 has credited the government's Joint Forest Management programme for the significant increase in community-managed forest areas in the Asian continent.

- The forest area managed by local, tribal & indigenous communities in India increased from zero in 1990 to about 25 million ha in 2015.
- India has been taking up massive afforestation & plantation schemes.
- During 2010-20, the rate of increase in naturally regenerating forest was just 0.38 per cent.
- India reported the maximum employment in the forestry sector in the world.
- Globally, 12.5 million people were employed in the forestry sector.
- India accounted for nearly 50 per cent.

About FAO

- The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger.
- Goal of FAO is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
- With over 194 member states, FAO works in over 130 countries worldwide.
- The FAO is headquartered in Rome, Italy.
- It helps governments and development agencies coordinate their activities.

2. Consider the following statements:

1. As per law, the Compensatory Afforestation Fund Management and Planning Authority exists at both National and State levels.
2. People's participation is mandatory in the compensatory afforestation programmes carried out under the

Compensatory Afforestation Fund Act, 2016.

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

Features of Compensatory Afforestation Fund Act 2016

1. To compensate for the loss of forest area and to maintain sustainability, the Government of India came up with a well-defined Act, known as CAMPA (Compensatory Afforestation Fund Management and Planning Authority).
2. The law establishes the National Compensatory Afforestation Fund under the Public Account of India and a State Compensatory Afforestation Fund under the Public Account of each state.
3. The act also seeks to establish National and State Compensatory Afforestation Fund Management and Planning Authorities to manage the funds.

These Funds will receive payments for

- compensatory afforestation,
- Net present value of forest (NPV), and
- other project specific payments.
- The determination of NPV (Net Present Value) will be delegated to an expert committee constituted by the central government. NPV is the ecological cost of forests.
- The National Fund will receive 10% of these funds, and the State Funds will receive the remaining 90%.

- According to the Act's provision, a company diverting forest land must provide alternative land to take up compensatory afforestation.
- For afforestation, the company should pay to plant new trees in the alternative land provided to the state.
- The funds can be used for the treatment of catchment areas, assisted natural generation, forest management, wildlife protection and management, relocation of villages from protected areas, managing human-wildlife conflicts, training and awareness generation, the supply of wood saving devices, and allied activities.
- **Statement 2 is Not Correct.** However, there is no mention in the Act of mandatory people's participation in carrying out programmes under the Act.

3. Consider the following statements regarding the colonial legacy of forest policies in India:

1. Demand for Indian teak for ship building and railways was the reason behind the development of forest policy by the Britishers.
2. Indian forest policy 1894 gave priority to agriculture over forests.

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

Evolution of Forest Laws in the British Period

- 1856: Lord Dalhousie emphasized the need for a definite forest policy. Railways were first introduced to India in the year 1853 from Mumbai to Thane. Increasing difficulty of obtaining adequate supplies of timber (needed for the great extension of railway lines then being undertaken) was one of the main reason for this cognizance.
- Another reason - The Indian teak, suitable for ship building, saved England during the war with Napoleon.
- 1865: The Indian Forests Act of 1865 extended the British Colonial claims over forests in India. The Act empowered the Government to declare any land covered with trees as Government forests and to issue rules for conserving them. This was the first attempt at forest legislation by the British in India.
- 1878: The Forest Act of 1878 was introduced, and it truncated the centuries-old traditional use by communities of their forests and secured the colonial governments control over the forestry. The provision of this Act established a virtual State monopoly over the forests in a legal sense on one hand, and attempted to establish, on the other, that the customary use of the forests by the villagers was not a 'right', but a 'privilege' that could be withdrawn at will.
- A revised Indian Forest Act was passed in 1878 and was extended to all provinces of British India with the exception of Madras and some other areas. This Act aimed at improving on the inadequacies of the Indian Forest

Act of 1865. This Act classified the forests into reserved forests, protected forests and village forests. The rights of the people over forest lands and produce in the reserved and protected forests were restricted and regulated by this Act. It empowered the Government to exercise control over the forests.

- The first Forest Policy was in the year 1894, which gave priority to agriculture over forests. Many forests were destroyed in the name of agriculture and the need for more land for cultivation.
- Colonial Forest policies focused on enrichment plantation. It means commercially valuable species was extensively planted and other species eliminated. For instance, teak monoculture has damaged the natural forest in South India and Chir Pine plantations in the Himalayas have replaced the Himalayan oak and Rhododendron forests. Large scale development projects have also contributed to a great extent to the loss of forests.
- The Indian Forest Act, 1927: In continuance with the forest use policy of 1878, this landmark law – India's main forest law, had nothing to do with conservation. It was created to serve the British need for timber. It sought to override customary rights and forest management systems by declaring forests state property and exploiting their timber.
- This Act does not lay down a specific definition for forests. The act establishes three categories of forests, reserve forest, protected forest and village forest.
- Reserve forest = Most restricted, constituted by state govt on govt property

4. If you travel through the Himalayas, you are likely to see which of the following plants naturally growing there? [UPSC CSE Pre. 2014]

1. Oak
2. Rhododendron
3. Sandalwood

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 : A

Explanation

- **Option 1 and 2 are correct.** The Eastern Himalayan broadleaf forests are diverse and species-rich, with a great diversity of oaks and rhododendrons in particular.
- The ecoregion has two broad forest types: evergreen and deciduous.
- Evergreen forests are characterized by oaks together with Rhododendrons.
- In Western Himalayas, the evergreen broadleaf forests is dominated by oaks.
- **Option 3 is incorrect.** Sandalwood is an evergreen tree which generally grows in the tropical dry, deciduous forests of Karnataka, Tamil Nadu, Kerala and Andhra Pradesh.



5. In terms of the forest cover areawise, arrange the following states in the ascending order:

1. Madhya Pradesh
2. Maharashtra
3. Chhattisgarh
4. Arunachal Pradesh

Select the correct code using the option given below:

- A. 2-3-4-1
- B. 2-3-1-4
- C. 3-2-1-4
- D. 3-2-4-1

Answer : A

Explanation

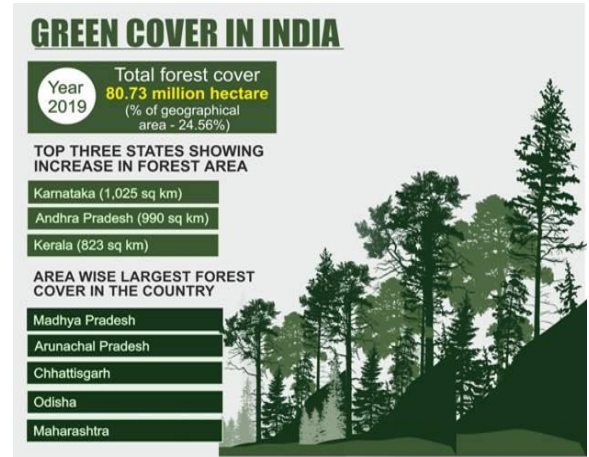
- The Indian State Forest Report (ISFR) assesses the forest and tree cover, bamboo resources, carbon stock and forest fires in the country.
- It is a biennial publication of Forest Survey of India (FSI), an organization under the Ministry of Environment Forest & Climate Change.

According to the ISFR 2019,

- Area-wise Madhya Pradesh has the largest forest cover in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra.



- In terms of forest cover as percentage of total geographical area, the top five States are Mizoram (85.41%), Arunachal Pradesh (79.63%), Meghalaya (76.33%), Manipur (75.46%) and Nagaland (75.31%).



Questions for Today

1. With reference to the Arsenic Pollution, consider the following statements:

1. Arsenic is widely distributed throughout the environment in the air, water and land.
2. Alluvial sediments are the major source for arsenic contamination in groundwater.

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

2. Consider the following statements:

1. Coal ash contains arsenic, lead and mercury.
2. Coal-fired power plants release sulphur dioxide and oxides of nitrogen into the environment.
3. High ash content is observed in Indian coal.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

3. Which of the following are the reasons/factors for exposure to benzene pollution?

1. Automobile exhaust
2. Tobacco smoke
3. Wood burning

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

4. Recently, "oilzapper" was in the news. What is it?

- A. It is an eco-friendly technology for the remediation of oily sludge and oil spills
- B. It is the latest technology developed for under-sea oil exploration
- C. It is a genetically engineered high biofuel-yielding maize variety
- D. It is the latest technology to control the accidentally caused flames from oil wells.

5. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

1. Smelting units
2. Pens and pencils
3. Paints
4. Hair oils and cosmetics

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. 1 and 3 only
- C. 2 and 4 only
- D. 1, 2, 3 and 4

Answers with Explanations

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1. Arsenic is widely distributed throughout the environment in the air, water and land.
2. Alluvial sediments are the major source for arsenic contamination in groundwater.

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

- To make provision of potable tap water supply in adequate quantity, of prescribed quality and on regular & long-term basis to every rural household in the country by 2024, since August, 2019, Jal Jeevan Mission (JJM) is being implemented in partnership with States.
- Under Jal Jeevan Mission (JJM)**, while allocating the funds to States/UTs, 10% weightage is given to the population residing in habitations affected by chemical contaminants including Arsenic.

About Arsenic

- Statement 1 is correct:** Arsenic is a natural component of the earth's crust. It is widely distributed throughout the environment in the air, water and land. Inorganic arsenic compounds are more harmful than organic ones. More than 90% of

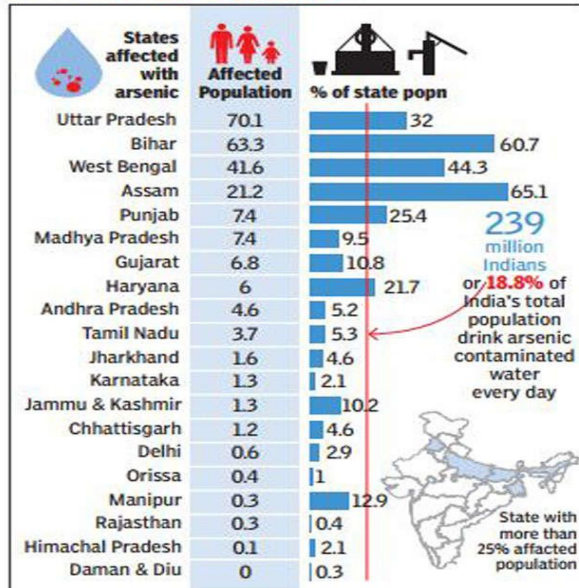
arsenic pollution is inferred to be geogenic.

- Statement 2 is correct:** Alluvial sediments are the major source for arsenic contamination in groundwater and there is a relation with plate tectonic processes, mountain building, erosion and sedimentation. The groundwater extracted from unconsolidated sedimentary aquifers, particularly those which are located within the younger orogenic belts of the world, are the worst affected.
- Arsenic poisoning is caused by the ingestion, absorption, or inhalation of dangerous amounts of arsenic.
- Long-term exposure to arsenic-contaminated groundwater results in severe health issues like skin, lung, kidney and bladder cancer; coronary heart disease; bronchiectasis; hyperkeratosis and arsenicosis.
- Black foot disease**



- Remedial Measures are to be designed based on the source mineral, climatological and hydrogeological scenario of the affected region.
- The corrective measures available include- Substituting high-arsenic sources, such as groundwater, with low-arsenic, microbiologically safe sources such as rain water and treated surface water.
 - Removing arsenic from groundwater using filters,
 - Exploring deeper or alternative aquifers,
 - Treatment of the aquifer itself,
 - Dilution method by artificial recharge to groundwater,
 - Conjunctive use, and
 - Installation of nano-filter, among other procedures.

STATUS OF STATES



- According to the latest report of the Central Ground Water Board (CGWB), 21 states across the country have pockets with arsenic levels higher than the BIS stipulated permissible limit of 0.01 milligram per litre (mg/l).

- The states along the **Ganga-Brahmaputra-Meghna (GBM) river basin** – Uttar Pradesh, Bihar, Jharkhand, West Bengal and Assam – are the worst affected by this human-amplified geogenic occurrence.
- In India, arsenic contamination was first officially confirmed in West Bengal in 1983.

2. Consider the following statements:

- Coal ash contains arsenic, lead and mercury.
- Coal-fired power plants release sulphur dioxide and oxides of nitrogen into the environment.
- High ash content is observed in Indian coal.

Which of the statements given above is/are correct?

- 1 only
- 2 and 3 only
- 3 only
- 1, 2 and 3

Answer : D

Explanation

- Statement 1 is correct.** Typically, coal ash consists of arsenic, lead, mercury, selenium, and hexavalent chromium among other carcinogens and neurotoxins. Coal ash, also referred to as coal combustion residuals or CCRs, is produced primarily from the burning of coal in coal-fired power plants.
- Statement 2 is correct.** Coal-fired power plants also produce large amounts of nitrogen oxides and sulfur dioxide – the pollutants that cause acid rain.
- Statement 3 is correct.** India's domestic coal reserves have a high ash content – up to 40 to 45 per cent.

- Ash content of coal produced in the country is generally UPTO to 45 % whereas average ash content of imported coal varies from **10 to 20 %**. **Indian Coal** has comparatively higher ash content than imported coal due to **drift theory of formation** of coal deposits in India. Coal seams formed due to drift theory contains higher ash as compared to in-situ theory of formation.

3. Which of the following are the reasons/factors for exposure to benzene pollution?

1. Automobile exhaust
2. Tobacco smoke
3. Wood burning

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 : D

Explanation

- Benzene is a colourless liquid with a sweet Odour. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable.
- Natural sources of benzene include volcanoes and forest fires. Human exposure to benzene has been associated with a range of acute and long-term adverse health effects and diseases, including cancer and aplastic anaemia.
- Indoor air generally contains levels of benzene higher than those in outdoor air.
- The benzene in indoor air comes from products that contain benzene such as glues, paints, furniture wax, and detergents.

- **Option 1 is correct.** Automobile exhaust accounts for the largest source of benzene in the general environment.
- **Option 2 is correct.** Active and passive exposure to tobacco smoke is also a significant source of exposure. Benzene is highly volatile, and exposure occurs mostly through inhalation.
- **Option 3 is correct.** Benzene is one of the main organic compounds emitted by wood-burning, that has the potential to cause cancer.

4. Recently, "oilzapper" was in the news. What is it?

- A. It is an eco-friendly technology for the remediation of oily sludge and oil spills
- B. It is the latest technology developed for under-sea oil exploration
- C. It is a genetically engineered high biofuel-yielding maize variety
- D. It is the latest technology to control the accidentally caused flames from oil wells.

Answer : A

Explanation

Oilzapper:

- Developed by TERI, partly supported by the DBT (Department of Biotechnology), Ministry of Science and Technology, Government of India.
- Oilzapper feeds on hydrocarbon compounds present in crude oil and oily sludge (a hazardous hydrocarbon waste generated by oil refineries) and converts them into harmless CO₂ and water.

- Oilzapper's uniqueness lies in the bio-friendly manner in which it detoxifies oily sludges and cleans up oil slicks.

How does Oil Zapper Work?

- There are five different bacterial strains that are immobilized and mixed with a carrier material such as powdered corncob.
- This mixture of live bacteria is called Oil Zapper.
- Oilzapper feeds on hydrocarbon compounds present in crude oil and the hazardous hydrocarbon waste generated by oil refineries, known as Oil Sludge and converts them into harmless CO₂ and water.
- The Oilzapper is neatly packed into sterile polythene bags and sealed aseptically for safe transport.
- The shelf life of the product is three months at ambient temperature.
- The technique was used successfully and 130,000 tons of oily sludge/oil-contaminated soil was treated as per the leading news sources.

Answer : B

Explanation

- Important sources of lead poisoning include mining, smelting, art supplies, manufacturing and recycling activities, and, in some countries, the continued use of leaded paint, leaded gasoline, and leaded aviation fuel.
- Exposure to high levels of lead may cause anemia, weakness, and kidney and brain damage.
- Very high lead exposure can cause death.
- Lead can cross the placental barrier, which means pregnant women who are exposed to lead also expose their unborn child.
- Lead can damage a developing baby's nervous system.
- Lead poisoning is also known as Plumbism.

5. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

1. Smelting units
2. Pens and pencils
3. Paints
4. Hair oils and cosmetics

Select the correct answer using the codes given below:

- A. 1, 2 and 3 only
- B. **1 and 3 only**
- C. 2 and 4 only
- D. 1, 2, 3 and 4

Questions for Today

Q1.) In rural road construction, the use of which of the following is preferred for ensuring environmental sustainability or to reduce carbon footprint?

1. Copper slag
2. Cold mix asphalt technology
3. Geotextiles
4. Hot mix asphalt technology
5. Portland cement

Select the correct answer using the code given below:

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

Q2.) Consider the following statements:

1. Coal ash contains arsenic, lead and mercury.
2. Coal-fired power plants release sulphur dioxide and oxides of nitrogen into the environment.
3. High ash content is observed in Indian coal.

Which of the statements given above is/are correct?

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

Q3.) What is the use of biochar in farming?

1. Biochar can be used as a part of the growing medium in vertical farming.
2. When biochar is a part of the growing medium, it promotes the growth of nitrogen-fixing microorganisms.

3. When biochar is a part of the growing medium, it enables the growing medium to retain water for longer time.

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

Q4.) Why is there a concern about copper smelting plants?

1. They may release lethal quantities of carbon monoxide into environment.
2. The copper slag can cause the leaching of some heavy metals into environment.
3. They may release sulphur dioxide as a pollutant.

Select the correct answer using the code given below:

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

Q5.) With reference to furnace oil, consider the following statements:

1. It is a product of oil refineries.
2. Some industries use it to generate power.
3. Its use causes sulphur emissions into environment.

Which of the statements given above are correct?

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

Answers with Explanations

Click [here](#) to watch the following topics on YouTube

Q1.) In rural road construction, the use of which of the following is preferred for ensuring environmental sustainability or to reduce carbon footprint?

- 1. Copper slag
- 2. Cold mix asphalt technology
- 3. Geotextiles
- 4. Hot mix asphalt technology
- 5. Portland cement

Select the correct answer using the code given below:

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

Answer : A

Explanation

- The use of copper slag in cement and concrete provides potential environmental as well as economic benefits for all related industries, particularly in areas where a considerable amount of copper slag is produced.
- Cold asphalt mix is produced by mixing unheated mineral aggregate with either emulsified bitumen or foamed bitumen.
- Unlike hot mix asphalt (HMA), cold asphalt mix does not require any heating of aggregate which makes it economical and relatively pollution -

free (no objectionable fumes or odours).

- Production of cold asphalt mix does not require high investment in equipment, which makes it economical.
- It is also suitable for use in remote areas.
- Cold asphalt mixes can be used both for initial construction (100% virgin mixes) and for recycling of asphalt pavements.
- Hot mix asphalt technology is major CO₂ emitter.
- Geotextiles are mostly used in road construction, especially to fill gaps between the roads to improve soil structure.
- Geotextile makes poor soil more beneficial for use and then easy to build in difficult places also.
- It helps to prevent the erosion of soil but allows the water to drain off.
- Portland cement that binds concrete together is energy intensive and emits enormous amounts of carbon dioxide (CO₂) as well as numerous other pollutants.

Q2.) Consider the following statements:

- 1. Coal ash contains arsenic, lead and mercury.
- 2. Coal-fired power plants release sulphur dioxide and oxides of nitrogen into the environment.

3. High ash content is observed in Indian coal.

Which of the statements given above is/are correct?

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

Answer : D

Explanation

- Coal ash is the waste that is left after coal is combusted (burned).
- It includes fly ash (fine powdery particles that are carried up the smoke stack and captured by pollution control devices) as well as coarser materials that fall to the bottom of the furnace.
- Coal itself isn't a particularly toxic material.
- But after it's burned, what remains in the ash includes lead, mercury, cadmium, chromium, arsenic, and selenium, all in levels that may threaten human health.
- Thermal power plants produce large amounts of nitrogen oxides and sulfur dioxide—the pollutants that cause acid rain—when they burn fossil fuels, especially coal, to produce energy.
- India's domestic coal reserves have a high ash content—up to 40 to 45 percent.

Q3.) What is the use of biochar in farming?

- 1. Biochar can be used as a part of the growing medium in vertical farming.
- 2. When biochar is a part of the growing medium, it promotes the growth of nitrogen-fixing microorganisms.

3. When biochar is a part of the growing medium, it enables the growing medium to retain water for longer time.

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 : D

Explanation

- Biochar is a charcoal-like material produced by heating biomass in the absence of oxygen.
- The use of biochar in vertical farming can increase output significantly.
- Adding biochar to soil increases its carbon content and could help mitigate greenhouse gas emissions.
- Biochar is shown to have an increased abundance of mycorrhizal fungi, assisting nutrient uptake by plants.
- In addition to supporting the life of nitrogen - fixing microorganisms, biochar can also decrease soil N₂O emission, and increase nitrogen use efficiency and nitrogen retention in the soil.
- Biochar is characterized by large pore surface area.
- Because of its porous nature, biochar can improve your soil's water retention and water holding capacity – defined as the amount of water that a soil can hold for its crops – so that your plants will have more water available to them for a longer period of time.

Q4.) Why is there a concern about copper smelting plants?

1. They may release lethal quantities of carbon monoxide into environment.
2. The copper slag can cause the leaching of some heavy metals into environment.
3. They may release sulphur dioxide as a pollutant.

Select the correct answer using the code given below:

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

Answer : B

Explanation

- Copper smelting plants separate elemental copper from copper concentrates through multiple sulphide oxidizing stages.
- Smelting is a process of applying heat to ore in order to extract a base metal.
- The copper concentrates are fed through the flash smelting furnace with oxygen -enriched air.
- In the furnace, the concentrates are instantly oxidized, after which they melt and separate by their own reaction heat into copper matte with a grade of 65% and slag consisting of iron oxide, silica, and other compounds.
- Extractive metallurgical and smelting processes can be highly polluting activities.
- Some facilities that carry out metal and smelting processes are known to emit high quantities of air pollutants such as hydrogen fluoride, sulfur dioxide, oxides of nitrogen, offensive

and noxious smoke fumes, vapors, gases, and other toxins.

- Due to the application of pyro - metallurgical processes in copper smelters, significant air pollution occurs with suspended particles.
- These particles contain high concentrations of Lead (Pb), Cadmium (Cd), Nickel (Ni) and Arsenic (As).
- The carbon (or carbon monoxide derived from it) **removes oxygen from the ore, leaving the elemental metal.**
- The carbon thus oxidizes in two stages, producing first carbon monoxide and then carbon dioxide.

Q5.) With reference to furnace oil, consider the following statements:

1. It is a product of oil refineries.
2. Some industries use it to generate power.
3. Its use causes sulphur emissions into environment.

Which of the statements given above are correct?

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

Answer : D

Explanation

- Fuel oil (also known as heavy oil, marine fuel, bunker, furnace oil, or gasoil) is a fraction obtained from petroleum distillation.
- Diesel-based power plants may use Diesel, Furnace Oil, Heavy Fuel Oil (HFO), Low Sulfur Fuel Oil (LSFO) or Low Sulfur Heavy Stock (LSHS).

- The oxides of sulphur (SO_x ; $\text{SO}_2 + \text{SO}_3$) emissions are a direct result of the sulphur content of the fuel oil.
- During the combustion process this fuel-bound sulphur is rapidly oxidised to sulphur dioxide (SO_2).
- A small fraction of the SO_2 , some 3-5% may be further oxidised to sulphur trioxide (SO_3) within the combustion chamber and exhaust duct.

Questions for Today

1. Consider the following drugs:

- 1) Diclofenac
- 2) Aceclofenac
- 3) Ketoprofen

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. 1, 2 and 3

Which of the above are toxic/dangerous for vultures?

- A. 1 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. All of the above

2. Consider the following statements regarding Breakthrough Agenda Report 2022

1. It is released by International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and the UN Climate Change High-Level Champions.
2. It assesses progress on reducing emissions in five key sectors - power, hydrogen, road transport, steel and agriculture.

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

3. Consider the following

1. Carbon dioxide from urea
2. Nitrous oxide from livestock dung and urine
3. Methane from belching

Which of the above is/are sources of livestock emissions?

4. Consider the following statements regarding LiFE Initiative

1. It was introduced by the UNEP during the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow in 2021.
2. It focuses on the circular economy.
3. It will create a global network of individuals, namely 'Pro-Planet People' (P3).

Which of the above statements is/are incorrect?

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. None of the above

5. India's first fully solar village is in which of the following states?

- A. Maharashtra
- B. Gujarat
- C. Tamil Nadu
- D. None of the above

Answers with Explanations

Click [here](#) to watch the following topics on YouTube

1. Consider the following drugs:

- 1) Diclofenac
- 2) Aceclofenac
- 3) Ketoprofen

Which of the above are toxic/dangerous for vultures?

- A. 1 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. All of the above

Answer : D

Explanation

- Indian Veterinary Research Institute (IVRI) has demanded a ban on using aceclofenac in cattle after a new study showed that the drug metabolises into diclofenac in water buffaloes and cows.
- IVRI and its collaborators conducted the study and found that aceclofenac was rapidly converted to diclofenac.
- Such metabolisms pose a threat to vulture populations in the country.
- Diclofenac, an anti-inflammatory drug was banned for veterinary use by the Government of India in 2006.
- It was found to be the main cause of a dramatic decline (99 per cent) of the vulture population across Asia.
- The NSAID ketoprofen has been shown to kill Gyps vultures.
- Wild vultures are exposed to veterinary NSAIDs by feeding on carcasses of domesticated ungulates treated with these drugs shortly before death.

- It caused hyperuricemia (i.e., elevated uric acid levels), kidney failure and death.
- In contrast to ketoprofen, the NSAID meloxicam has been shown to be non-toxic to Gyps vultures.
- Arsenic poisoning is caused by the ingestion, absorption, or inhalation of dangerous amounts of arsenic.
- Long-term exposure to arsenic-contaminated groundwater results in severe health issues like skin, lung, kidney and bladder cancer; coronary heart disease; bronchiectasis; hyperkeratosis and arsenicosis.
- **Black foot disease**

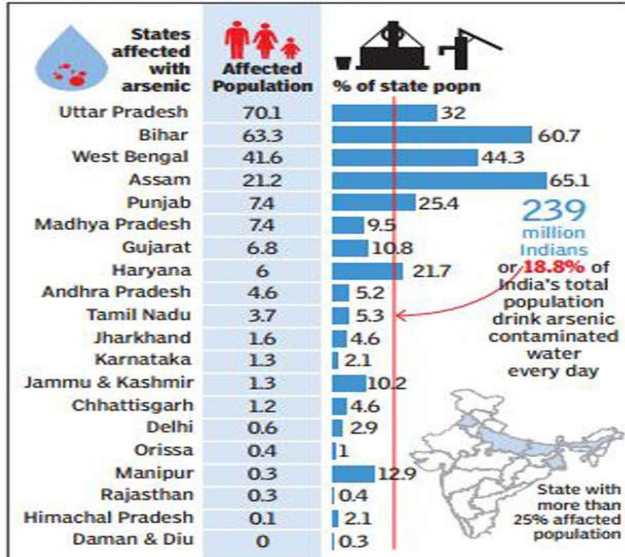


- Remedial Measures are to be designed based on the source mineral, climatological and hydrogeological scenario of the affected region.
- The corrective measures available include- Substituting high-arsenic sources, such as groundwater, with low-arsenic, microbiologically safe

sources such as rain water and treated surface water.

- Removing arsenic from groundwater using filters,
- Exploring deeper or alternative aquifers,
- Treatment of the aquifer itself,
- Dilution method by artificial recharge to groundwater,
- Conjunctive use, and
- Installation of nano-filter, among other procedures.

STATUS OF STATES



- According to the latest report of the Central Ground Water Board (CGWB), 21 states across the country have pockets with arsenic levels higher than the BIS stipulated permissible limit of 0.01 milligram per litre (mg/l).
- The states along the Ganga-Brahmaputra-Meghna (GBM) river basin – Uttar Pradesh, Bihar, Jharkhand, West Bengal and Assam – are the worst affected by this human-amplified geogenic occurrence.
- In India, arsenic contamination was first officially confirmed in West Bengal in 1983.

2. Consider the following statements regarding Breakthrough Agenda Report 2022

1. It is released by International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and the UN Climate Change High-Level Champions.
2. It assesses progress on reducing emissions in five key sectors – power, hydrogen, road transport, steel and agriculture.

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

- It is released by International Energy Agency (IEA), the International Renewable Energy Agency (IRENA) and the UN Climate Change High-Level Champions.
- It delivers a progress report on the actions needed to deliver on the historic clean technology commitment by governments.
- It assesses progress on reducing emissions in five key sectors – power, hydrogen, road transport, steel and agriculture.
- It is a first-of-its-kind annual progress report, requested by world leaders at the UN Climate Change Conference COP26 in November 2021 as part of the launch of the Breakthrough Agenda.
- The Breakthrough Agenda currently covers more than two-thirds of the global economy, with endorsement

from 45 world leaders, including those of the G7, China and India.

- The report notes an increase in practical international cooperation in recent years such as *doubling of EV sales, increase in global renewable capacity of eight per cent in 2022* – pushing through the 300GW mark for the first time.
- The report also warns that far greater international cooperation is needed to get the world on track to meet its climate commitment.

3. Consider the following

1. Carbon dioxide from urea
2. Nitrous oxide from livestock dung and urine
3. Methane from belching

Which of the above sources of livestock emissions is/are correctly matched?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. 1, 2 and 3

Answer : D

Explanation

- Emissions from livestock mainly include carbon dioxide (from urea), nitrous oxide (from livestock dung and urine), and methane (from belching) among others.
- In the livestock sector, popular belief says cow flatulence is a bigger source of methane than cow belching.
- They contribute towards the greenhouse effect as due to these gases, heat gets trapped around the surface of the earth and causes global warming.

- According to the Intergovernmental Panel on Climate Change (IPCC), the Global Warming Potential (GWP) of gases is a metric that helps measure “the radiative effect (determined by the ability to absorb energy) of each unit of gas” over a specific period of time such as 100 years, “as expressed relative to the radiative effect of carbon dioxide.”
- Through GWP, we know gases such as nitrous oxide and methane produce more heat around the earth’s surface than carbon dioxide or CO₂, which is taken as a reference.
- It absorbs more energy than CO₂ but stays in the atmosphere for a shorter duration.
- Over a 20-year-period, it has 80 times more GWP than that carbon dioxide, according to the UNEP website.

4. Consider the following statements regarding LiFE Initiative

1. It was introduced by the UNEP during the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow in 2021.
2. It focuses on the circular economy.
3. It will create a global network of individuals, namely ‘Pro-Planet People’ (P3).

Which of the above statements is/are incorrect?

- A. 1 only
- B. 1 and 2 only
- C. 1 and 3 only
- D. None of the above

Answer: A

Explanation

- The idea of LiFE was introduced by India during the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow in 2021.
- Prime Minister recently launched the global initiative 'Lifestyle for the Environment - LiFE Movement'.
- He stressed the need of the hour to solve the challenge faced by our planet using human-centric, collective efforts and robust action that further sustainable development.
- He added that the vision of LiFE is to live a lifestyle that is in tune with our planet and does not harm it.
- And those who live such a lifestyle are called "Pro-Planet People".
- Mission LiFE borrowes from the past, operates in the present and focuses on the future.
- The idea promotes an environmentally conscious lifestyle that focuses on 'mindful and deliberate utilization' instead of 'mindless and wasteful consumption.
- Reduce, Reuse and Recycle are the concepts woven into our life.
- The Circular Economy has been an integral part of our culture and lifestyle.

5. India's first fully solar village is in which of the following states?

- A. Maharashtra
- B. **Gujarat**
- C. Tamil Nadu
- D. None of the above

Answer : B



- The project in Modhera, financed by the federal and provincial government at nearly \$10 million, involved setting up over 1,300 rooftop panels on residential and government buildings that were connected to a power plant.
- The government buys excess energy produced here from residents if they do not use all of the capacity allotted to the households.

Questions for Today

1. Consider the following statements regarding Biomethane

- 1) It contains only methane.
- 2) It is obtained by purifying biogas.

Which of the above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. Consider the following statements regarding Biosphere reserves

1. India has 10 BRs in the World Network of Biosphere Reserves, based on the UNESCO Man and the Biosphere (MAB) Programme list.
2. November 4 will be the first 'The International Day for Biosphere Reserves', to be celebrated beginning in 2022.

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

3. Consider the following statements regarding BS VI emissions standards

1. The central government had made it compulsory for automakers to manufacture, sell and register only BS-VI (BS6) vehicles from 1 April 2020.
2. They are notified by CPCB.
3. Sulphur content is reduced to 10 mg/kg max in BS-VI from 50 mg/kg under BS-IV.

Which of the above statements is/are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. 1, 2 and 3

4. Consider the following statements regarding Amur Falcons

1. They get their name from the Amur River which forms the border between Russia and Mongolia.
2. Nagaland is also known as the Falcon Capital of the World.
3. They are the world's longest-travelling raptors.
4. The birds are protected as endangered under the International Union for Conservation of Nature (IUCN) Red List.

Which of the above statements is/are incorrect?

- A. All except 1
- B. All except 2
- C. All except 3
- D. All are correct

5. Adaptation Gap Report 2022 has been released by which of the following organisations?

- A. World Meteorological Organization
- B. Intergovernmental Panel on Climate Change
- C. United Nations Environment Programme
- D. None of the above

Answers with Explanations

Click [here](#) to watch the following topics on YouTube

1. Consider the following statements regarding Biomethane

- 1) It contains only methane.
- 2) It is obtained by purifying biogas.

Which of the above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: B

Explanation

- Bio-CNG or Biomethane is a renewable fuel obtained by purifying biogas – in contrast to CNG, a non-renewable source of energy.
- Biogas is a mixture of methane, CO₂ and small quantities of other gases produced by the anaerobic digestion of organic matter in an oxygen-free environment.
- The methane content of biogas typically ranges from 45% to 75% by volume, with most of the remainder being CO₂
- Bio-CNG is a purified form of biogas with over 95% pure methane gas
- It is similar to natural gas in its composition (97% methane) and energy potential.

2. Consider the following statements regarding Biosphere reserves

1. India has 10 BRs in the World Network of Biosphere Reserves, based on the UNESCO Man and the Biosphere (MAB) Programme list.
2. November 4 will be the first 'The International Day for Biosphere

Reserves', to be celebrated beginning in 2022.

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

- There are 18 biosphere reserves in India.
- There are a total of 12 biosphere reserves in India which have been recognized internationally under the Man and Biosphere Reserve program:
 - Nilgiri (First to be included)
 - Gulf of Mannar
 - Sunderban
 - Nanda Devi
 - Nokrek
 - Pachmarhi
 - Similipal
 - Achanakmar - Amarkantak
 - Great Nicobar
 - Agasthyamala
 - Khangchendzonga
 - Panna, Madhya Pradesh (Latest)
- The 3 November 2022 will be the first International Day for Biosphere Reserves.
- It will also mark the end of the two years celebration of the 50th anniversary of Man and the Biosphere (MAB) Programme.

3. Consider the following statements regarding BS VI emissions standards

1. The central government had made it compulsory for automakers to manufacture, sell and register only BS-VI (BS6) vehicles from 1 April 2020.
2. They are notified by CPCB.
3. Sulphur content is reduced to 10 mg/kg max in BS-VI from 50 mg/kg under BS-IV.

Which of the above statements is/are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. 1, 2 and 3

Answer: D

Explanation

- Studies show that vehicles are a major source of pollutants that cause climate change.
- In a bid to bring down pollution levels, the Central government has announced that from April 1, 2020, all vehicles sold in India should comply with Bharat Stage-VI, or BS-VI emission standards.
- The Bharat Stage emission standards are the legal limits on the amount of air pollutants like carbon monoxide and particulate matter that a vehicle in India can emit.
- These standards are targeted at making improvements in three areas -
- emission control, fuel efficiency and engine design.
- Sulphur content in fuel is a major cause for concern. Sulphur dioxide released by fuel burning is a major pollutant that affects health as well. BS-VI fuel's sulphur content is much lower than BS-IV fuel.

- It is reduced to 10 mg/kg max in BS-VI from 50 mg/kg under BS-IV. This reduction makes it possible to equip vehicles with better catalytic converters that capture pollutants.
- However, BS-VI fuel is expected to be costlier than BS-IV fuel. Vehicles that are compliant with BS-VI will also be more expensive.

4. Consider the following statements regarding Amur Falcons

1. They get their name from the Amur River which forms the border between Russia and Mongolia.
2. Nagaland is also known as the Falcon Capital of the World.
3. They are the world's longest-travelling raptors.
4. The birds are protected as endangered under the International Union for Conservation of Nature (IUCN) Red List.

Which of the above statements is/are incorrect?

- A. All except 1
- B. All except 2
- C. All except 3
- D. All are correct

Answer: B

Explanation

- The Amur falcon, a small-sized raptor from the falcon family, breeds in Siberia and Northern China but migrates to the warmer climate of the Southern part of Africa via India every year.
- They get their name from the Amur River which forms the border between Russia and China.
- Amur falcons, the world's longest-travelling raptors start travelling with the onset of winter.

- The birds are the least concern under the International Union for Conservation of Nature (IUCN) Red List.



- This edition also focuses on the effectiveness of adaptation and considers adaptation-mitigation co-benefits.

5. Adaptation Gap Report 2022 has been released by which of the following organisations?

- A. World Meteorological Organization
- B. Intergovernmental Panel on Climate Change
- C. **United Nations Environment Programme**
- D. None of the above

Answer: C

Explanation

- The United Nations Environment Programme (UNEP) has launched the 2022 edition of the Adaptation Gap Report in a virtual press conference in the lead-up to the 2022 United Nations Climate Change Conference (COP27).
- The report provides an update on the global status and progress of the adaptation process across three elements: planning, financing, and implementation.

Questions for Today

1. Consider the following statements regarding Mangrove Alliance for Climate

1. India is not a part of this alliance.
2. It is not legally binding.

Which of the above statements is/are incorrect?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. Consider the following statements regarding Climate Vulnerable Forum

1. It is a global partnership of 58 countries that are disproportionately affected by the consequences of climate change.
2. It was founded by the Maldives government before the 2009 United Nations Climate Change Conference in Copenhagen, which sought to increase awareness of countries considered vulnerable.
3. India is a member.

Which of the statements given above is/are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. 1 and 2 only
- D. All of the above

3. Consider the following

1. Climate Change
2. Biodiversity loss
3. Pollution

4. Ozone depletion

Which of the above is part of the Triple Planetary Crisis?

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only
- C. 1, 3 and 4 only
- D. 1, 2 and 4 only

4. Consider the following statements regarding GHG emissions

1. Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
2. Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

Which of the above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

5. A Satellite-based monitoring system "MARS", launched by the UN, is used for tracking of

- A. Agricultural resourceS
- B. Marsquakes
- C. Methane emissions
- D. None of the above

Answers with Explanations

Click [here](#) to watch the following topics on YouTube.

1. Consider the following statements regarding Mangrove Alliance for Climate

1. India is not a part of this alliance.
2. It is not legally binding.

Which of the above statements is/are incorrect?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- An initiative led by the United Arab Emirates (UAE) and Indonesia, the Mangrove Alliance for Climate (MAC) includes India, Sri Lanka, Australia, Japan, and Spain.
- It seeks to educate and spread awareness worldwide on the role of mangroves in curbing global warming and its potential as a solution for climate change.
- However, the intergovernmental alliance works on a voluntary basis which means that there are no real checks and balances to hold members accountable.
- Instead, the parties will decide their own commitments and deadlines regarding planting and restoring mangroves.
- The members will also share expertise and support each other in researching, managing and protecting coastal areas.
- As part of its NDCs, India has committed to creating an additional

carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030.

- India has demonstrated expertise in mangrove restoration activities for nearly five decades and restored different types of mangrove ecosystems both on its east and west coasts.
- There has been a significant increase in the mangrove cover in India in the Andaman, Sundarbans and the Gujarat regions.

2. Consider the following statements regarding Climate Vulnerable Forum

1. It is a global partnership of 58 countries that are disproportionately affected by the consequences of climate change.
2. It was founded by the Maldives government before the 2009 United Nations Climate Change Conference in Copenhagen, which sought to increase awareness of countries considered vulnerable.
3. India is a member.

Which of the statements given above is/are correct?

- A. 1 and 3 only
- B. 2 and 3 only
- C. **1 and 2 only**
- D. All of the above

Answer: C

Explanation

- The Climate Vulnerable Forum (CVF) is a global partnership of countries that are disproportionately affected by the consequences of climate change.



- The CVF was founded by the Maldives government before the 2009 United Nations Climate Change Conference in Copenhagen, which sought to increase awareness of countries considered vulnerable.
- Eleven governments from Africa, Asia, the Americas and the Pacific, representing the countries most vulnerable to climate change, met near the Maldives capital of Malé in November 2009.
- This group heads to COP27 with a core demand – a dedicated fund whereby rich polluting countries help the vulnerable bear the costs of “loss and damage”.
- India is an observer state.

3. Consider the following

1. Climate Change
2. Biodiversity loss
3. Pollution
4. Ozone depletion

Which of the above is part of the Triple Planetary Crisis?

- A. 1, 2 and 3 only
- B. 2, 3 and 4 only
- C. 1, 3 and 4 only
- D. 1, 2 and 4 only

Answer: A

Explanation

Triple Planetary Crisis

- The triple planetary crisis refers to the three main interlinked issues that humanity currently faces - climate change, pollution and biodiversity loss.
- Each of these issues has its own causes and effects and each issue needs to be

resolved if we are to have a viable future on this planet.

4. Consider the following statements regarding GHG emissions

1. Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
2. Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity.

Which of the above is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation

- Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
- Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity but occur at sources owned or controlled by another entity.
- GHG Protocol further categorizes these direct and indirect emissions into three broad scopes:
 - Scope 1: All direct GHG emissions.
 - Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
 - Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g.

T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

5. A Satellite-based monitoring system "MARS", launched by the UN, is used for tracking of

- A. Agricultural resourceS
- B. Marsquakes
- C. **Methane emissions**
- D. None of the above

Answer: C

Explanation

- The Methane Alert and Response System (MARS) is a new initiative to scale up global efforts to detect and act on major emissions sources in a transparent manner and accelerate implementation of the Global Methane Pledge.
- It is satellite-based monitoring system.
- It will integrate data from a large number of existing and future satellites that have the ability to detect methane emission events anywhere in the world, and send out notifications to the relevant stakeholders to act on it.
- MARS will alert governments, companies and operators about large methane sources to foster rapid mitigation action of this potent gas.
- Methane released by human activities is responsible for around 25% of anthropogenic climate change.

Questions for Today

Q.1) Which of the following statements can help in water conservation in agriculture?

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

Q2.) With reference to the circumstances in Indian agriculture, the concept of "Conservation Agriculture" assumes significance. Which of the following fall under the Conservation Agriculture?

1. Avoiding the monoculture practices
2. Adopting minimum tillage
3. Avoiding the cultivation of plantation crops
4. Using crop residues to cover soil surface
5. Adopting spatial and temporal crop sequencing/crop rotations

Select the correct answer using the code given below:

- A. 1, 3 and 4
- B. 2, 3, 4 and 5
- C. 2, 4 and 5
- D. 1, 2, 3 and 5

Q3) What is/are the advantage/ advantages of zero tillage in agriculture?

1. Sowing of wheat is possible without burning the residue of previous crop.
2. Without the need for nursery of rice saplings, direct planting of paddy seeds in the wet soil is possible.
3. Carbon sequestration in the soil is possible.

Select the correct answer using the code given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

Q4.) What are the advantages of fertigation in agriculture?

1. Controlling the alkalinity of irrigation water is possible.
2. Efficient application of Rock Phosphate and all other phosphatic fertilizers is possible.
3. Increased availability of nutrients to plants is possible.
4. Reduction in the leaching of chemical nutrients is possible.

Select the correct answer using the code given below:

- A. 1, 2 and 3 only
- B. 1, 2 and 4 only
- C. 1, 3 and 4 only
- D. 2, 3 and 4 only

Q5.) In India, the use of carbofuran, methyl parathion, phorate and triazophos is viewed with apprehension. These chemicals are used as

- A. pesticides in agriculture
- B. preservatives in processed foods
- C. fruit-ripening agents
- D. moisturizing agents in cosmetics

Answers with Explanations

Click [here](#) to watch the following topics on YouTube.

Q.1) Which of the following statements can help in water conservation in agriculture?

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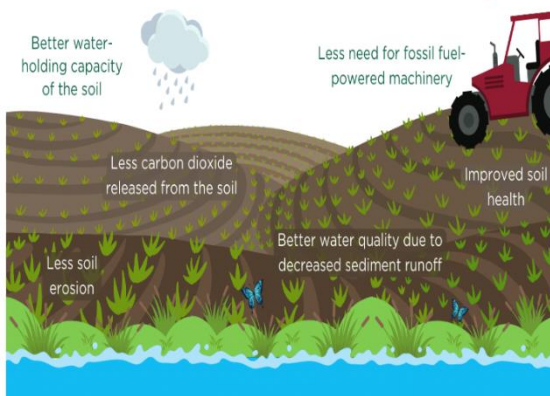
- A. 1 and 2 only
- B. 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

Answer: C

Explanation

- No-till farming (also called zero tillage or direct drilling) is a way of growing crops or pastures from year to year without disturbing the soil through tillage.

Benefits of No-Till Farming



- No-till is an agricultural technique which increases the amount of water that infiltrates into the soil and increases organic matter retention and cycling of nutrients in the soil.

Q2.) With reference to the circumstances in Indian agriculture, the concept of "Conservation Agriculture" assumes significance. Which of the following fall under the Conservation Agriculture?

1. Avoiding the monoculture practices
2. Adopting minimum tillage
3. Avoiding the cultivation of plantation crops
4. Using crop residues to cover soil surface
5. Adopting spatial and temporal crop sequencing/crop rotations

Select the correct answer using the code given below:

- A. 1, 3 and 4
- B. 2, 3, 4 and 5
- C. 2, 4 and 5
- D. 1, 2, 3 and 5

Answer: C

Explanation

- Conservation Agriculture (CA) is a farming system that can prevent losses of arable land while regenerating degraded lands.
- Despite high variability in the types of crops grown and specific management regimes, all forms of conservation agriculture share three core principles. These include:
 - maintenance of permanent or semi-permanent soil cover (using either a previous crop residue or specifically growing a cover crop for this purpose)

- minimum soil disturbance through tillage (just enough to get the seed into the ground)
- regular crop rotations to help combat the various biotic constraints.

Three principles of Conservation Agriculture:

Minimum mechanical soil disturbance

(i.e. no tillage) through direct seed and/or fertilizer placement.



Permanent soil organic cover

(at least 30 percent) with crop residues and/or cover crops.



Species diversification

through varied crop sequences and associations involving at least three different crops.



- It helps farmers to **maintain and boost yields** and increase profits, while reversing land degradation, protecting the environment and responding to growing challenges of climate change
- To reduce soil disturbance, farmers practice zero-tillage farming, which allows direct planting without ploughing or preparing the soil.
- The farmer seeds directly through surface residues of the previous crop.
- Zero tillage is combined with intercropping and crop rotation, which means either growing two or more crops at the same time on the same piece of land or growing two different crops on the same land in a sequential manner.

Q.3) What is/are the advantage/ advantages of zero tillage in agriculture?

1. Sowing of wheat is possible without burning the residue of previous crop.

2. Without the need for nursery of rice saplings, direct planting of paddy seeds in the wet soil is possible.
3. Carbon sequestration in the soil is possible.

Select the correct answer using the code given below:

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

Answer: D

Explanation

- Tillage is an **agricultural land preparation** through mechanical agitation which includes digging, stirring and overturning.
- **No-till farming** is an agricultural technique for growing crops or pastures **without disturbing the soil through tillage**.
- Wheat will be planted after the rice harvest without any operation.
- Hundreds of farmers are following the same system and getting more yields and profits by reducing the cost of cultivation.
- **Direct seeded rice (DSR)** has received much attention because of its low - input demand.
- It involves **sowing pre-germinated seed** into a puddled soil surface (wet seeding), standing water (water seeding) or dry seeding into a prepared seedbed (dry seeding).
- Adopting no-tillage in agro-ecosystems has been widely recommended as a means of enhancing carbon (C) sequestration in soils.

Q4.) What are the advantages of fertigation in agriculture?

1. Controlling the alkalinity of irrigation water is possible.
2. Efficient application of Rock Phosphate and all other phosphatic fertilizers is possible.
3. Increased availability of nutrients to plants is possible.
4. Reduction in the leaching of chemical nutrients is possible.

Select the correct answer using the code given below:

- A. 1, 2 and 3 only
- B. 1, 2 and 4 only
- C. **1, 3 and 4 only**
- D. 2, 3 and 4 only

Answer: C

Explanation

- **Fertigation** is a method of fertilizer application in which fertilizer is incorporated within the irrigation water by the drip system.
- Alkalinity of a fertigation system can be controlled by adding Acid.
- The injection of acid to the irrigation water should be, as much as possible, uniform and continuous, throughout the entire duration of the irrigation.
- Drip fertigation increases water and nitrogen use efficiency.
- Drip fertigation reduced dissolved inorganic and organic N leaching by 90%.
- Soluble fertilizers like urea, potash and a wide variety of fertilizer mixtures available in the market could be well mixed with irrigation water, filtered and then passed through the irrigation unit.

- Rock Phosphate and some other mineral fertilizers containing phosphorus are insoluble in water as well as in citric acid.

Q5.) In India, the use of carbofuran, methyl parathion, phorate and triazophos is viewed with apprehension. These chemicals are used as

- A. **pesticides in agriculture**
- B. preservatives in processed foods
- C. fruit-ripening agents
- D. moisturizing agents in cosmetics

Answer: A

Explanation

- **Banned pesticides** - carbofuran, phorate, methyl parathion, monocrotophos, methyl demethon, prophenophos and triazophos.

Questions for Today

1. Which of the following statements regarding 'Green Climate Fund' is/are correct?

1. It is intended to assist the developing countries in adaptation and mitigation practices to counter climate change.
2. It is founded under the aegis of UNEP, OECD, Asian Development Bank and World Bank.

Select the correct answer using the codes given below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. With reference to the International Union for Conservation of Nature and Natural Resource (IUCN) and the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES), which of the following statements is/are correct ?

1. IUCN is an organ of the United Nations and CITES is an international agreement between governments.
2. IUCN runs thousands of field projects around the world to better manage natural environments.
3. CITES is legally binding on the States that have joined it, but this Conventional does not take the place of national laws.

Select the correct answer using the codes given below:

- A. 1 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

3. Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC)

1. TRAFFIC is a bureau under United Nations Environment Programmed (UNEP).
2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

4. The 'Common Carbon Metric', supported by UNEP, has been developed for

- A. assessing the carbon footprint of building operations around the world
- B. enabling commercial farming entities around the world to enter carbon emission trading
- C. enabling governments to assess the overall carbon footprint caused by their countries
- D. assessing the overall carbon foot-print caused by the use of fossil fuels by the world in a unit time

5. 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

Answers with Explanations

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Select the correct answer using the codes given below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- The Green Climate Fund is a fund established within the framework of the UNFCCC as an operating entity of the Financial Mechanism to assist developing countries in adaptation and mitigation practices to counter climate change.
- It was set up in 2010.
- It is the world's largest climate fund, mandated to support developing countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions, climate-resilient pathways.
- The GCF is based in Incheon, South Korea.
- The World Bank serves as the interim Trustee of the GCF.

- The World Bank was invited by the COP to serve as the interim trustee of the GCF, subject to a review three years after the operationalization of the Fund.
- In 2015, the GCF Board invited the World Bank to continue serving as the Interim Trustee until a permanent Trustee is appointed.

2. With reference to the International Union for Conservation of Nature and Natural Resource (IUCN) and the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES), which of the following statements is/are correct ?

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- A. 1 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

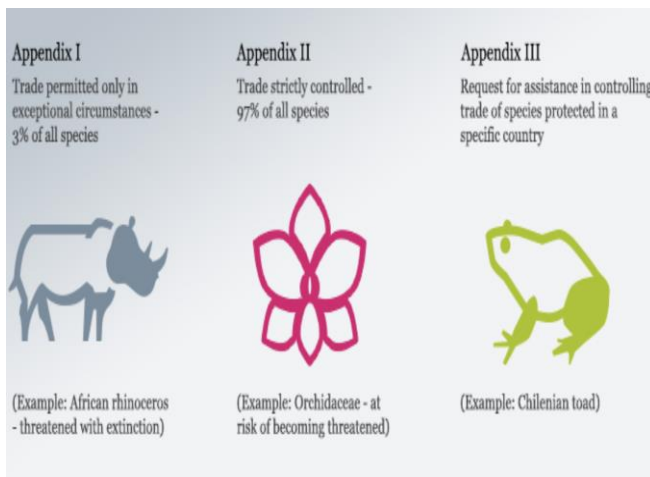
Answer: B

Explanation

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement to which States and regional economic

integration organizations adhere voluntarily.

- CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN).
- The aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
- The CITES Secretariat is administered by UNEP (The United Nations Environment Programme) and is located at Geneva, Switzerland.



- Although CITES is legally binding on the Parties, 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.
- The IUCN is a membership Union uniquely composed of both government and civil society organisations.
- Created in 1948, it is the global authority on the status of the natural world and the measures needed to safeguard it.

- It is headquartered in Switzerland.
- The IUCN Red List of Threatened Species, is the world's most comprehensive inventory of the global conservation status of plant and animal species.

3. Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC)

1. TRAFFIC is a bureau under United Nations Environment Programme (UNEP).
2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the above statements is/are correct?

- A. 1 only
- B. **2 only**
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer : B

Explanation

- **TRAFFIC, the Wildlife Trade Monitoring Network**, is a **non-governmental organisation** working globally on the trade in wild animals and plants, interested in both biodiversity and sustainable development.
- TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce) was originally created in 1976, as a specialist group of the Species Survival Commission of the International Union for Conservation of Nature (IUCN).
- For over 40 years TRAFFIC performed that function as a leader in wildlife

trade research, as a joint program of WWF and IUCN.

- TRAFFIC became an independent non-profit organization in 2017, with WWF and IUCN sitting on its Board of Directors along with independent Board members.
- The organisation's aim is to "ensure that trade in wild plants and animals is not a threat to the conservation of nature"
- The TRAFFIC is governed by the **TRAFFIC Committee**, a steering group composed of members of TRAFFIC's partner organizations, WWF and IUCN.
- TRAFFIC also works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

4. The 'Common Carbon Metric', supported by UNEP, has been developed for

- A. **assessing the carbon footprint of building operations around the world**
- B. enabling commercial farming entities around the world to enter carbon emission trading
- C. enabling governments to assess the overall carbon footprint caused by their countries
- D. assessing the overall carbon foot-print caused by the use of fossil fuels by the world in a unit time

Answer: A

Explanation

- Leading experts from around the world have, through extensive international cooperation, developed a universal

method of measuring a building's carbon footprint.

- Supported by the United Nations Environment Programme, this new 'Common Carbon Metric' will allow emissions from buildings around the world to be consistently assessed and compared, and improvements measured.
- The CCM is intended to create a uniform system for defining the climate impact of buildings through a consistent protocol, which can, in turn, help develop international baselines for use by architects, designers and the construction industry.

5. 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

- **The Economics of Ecosystems and Biodiversity (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.*
- 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 values in economic terms and, where appropriate, capture those values in decision-making.

Questions for Today

1. Consider the following

1. Ramsar site
2. UNESCO World Heritage site
3. Man and Biosphere reserve
4. Tiger Reserve

Which of the above tags has been endowed upon Sunderbans in India?

- A. 1, 2 and 4 only
- B. 1, 2 and 3 only
- C. 3 and 4 only
- D. All of the above.

2. Consider the following pairs:

Biome Type	Vegetation type
1. Taiga	Devoid of trees, except stunted shrubs
2. Savannah	Grasses with scattered trees and fire resisting thorny shrubs
3. Temperate	Broad-leaved trees with less diversity of plant species

Which of the above is correctly matched?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above.

3. Consider the following states having Mangroves in India

1. West Bengal
2. Andhra Pradesh
3. Maharashtra
4. Gujarat

Arrange them in increasing order of their area

- A. 2<3<4<1
- B. 3<2<1<4
- C. 3<4<2<1
- D. 3<2<4<1

4. Which of the following best describes Ecological Civilization?

- A. It is the one in which human communities (our systems of economics, agriculture, education, production and consumption, etc.) are designed to promote the overall well-being of people and the planet.
- B. It considers nature to be part of life, rather than something that can be exploited without restraint.
- C. Both A and B
- D. None of the above.

5. Which one of the following regions of India has a combination of mangrove forest, evergreen forest and deciduous forest?

- A. North Coastal Andhra Pradesh
- B. South-West Bengal
- C. Southern Saurashtra
- D. Andaman and Nicobar Islands

Answers with Explanations

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1. Consider the following

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3. Man and Biosphere reserve
4. Tiger Reserve

Which of the above tags has been endowed upon Sunderbans in India?

- A. 1, 2 and 4 only
- B. 1, 2 and 3 only
- C. 3 and 4 only
- D. All of the above

Answer : D

Explanation

- The Sunderbans comprises hundreds of islands and a network of rivers, tributaries and creeks in the delta of the Ganga and the Brahmaputra at the mouth of the Bay of Bengal in India and Bangladesh.
- Indian Sunderbans constitute over 60% of the country's total mangrove forest area.
- It is the 27th Ramsar Site in India.



- The Indian Sunderbans, also a UNESCO world heritage site.

- Sunderbans was designated as a Biosphere Reserve by UNESCO in 2001.
- India's Sundarbans National Park is among five sites that have the highest blue carbon stocks globally.
- Critically endangered northern river terrapin (Batagur baska), the endangered Irrawaddy dolphin (Orcaella brevirostris), and the vulnerable fishing cat (Prionailurus viverrinus).

2. Consider the following pairs:

<u>Biome Type</u>	<u>Vegetation type</u>
1. Taiga	Devoid of trees, except stunted shrubs
2. Savannah	Grasses with scattered trees and fire resisting thorny shrubs
3. Temperate	Broad-leaved trees with less diversity of plant species

Which of the above is correctly matched?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above.

Answer : B

Explanation

- Taiga - In the higher latitudes (50°-70°) of Northern hemisphere, the Coniferous forests are found. These are also called as Taiga. These forests are also seen in the higher altitudes.
- In Tundra type of vegetation, the growth of natural vegetation is very limited. Only mosses, lichens and very small shrubs are found here. It grows during

the very short summer. This is called Tundra type of vegetation.

- Tropical grasslands: These grow on either side of the equator and extend till the tropics. This vegetation grows in the areas of moderate to low amount of rainfall. They can grow very tall, about 3 to 4 metres in height.
- Savannah grasslands of Africa are of this type.
- Savannah shrubs are fire-resistant which helps them survive periodic, natural fire spread in forests.
- Temperate forests have moderately dense broad-leaved trees and have less diversity of plant species. Oak, Beach, Maple etc. are some common species.

3. Consider the following states having Mangroves in India

1. West Bengal
2. Andhra Pradesh
3. Maharashtra
4. Gujarat

Arrange them in increasing order of their area

- A. $2 < 3 < 4 < 1$
- B. $3 < 2 < 1 < 4$
- C. $3 < 4 < 2 < 1$
- D. $3 < 2 < 4 < 1$

Answer : D

Explanation

- According to The State Forest Report, 2021 the total mangrove cover in India was 4,992 sq km, an increase of 17 sq Km as compared to 2019.
- Overall, 12 states/Uts have Mangrove Covers.

- Top 5 States/Uts with mangrove Cover: West Bengal, Gujarat, Andaman and Nicobar Islands, Andhra Pradesh and Maharashtra.
- The Global Mangrove Alliance was launched in 2018 at the World Ocean Summit by Conservation International (CI), the International Union for Conservation of Nature (IUCN), The Nature Conservancy (TNC), Wetlands International, and World Wildlife Fund (WWF).
- Today, the alliance includes more than 30 organizations.
- In 2021, it published the inaugural 'The State of the World's Mangroves 2021'.
- Recently, 'The State of the World's Mangroves 2022' was released.
- Global Mangrove Extent is of 147,359 km² (2020). It is higher than previous estimates of 136,000 km² (for 2016) largely due to improved maps rather than real gains.
- The rates of loss have greatly diminished, with averaged losses over the last decade of just 66 km² of all mangroves per year (327 km² between 1996 and 2010).

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- B. It considers nature to be part of life, rather than something that can be exploited without restraint.
- C. Both A and B
- D. None of the above.

Answer : C

Explanation

- Ecological Civilization describes a world in which human communities (our systems of economics, agriculture, education, production and consumption, etc.) are designed to promote the overall well-being of people and the planet.
- It's a vision for a more sustainable and just society; a world that works for all.

5. Which one of the following regions of India has a combination of mangrove forest, evergreen forest and deciduous forest?

- North Coastal Andhra Pradesh
- South-West Bengal
- Southern Saurashtra
- Andaman and Nicobar Islands**

Answer : D

Explanation

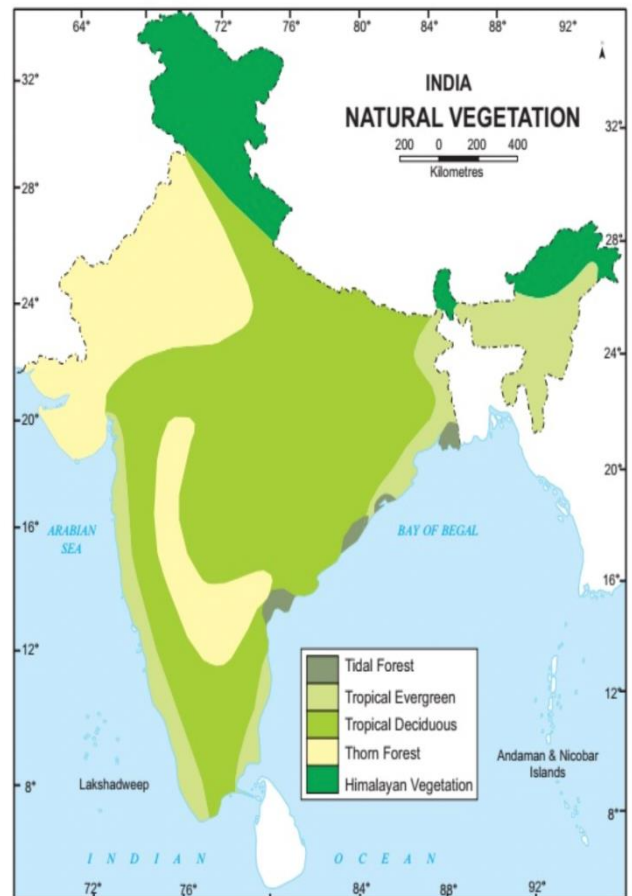
Tropical evergreen forests of India are found in the Andaman and Nicobar Islands, the Western Ghats, which fringe the Arabian Sea, the coastline of peninsular India, and the greater Assam region in the northeast.

The states where these forests are predominantly identified are :

- Tamil Nadu
- Kerala
- Karnataka
- Maharashtra
- Assam
- Arunachal Pradesh
- Nagaland
- Tripura
- Meghalaya

10. West Bengal

11. Andaman and Nicobar Islands.



12. The mangrove cover in India is 4,992 sq km, which is 0.15% of the country's total geographical area.

Mangrove Cover Assessment 2021

(in sq km)

Sl. No.	State/UT	Very Dense Mangrove	Moderately Dense Mangrove	Open Mangrove	Total	Change with respect to ISFR 2019
1.	Andhra Pradesh	0	213	192	405	1
2.	Goa	0	21	6	27	1
3.	Gujarat	0	169	1,006	1,175	-2
4.	Karnataka	0	2	11	13	3
5.	Kerala	0	5	4	9	0
6.	Maharashtra	0	90	234	324	4
7.	Odisha	81	94	84	259	8
8.	Tamil Nadu	1	27	17	45	0
9.	West Bengal	994	692	428	2,114	2
10.	AGN Islands	399	168	49	616	0
11.	DGNH and Daman & Diu	0	0	3	3	0
12.	Puducherry	0	0	2	2	0
Total		1,475	1,481	2,036	4,992	17

13. West Bengal has the highest percentage of area under total Mangrove cover followed by Gujarat and Andaman Nicobar Islands.

Questions for Today

1. Consider the following statements regarding Wildlife (Protection) Amendment Bill 2022

1. It reduces the number of schedules from Six to Four.
2. The Bill allows for Commercial Trade In Live Elephants.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. Consider the following

Species	Indicates
1. Moss	Acidic soil
2. Tubifex worms	Non potable water
3. Lichens	Sulphur dioxide in the air

Which of the above is correctly matched?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above

3. Consider the following statements regarding wetlands in India.

1. The Maximum number of Ramsar sites in India is in the state of Uttar Pradesh.
2. The Maximum area under wetlands is in the state of Gujarat in India.

Which of the above statements is/are incorrect?

- A. 1 only
- B. 2 only

- C. Both 1 and 2
- D. Neither 1 nor 2

4. Consider the following statements regarding Carbon Border Tax

1. It is a tax on carbon emissions attributed to imported goods that have not been carbon-taxed at the source.
2. It would be implemented by all the G7 countries.
3. It would not take effect until 2026.

Which of the above statements is/are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above

5. Greenhouse Gas Bulletin has been released by which of the following organisations?

- A. Intergovernmental Panel on Climate Change
- B. World Meteorological Organization
- C. Climate Action Network
- D. United Nations Environment Programme

Answers with Explanations

Click [here](#) to watch the following topics on YouTube.

1. Consider the following statements regarding Wildlife (Protection) Amendment Bill 2022

1. It reduces the number of schedules from Six to Four.
2. The Bill allows for Commercial Trade In Live Elephants.

Which of the above statements is/are correct?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: C

Explanation:

Rajya Sabha passed the Wildlife (Protection) Amendment Bill, 2022 which seeks to amend the Wild Life (Protection) Act, 1972.

- Ensure better management of protected areas and rationalise schedules which list out species under the Wildlife (Protection) Act, 1972.
- Implement the provisions of the CITES.
- Provides much more power at the hands of the Central Government.
- The Bill allows for Commercial Trade In Live Elephants.
- Increases the Penalties.
- Reduces the number of schedules from Six (currently) to Four.
- Schedule I - Species that will enjoy the highest level of protection.
- Schedule II - Species that will be subject to a lesser degree of protection.

- Schedule III - Plants.
- Schedule IV - Specimens listed in the Appendices under CITES (scheduled specimens)
- It removes the schedule for vermin species.

2. Consider the following

Species	Indicates
1. Moss	Acidic soil
2. Tubifex worms	Non potable water
3. Lichens	Sulphur dioxide in the air

Which of the above is correctly matched?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above

Answer: D

Explanation:

- An indicator species is an organism whose presence, absence or abundance reflects a specific environmental condition.
- Indicator species can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem.
- Also known as "sentinel species."
- For example, plants or lichens sensitive to heavy metals or acids in precipitation may be indicators of air pollution.
 - Miners used to use the canary bird like an indicator for the concentration of carbon monoxide in the air.

- Some moss species indicate acidic soil.
- Tubifex worms indicate non-potable, stagnant, oxygen-poor water.

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Which of the above statements is/are incorrect?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation:

- There are 75 Ramsar Sites in India.
- Tamil Nadu has fourteen wetlands.
- Uttar Pradesh has ten wetlands.
- Punjab and Orissa have six wetlands.
- Jammu and Kashmir have five wetlands.
- Madhya Pradesh has four wetlands.
- Maharashtra, Himachal Pradesh and Kerala have three wetlands each.
- Haryana, West Bengal and Rajasthan have two wetlands each.
- Gujarat, Tripura, Andhra Pradesh, Assam, Bihar, Uttarakhand, Mizoram, Manipur, Goa, and Karnataka have one wetland each.
- India is home to more than 7.5 lakh wetlands.

- India has nearly 4.6% of its land as wetlands covering an area of 15.26 million hectares and has 75 sites designated as Wetlands of International Importance (Ramsar Sites), with a surface area of 1.09 million hectares.
- India has 19 types of wetlands.
- In the state-wise distribution of wetlands, Gujarat is at the top (17.56% of the total geographical area of the state or 22.7% of total wetlands areas of the country thanks to a long coastline)
- It is followed by Andhra Pradesh, Uttar Pradesh, and West Bengal.

4. Consider the following statements regarding Carbon Border Tax

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Which of the above statements is/are correct?

- A. 1 and 2 only
- B. 2 and 3 only
- C. 1 and 3 only
- D. All of the above.

Answer: C

Explanation:

Carbon Border Tax

- A carbon border tax is a tax on carbon emissions attributed to imported goods that have not been carbon-taxed at source.

- Also known as carbon border adjustment tax.
- In pushing through policies that result in EU manufacturers relying on environmentally friendlier but more expensive renewable energy, the manufacturers would be at a cost disadvantage compared with overseas competitors that are still using carbon dioxide-producing but cheaper power sources.
- If implemented as planned, EU importers will have to buy carbon certificates corresponding to the carbon price that would have been paid in the EU, if the goods had been produced locally.
- The border tax would not take effect until 2026.
- European officials are proposing a phase-in period where they would try to figure out how the border tax would work in practice, giving time for other countries to prepare.



5. Greenhouse Gas Bulletin has been released by which of the following organisations?

- A. Intergovernmental Panel on Climate Change
- B. World Meteorological Organization**
- C. Climate Action Network
- D. United Nations Environment Programme

Answer: B

Explanation:

The Greenhouse Gas Bulletin shows globally averaged surface mole fractions for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) and compares them with the mole fractions during the previous year and with the preindustrial levels.

Questions for Today

1. Consider the following statements regarding Article 6 of the Paris Agreement

- Article 6.2 - Bilateral actions to reduce or remove GHG emissions.
- Article 6.4 - Multilateral mechanism to replace the old CDM.
- Article 6.8 - non-market international cooperation.

Which of the above is/are correctly matched?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

2. In the context of which of the following do some scientists suggest the use of the cirrus cloud thinning technique and the injection of sulphate aerosol into the stratosphere?

- Creating artificial rains in some regions
- Reducing the frequency and intensity of tropical cyclones
- Reducing the adverse effects of the solar wind on the earth
- Reducing the global warming

3. Consider the following statements regarding N₂O emission.

- It has the highest concentration in our atmosphere among greenhouse gases responsible for global warming.
- As per the recent study, a major proportion of the N₂O emissions in the last four decades came from the agricultural sector.

Which of the above statements is/are incorrect?

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

4. Consider the following pairs:

Terms sometimes seen in the news: Their origin

- Annex-I Countries: Cartagena Protocol
- Certified Emissions Reductions: Nagoya Protocol
- Clean Development Mechanisms: Kyoto Protocol

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

- 1 and 2 only
- 2 and 3 only
- 3 only
- 1, 2 and 3

5. Which of the following organisations released a report, *Striving for Clean Air: Air Pollution and Public Health in South Asia*?

- Intergovernmental Panel on Climate Change
- World Meteorological Organization
- Climate Action Network
- None of the above.

Answers with Explanation

Click [here](#) to watch the following topics on YouTube.

1. Consider the following statements regarding Article 6 of the Paris Agreement

- Article 6.2 - Bilateral actions to reduce or remove GHG emissions.
- Article 6.4 - Multilateral mechanism to replace the old CDM.
- Article 6.8 - non-market international cooperation.

Which of the above is/are correctly matched?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Answer: D

Explanation

- Article 6 of the Paris Agreement allows countries to voluntarily cooperate with each other to achieve emission reduction targets set out in their NDCs.
- Article 6 pertains to the establishment of international compliance carbon markets governed by the rules of the Paris Agreement where countries can trade carbon credits.
- Article 6.2 covers bilateral actions to reduce or remove GHG emissions.
- Article 6.4 creates a new multilateral mechanism to replace the old CDM.
- Article 6.8 addresses non-market international cooperation among governments.
- These new rules cover both government-to-government and government-to-private sector markets.

2. In the context of which of the following do some scientists suggest the use of the cirrus cloud thinning technique and the injection of sulphate aerosol into the stratosphere?

- Creating artificial rains in some regions
- Reducing the frequency and intensity of tropical cyclones
- Reducing the adverse effects of the solar wind on the earth
- Reducing the global warming

Answer: D

Explanation

- Cirrus cloud thinning is a proposed form of **climate engineering**.
- Cirrus clouds are high-cold ice that, like other clouds, both **reflect sunlight and absorb warming infrared radiation**.
- However, they differ from other types of clouds in that, on average, infrared absorption outweighs sunlight reflection, resulting in a **net warming effect** on the climate.
- Therefore, thinning or removing these clouds **would reduce their heat-trapping capacity**, resulting in a cooling effect on Earth's climate.
- This could be a **potential tool** to reduce anthropogenic global warming.
- The ability of **stratospheric aerosols** to create a **global dimming effect** has made them a possible candidate for use in solar radiation management climate engineering projects to limit the effect and impact of climate change due to rising levels of greenhouse gases.



- Delivery of precursor **sulfide gases** such as **sulfuric acid**, **hydrogen sulfide (H₂S)** or **sulfur dioxide (SO₂)** by artillery, aircraft and balloons has been proposed.

3. Consider the following statements regarding N₂O emission.

1. It has the highest concentration in our atmosphere among greenhouse gases responsible for global warming.
2. As per the recent study, a major proportion of the N₂O emissions in the last four decades came from the agricultural sector.

Which of the above statements is/are incorrect?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answer: A

Explanation

- It has the **third-highest concentration** – after CO₂ and methane – in our atmosphere among greenhouse gases responsible for global warming.
- A **major proportion** of the N₂O emissions in the last four decades came from the **agricultural sector**.
- Approx 43% of the total emissions came from **human sources** and most N₂O emissions came from emerging countries like **India, China and Brazil**.
- A major proportion of the N₂O emissions in the last four decades came from the agricultural sector, mainly because of the use of **nitrogen-based fertilisers**.

4. Consider the following pairs:

Terms sometimes seen in the news: Their origin

1. Annex-I Countries: Cartagena Protocol
2. Certified Emissions Reductions: Nagoya Protocol
3. Clean Development Mechanisms: Kyoto Protocol

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

- A. 1 and 2 only
- B. 2 and 3 only
- C. 3 only
- D. 1, 2 and 3

Answer: C

Explanation:

- The **Kyoto Protocol** was adopted in Kyoto, Japan, on 11 December 1997.
- Due to a complex ratification process, it entered into force on 16 **February 2005**.
- The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh, Morocco, in 2001, and are referred to as the "**Marrakesh Accords**."
- Its **first commitment period** started in 2008 and ended in 2012.
- In short, the Kyoto Protocol is what "operationalizes" the Convention.
- It commits industrialized countries to stabilize greenhouse gas emissions based on the principles of the Convention.
- Under the Protocol, countries must meet their targets primarily through **national measures**.

- However, the Protocol also offers them an additional means to meet their targets by way of **three market-based mechanisms**.
- The **Kyoto mechanisms** are
 - International Emissions Trading
 - Clean Development Mechanism (CDM)
 - Joint implementation (JI)
- The mechanisms help to stimulate green investment and help Parties meet their emission targets in a cost-effective way.
- The CDM and JI are called "**project-based mechanisms**," in that they generate emission reductions from projects.
- The **CDM** is designed to encourage the production of emission reductions in non-Annex I Parties, while **JI** encourages the production of emission reductions in Annex I Parties.
- **Annex I** parties are the industrialized (developed) countries and "economies in transition" (EITs).
- **Annex II Parties** are required to provide financial and technical support to the EITs and developing countries to assist them in reducing their greenhouse gas emissions (climate change mitigation) and manage the impacts of climate change (climate change adaptation).
- **Annex B** - Parties listed in Annex B of the Kyoto Protocol are Annex I Parties with first or second round Kyoto greenhouse gas emissions targets.
- **Non-Annex I** - Parties to the UNFCCC not listed in Annex I of the Convention are mostly low-income developing countries. Developing countries may volunteer to become Annex I countries when they are sufficiently developed.

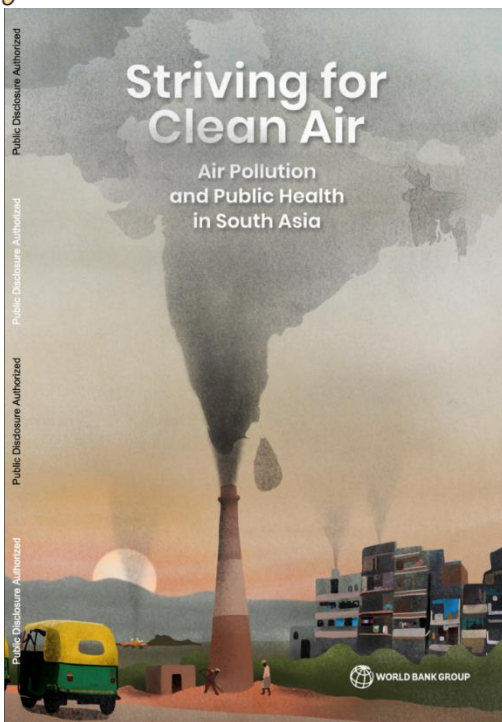
5. Which of the following organisations released a report, *Striving for Clean Air: Air Pollution and Public Health in South Asia*?

- A. Intergovernmental Panel on Climate Change
- B. World Meteorological Organization
- C. Climate Action Network
- D. None of the above.

Answer: D

Explanation:

- **Nine out of the world's 10 cities** with the worst air pollution are in South Asia.
- The World Health Organization's (WHO) Air Quality Guideline recommends that concentrations of **PM2.5**—small dust or soot particles in the air—should not exceed an annual average of **5 micrograms per cubic meter (µg/m3)**.
- But in South Asia, nearly **60 percent** of the population lives in areas where concentrations of **PM2.5 exceed** an annual mean of 35 µg/m3.
- In the densely populated Indo-Gangetic Plain, it is **over 20 times** the level that the WHO considers healthy (100 µg/m3 in several locations).
- Ambient air pollution is a public health crisis for South Asia, not only imposing **high economic costs** but also causing an estimated **2 million premature deaths** each year.



- **Six large airsheds exist in South Asia**, where the air quality in one can affect the air quality in another. They are:
 - **West/Central Indo-Gangetic Plain (IGP)** that included Punjab (Pakistan), Punjab (India), Haryana, part of Rajasthan, Chandigarh, Delhi, Uttar Pradesh.
 - **Central/Eastern IGP:** Bihar, West Bengal, Jharkhand, Bangladesh
 - **Middle India:** Odisha/Chhattisgarh
 - **Middle India:** Eastern Gujarat/Western Maharashtra
 - **Northern/Central Indus River Plain:** Pakistan, part of Afghanistan; and
 - **Southern Indus Plain and further west:** South Pakistan, Western Afghanistan extending into Eastern Iran.

Governmental measures can reduce particulate matter, but **significant reductions in airsheds require coordinated policies across the airsheds.**

Questions for Today

1. Consider the following statements regarding Kunming-Montreal Global Biodiversity Framework (GBF) 30*30 target

1. It includes an ambition to conserve 30% of the world's land and 30% of the ocean by 2030.
2. It includes the mobilisation of \$30bn by developed countries by 2030.

Which of the above is/are incorrect?

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

2. Consider the following statements regarding Biobutanol:

1. The primary use of biobutanol is as a fuel in internal combustion engines.
2. Its properties are similar to that of gasoline.
3. It has higher energy content than that of gasoline.

Which of the above is/are correct?

- A. 1 only
- B. 2 and 3 only
- C. 3 only
- D. 1 and 2 only

3. What is 'Greenhouse Gas Protocol'?

- A. It is an international accounting tool for government and business leaders to understand, quantify and manage greenhouse gas emissions.
- B. It is an initiative of the United Nations to offer financial incentives to developing countries to reduce

greenhouse gas emissions and to adopt ecofriendly technologies.

- C. It is an intergovernmental agreement ratified by all the member countries of the United Nations to reduce greenhouse gas emissions to specified levels by the year 2022.
- D. It is one of the multilateral REDD+ initiatives hosted by the World Bank.

4. Which of the following statements is/are correct regarding Human Climate Horizons?

1. It is a data and insights platform providing localized information on the future impacts of climate change across several dimensions of human development and human security.
2. It is the result of joint work of the Climate Impact Lab and the UNDP's Human Development Report Office.

Choose the correct option from below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

5. Which of the following statements is/are correct regarding Cryomesh?

1. It is a specially fabricated mesh used as a substrate in cryopreservation.
2. It will help store coral larvae at -196°C.

Choose the correct option from below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

Answers with Explanations

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2. It includes the mobilisation of \$30bn by developed countries by 2030.

Which of the above is/are incorrect?

- A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: D

Explanation

- The landmark deal Kunming-Montreal Global Biodiversity Framework (GBF) was reached after two weeks of often tense talks in Montreal at the UN biodiversity summit, known as COP15.
- There is hope that it will succeed unlike its predecessor – the Aichi targets, agreed at COP10 in 2010.
- The final deal included the oft-repeated headline target of “30×30” – an ambition to conserve 30% of the world's land and 30% of the ocean by 2030.
- A second “30×30” goal also made it into the final package, with developed countries agreeing to mobilise \$30bn for developing countries by 2030.
- There are four “overarching global” goals and 23 specific targets in the Kunming-Montreal Global Biodiversity Framework (GBF).

- None of the components of the Convention on Biological Diversity (CBD) – including the GBF and the decision texts – are legally binding.
- However, countries have agreed to turn promises into action through a plan to report on, review and voluntarily “ratchet up” their ambitions for tackling biodiversity loss.
- This is similar to the plan drawn up to implement the Paris Agreement for climate change.

2. Consider the following statements regarding Biobutanol:

1. The primary use of biobutanol is as a fuel in internal combustion engines.
2. Its properties are similar to that of gasoline.
3. It has higher energy content than that of gasoline.

Which of the above is/are correct?

- A. 1 only
B. 2 and 3 only
C. 3 only
D. 1 and 2 only

Answer: D

Explanation

- It has a lower energy content, on average 10-20%, than that of gasoline, which is a major disadvantage of biobutanol.
- Biobutanol is a four-carbon alcohol produced by the fermentation of biomass.
- The production of biobutanol can be carried out in ethanol production facilities.



- The primary use of biobutanol is as a fuel in internal combustion engines.
- Its properties are similar to that of gasoline.
- Some gasoline-powered vehicles can even use biobutanol without being modified.
- It can be blended with gasoline in concentrations up to 11.5% by volume.
- However, it has a lower energy content, on average 10-20%, than that of gasoline, which is a major disadvantage of biobutanol.
- Biobutanol exhibits the potential to reduce carbon emissions by 85% when compared to gasoline, thus making it a viable and suitable alternative to gasoline and gasoline ethanol blended fuels.

3. What is 'Greenhouse Gas Protocol'?

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- B. It is an initiative of the United Nations to offer financial incentives to developing countries to reduce greenhouse gas emissions and to adopt ecofriendly technologies.
- C. It is an intergovernmental agreement ratified by all the member countries of the United Nations to reduce greenhouse gas emissions to specified levels by the year 2022.
- D. It is one of the multilateral REDD+ initiatives hosted by the World Bank.

Answer: A

Explanation

- The Paris Agreement commits countries to reduce greenhouse gas emissions to keep the global

temperature rise below 1.5 degrees Celsius, in order to avoid the worst impacts of climate change.

- The GHG Protocol arose out of the need to help countries and companies account for, report, and mitigate emissions, based on a report that identified an action agenda to address climate change that included the need for standardized measurement of GHG emissions.
- The Greenhouse Gas Protocol (GHGP) provides accounting and reporting standards, sector guidance, calculation tools and training for businesses and local and national governments.
- It has created a comprehensive, global, standardized framework for measuring and managing emissions from private and public sector operations, value chains, products, cities and policies to enable greenhouse gas reductions across the board.
- The Greenhouse Gas (GHG) Protocol has been developed by World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD).

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2. It is the result of joint work of the Climate Impact Lab and the UNDP's Human Development Report Office.

Choose the correct option from below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2**
- D. Neither 1 nor 2

Answer: C

Explanation

- A data platform showing how different levels of global heating will affect people's lives around the world has been launched by the United Nations.
- Human Climate Horizons (HCH) is a data and insights platform providing localized information on the future impacts of climate change across several dimensions of human development and human security.
- It is open access and the scalable digital public good – a window to possible futures – fed by an evolving stream of multidisciplinary frontier research.
- It is the result of joint work of the Climate Impact Lab and the UNDP's Human Development Report Office.
- It allows users to pick a location, timeframe and emissions scenario – either global temperature rises of 2 degrees Celsius or the internationally agreed but currently unlikely target of 1.5 degrees.

5. Which of the following statements is/are correct regarding Cryomesh?

1. It is a specially fabricated mesh used as a substrate in cryopreservation.
2. It will help store coral larvae at -196°C.

Choose the correct option from below:

- A. 1 only
- B. 2 only

- C. Both 1 and 2**
- D. Neither 1 nor 2

Answer: C

Explanation

- Cryogenically frozen coral can be stored and later reintroduced to the wild but the current process requires sophisticated equipment including lasers.
- Scientists say a new lightweight “cryomesh” can be manufactured cheaply and better preserves coral.
- Cryomesh is a specially fabricated mesh used as a substrate in cryopreservation.
- This is lightweight and can be manufactured cheaply.
- It better preserves coral and has the properties of cryoplates.
- The mesh technology will help store coral larvae at -196°C (-320.8°F).