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Q.1) Consider the following statements with respect to concept of “Negative emissions”.

1. It means removing CO₂ from the atmosphere and storing it on land, underground or in the oceans.
2. This are gases with high warming potential, which poses greater threat in controlling climate change.

Which of the above statement is/are correct?

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

Q.1) Solution (a)

The Paris Agreement, adopted at the COP21 climate talks in December, sets out a global aim to limit average global surface temperatures to “well below 2C” above pre-industrial levels. It adds that there should be “efforts” to limit it to 1.5C.

A study published last year warned that all the scenarios for keeping global temperature rise to 2C require **“negative emissions”** – **removing CO₂** from the atmosphere and storing it on land, underground or in the oceans.

Q.2) The report titled “Ocean deoxygenation is released by?

- a) UNEP
- b) IPCC
- c) UN CLIMATE
- d) IUCN

Q.2) Solution (d)

Recently, a report titled, **‘Ocean deoxygenation: Everyone’s problem’** was released by the **International Union for Conservation of Nature (IUCN)**.

Ocean deoxygenation is one of the most pernicious, yet under-reported side-effects of human-induced climate change. The primary causes of deoxygenation are eutrophication (increased nutrient run-off from land and sewage pollution) and nitrogen deposition from the burning of fossil fuels, coupled with the widespread impacts from ocean warming. Oxygen loss from warming has alarming consequences for global oceanic oxygen reserves, which have already been reduced by 2% over a period of just 50-years (from 1960 to 2010).

Q.3) With respect to increasing Marine pollution, What are the impacts of global warming and pollution of water bodies?

1. Rise in sea surface temperature
2. Ocean deoxygenation
3. Decrease in oxygen demand of oceans
4. Formation of Gas Hydrates at bottom of oceans

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) All of the above

Q.3) Solution (a)

Climate Change: As the ocean warms due to global warming, it induces Ocean warming-driven deoxygenation.

- Warmer ocean water holds less oxygen and is more buoyant than cooler water. This leads to reduced mixing of oxygenated water near the surface with deeper waters
- Warmer water also raises oxygen demand from living organisms (increases the metabolic rates).
- Warming of bottom waters may result in enhanced destabilization of methane gas hydrates

Nutrient pollution (Eutrophication) - It causes oxygen loss in coastal waters as fertiliser, sewage, animal and aquaculture waste cause excessive growth of algae, which in turn deplete oxygen as they decompose.

Q.4) What is meant by carbon pricing, recently seen in News?

1. It is the cost that companies has to bear to bring clean technology in their production lines.
2. It is external costs of carbon emissions, such as damage to crops and health care costs from heat waves and droughts or to property from flooding and sea level rise.

Which of the above statement is/are correct?

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

Q.4) Solution (b)

The Carbon pricing phrase put a price on carbon has now become well known with momentum growing among countries and business to put a **price on carbon pollution** as a means of bringing down emissions and drive investment into cleaner options.

There are several paths governments can take to price carbon, all leading to the same result. They begin to capture what are **known as the external costs of carbon emissions** – costs that the public pays for in other ways, such as damage to crops and health care costs from heat waves and droughts or to property from flooding and sea level rise – and tie them to their sources through a price on carbon.

Q.5) Consider the following statements with respect to Montreal Protocol on Substances that Deplete the Ozone Layer

1. Under Montreal protocol Developing and developed countries have equal but differentiated responsibilities, where developed countries have legally binding targets and developing countries have non-binding targets
2. India achieved complete phase out of HCFC-141 b, one of the most potent ozone depleting chemical after Chlorofluorocarbons (CFCs).

Which of the above statement is/are correct?

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

Q.5) Solution (b)

The Montreal Protocol is the landmark multilateral environmental agreement that regulates the production and consumption of nearly 100 man-made chemicals referred to as ozone depleting substances (ODS).

- Adopted in 1987, the Protocol is to date the only UN treaty ever that has been ratified by all 197 UN Member States.
- Developing and developed countries have equal but differentiated responsibilities, but **both groups of countries have binding, time- targeted and measurable commitments.**
- Kigali agreement amended the Montreal Protocol in 2016.

India achieved complete phase out of HCFC-141 b, one of the most potent ozone depleting chemical after Chlorofluorocarbons (CFCs).

Q.6) Indian cities face the worst Air pollution in the world. What steps can be taken to reduce Air pollution across cities.

1. Use of LiDAR Technology to detect and control pollution
2. Photocatalytic paints to be used on roads
3. Set up 'smog towers'
4. Remove Scrubbers from chimneys of Industries

Choose correct option from below:

- a) 1 and 2 only
- b) 2, 3 and 4 only
- c) 1, 2 and 3 only
- d) All of the above.

Q.6) Solution (c)

Following technological solutions can be used to fight air pollution:

- Use of Light Detection and Ranging (LiDAR) and Wireless Sensor Networks (WSN) technology for better pollution- monitoring.
- Adoption of oxy furnaces in industries
- Photocatalytic paints to be used on roads
- Use of anti-smog gun

Scrubbers are air pollution control devices that use liquid to remove particulate matter or gases from an industrial exhaust or flue gas stream. This atomized liquid (typically water) entrains particles and pollutant gases in order to effectively wash them out of the gas flow.

Q.7) Consider the following pairs:

- | Conventions/ protocols | Pollutants |
|---|------------|
| 1. Gothenburg protocol : Ozone | |
| 2. Basel convention : Plastic | |
| 3. Rotterdam convention : Pesticide Phorate | |
| 4. Stockholm Convention : Persistent Organic Pollutants (POP) | |

Which of the above is/are correctly matched?

- a) 1 and 2 only
- b) 2 and 4 only
- c) 1, 2 and 3 only
- d) All of the above

Q.7) Solution (d)

Conventions/ protocols	Pollutants
Stockholm Convention	Persistent Organic Pollutants (POP), It was adopted in May 2001 and entered into force in 2004. It calls for international action on three categories of POPs: pesticides, industrial chemicals, and unintentionally produced POPs
Rotterdam Convention	Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade
Basel Convention	It was adopted in 1989 and entered into force in 1992. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics. Adopted an amendment to include unsorted, mixed and contaminated plastic waste under PIC (Prior Informed Consent) procedure and improve the regulation of its transboundary movement.
Gothenburg Protocol	It aims to abate Acidification, Eutrophication and Ground-level Ozone


	and is part of the Convention on Long-Range Transboundary Air Pollution.
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Q.8) Consider the following statements with respect to corals:

1. Coral reefs have greater biodiversity than tropical rainforests.
2. They are only found in tropical oceans and seas.

Which of the above statement is/are correct?

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

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Q.8) Solution (a)

The coral is a polyp, an organism that lives in the shallow sea. Its skeleton is composed of limestone and dolomite. The layers of deposition of the skeletons of these polyps form a shallow rock known as Coral Reef.

- Coral reefs are retreating from equatorial waters and **establishing new reefs in more temperate regions, a new study shows**. Researchers say during the last four decades, the number of young corals on tropical reefs has declined by 85 percent—and doubled on reefs in the subtropics.
- The coral reefs are more diverse than tropical rainforests because coral reefs have more than 1,000,000 species.

Q.9) With reference to the agricultural practices, consider the following statements:

1. Mulching is the practice of cultivation of leguminous crops between the cropping seasons
2. Inter-cropping method involves growing different crops simultaneously within the same plot.
3. Strip cropping is growing of two simultaneously which have different growth habits and no competition between them

Which of the above statement is/are incorrect?

- a) 1 only
- b) 2 and 4 only

- c) 1 and 3 only
d) All of the above

Q.9) Solution (c)

Intercropping	Intercropping involves growing different crops simultaneously within the same plot of land. This increases the yield and maximizes utilization of abiotic inputs, like efficient use of sunlight, water etc.
Mulching	Mulches are generally waste plant materials. In mulching, these plant materials are spread around the base of the crops. It protects the soil from erosion, reduces compaction from the impact of heavy rains ,conserves moisture,
Strip cropping	Strip cropping is growing two or more crops simultaneously in strips, wide enough to permit independent cultivation
Parallel cropping	Parallel cropping is growing of two crops simultaneously which have different growth habits and no competition among them.

Q.10) Zero Tillage is the central element in what is now widely termed Conservation Agriculture. What are the advantages of zero tillage?

1. Improves soil structure and soil cover increase the soil's ability to absorb and infiltrate water
2. Soil erosion is reduced by about 90% and soil biological activity is minimized.
3. Increases evaporation from the soil

Which of the above statement is/are correct?

- a) 1 only
b) 1 and 2 only
c) 2 and 3 only
d) All of the above

Q.10) Solution (a)

Zero Tillage is the central element in what is now widely termed Conservation Agriculture. It brings a quantum leap in crop production technology, for it brings agriculture into harmony with nature.

Features:

Crop residues are distributed evenly and left on the soil surface;

- No implements are used to turn the soil over, cultivate it, or incorporate crop

residues;

- Weeds and/or purpose-planted cover crops are controlled by a pre-planting application of a non-pollutant desiccant herbicide;
- A specialized planter or drill cuts through the desiccated cover and residues accumulated on the soil surface, slotting seed (and fertilizer) into the soil with minimal disturbance;
- Subsequent weed control is carried out with some pre- but mostly post-emergent herbicides, which also used in conventional tillage;
- Crop rotation is fundamental to Zero Tillage, since this promotes adequate biomass levels for permanent mulch cover; it also assists in the control of weeds, pests and diseases, as well as in improving the physical condition of the soil.
- Soil erosion is reduced by about 90% and soil biological activity and bio-diversity are maximized
- No-till practices also slow evaporation, which not only means better absorption of rainwater, but it also increases irrigation efficiency, ultimately leading to higher yields, especially during hot and dry weather.

Q.11) Recently, Central Ground Water Board (CGWB) released report on Groundwater Arsenic Contamination in India. In this context, Consider the following statements:

1. Peninsular states are worst effected by Arsenic contamination
2. Arsenic contamination impacts livestock population
3. Sources of arsenic contamination include both natural as well as Anthropogenic

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.11) Solution (c)

Recently, Central Ground Water Board (CGWB) released report on Groundwater Arsenic Contamination in India:

- 21 states across the country have pockets with arsenic levels higher than the Bureau of Indian Standards (BIS) stipulated permissible limit of 0.01 miligram 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
- Regular extraction of ground water for irrigation deposits arsenic in soil and consequently its uptake by the crops. Also, paddy farms flooded with contaminated water eventually causes accumulation of arsenic in the food crops.
- Rice husk used as fodder for livestock, exposes them to impacts of arsenic contamination. This leads to potential risk for humans when they consume cattle-

based food products

Sources of arsenic contamination:

- Natural processes in groundwater: Weathering of rocks and minerals comprising sand, silt and clay, followed by leaching and runoff.
- Anthropogenic activities like intense exploitation of groundwater, application of fertilizers, burning of coal and leaching of metals from coal-ash tailings

Q.12) In the context of water scarcity in India, Consider the following statements:

1. A water-stressed condition happens when per capita availability is less than 1,700 cubic metres
2. Water-scarcity condition when per capita availability falls below 1,000 cubic metres.

Which of the above statement is/are correct?

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

Q.12) Solution (c)

As per NITI Aayog report, nearly 600 million Indians face “high to extreme water stress” and 75% households do not have drinking water on their premises. 81.67% of rural households do not have tap water connections.

- India’s annual per capita availability of water fell from 1,820 cubic meters in 2001 to 1,545 cubic meters in 2011, which may further fall to 1,341 cubic meters in 2025.
- By Central water commission (CWC) benchmarks, a water-stressed condition happens when per capita availability is less than 1,700 cubic metres, and a water-scarcity condition when per capita availability falls below 1,000 cubic metres.

Q.13) Consider the following statements with respect to Jal Jeevan Mission (JJM)

1. JJM aims at providing Functional Household Tap Connection (FHTC) to every rural household only by 2024.
2. It will focus on integrated demand and supply side management of water

Which of the above statement is/are correct?

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

Q.13) Solution (c)

JJM aims at providing Functional Household Tap Connection (FHTC) **to every rural household** (Har Ghar Nal Se Jal) (with service level at the rate of 55 litres per capita per day (lpcd)) by 2024.

This Mission, under the Department of Drinking Water and Sanitation, will focus on integrated demand and supply side management of water at the local level, including creation of local infrastructure for source sustainability like rainwater harvesting, groundwater recharge and management of household wastewater for reuse in agriculture.

Q.14) Consider the following statements with respect to Plastic Waste Management Rules, 2016 (as amended in 2018)

1. Defines maximum thickness of plastic carry bags i.e. 50 microns
2. Rural areas are brought under the rules
3. Responsibility is fixed on street vendors and retailers for controlled use of plastics

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.14) Solution (b)

Plastic Waste Management Rules, 2016 (as amended in 2018):

- **Defines minimum thickness** of plastic carry bags i.e. **50 microns**. This would increase the cost and the tendency to provide free carry bags would come down.
- **Responsibility of local bodies:** Rural areas are brought under the rules since plastic has reached rural areas as well. The gram sabhas have been given responsibility of implementation.
- **Extended Producer Responsibility:** Producers and brand owners have been made responsible for collecting waste generated from their products
- **Responsibility of street vendors and retailers:** Not to provide such carry bags or fine would be imposed. Only the registered shopkeepers on payment of a registration fee to local bodies would be allowed to give out plastic carry bags on charge.

Q.15) With reference to recent All India Tiger estimates, Consider the following statements:

1. Karnataka state recorded highest number of Tigers in India
2. Continuing Increase of tiger-occupied areas has been recorded.

Which of the above statement is/are correct?

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

Q.15) Solution (d)

The four-year tiger census report, 'Status of Tigers, Co-predators, Prey and their Habitat, 2018' shows the count of tigers in India, has risen to 2967, in 2018 from 2,226 in 2014

Findings of All India Tiger Estimate-2018:

- Biggest increase in tigers: The biggest increase has been in Madhya Pradesh from 308 in 2014 to 526. Now, MP has most number of tigers.
- Continuing loss of tiger-occupied areas: The net loss in tiger-occupied area is estimated to be 20% of the tiger habitat in four years.
- No tiger was recorded in Buxa (West Bengal), Dampa (Mizoram) and Palamu (Jharkhand) tiger reserves.

Q.16) Consider the following statements, with respect to Cheetah reintroduction programme.

1. Asiatic cheetah is extinct. Hence, India is introducing African
2. Cheetah is a keystone species of dry forests, scrub forests, and savannahs.
3. Kuno Palpur was the preferred location for introduction of cheetah

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.16) Solution (c)

The plan, first floated in 2009, was to bolster the nearly extinct Indian cheetah population.

- Iran has a sub-species of the Asiatic cheetah but has refused to share them with India, forcing the government to look for African ones.
- In 2010, central government had set up an expert panel for reintroducing cheetah in India. Kuno Palpur was the preferred location for introduction of cheetah. It was also the place prepared by MP to house Asiatic lions
- Cheetah is a keystone species of dry forests, scrub forests, and savannahs.
- IUCN status: African Cheetah- Vulnerable and Asiatic Cheetah – Critically endangered (surviving only in Iran).

Q.17) With reference to tropical and temperate forests diversity, consider the following statements:

1. Temperate forests have a thin canopy of trees whereas tropical forests have a thick canopy
2. Tropical Forests consists of very high tree species as compared to temperate forests.

Which of the above statement is/are correct?

- a) 1 only
- b) 2 only

- c) Both 1 and 2
d) Neither 1 nor 2

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Q.17) Solution (c)

Flora in temperate forests are characterized by 3-4 tree species per square kilometre while for tropical forests it may be as high as 100 different tree species

- Temperate forests have a thin canopy of trees which allows more light and heat to penetrate and permit the survival of smaller and cold-blooded animals like garter snakes, turtles, and a few amphibians. Tropical forests have a thick canopy of trees which restricts light to penetrate
- Trees of temperate forests are distinguished by broad leaves which shed their leaves annually during the dry season. They include such species as oak, hickory, beech, hemlock, maple, basswood, cottonwood, elm, willow, and spring-flowering herbs. In case of boreal or taiga forests, the trees are cold-tolerant evergreen conifers with needle-like leaves like pine, fir, and spruce. While in tropical forests, trees are 25- 30 m tall, with shallow roots, mostly evergreen, with large dark green leaves. Some examples are orchids, bromeliads, vines (lianas), ferns, mosses, and palms.

Q.18) With reference to the productivity of an ecosystem, consider the following statements

1. Gross primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis.
2. Secondary productivity is the available biomass for the consumption to heterotrophs
3. Net primary productivity is defined as the rate of formation of new organic matter by consumers

Which of the above statement is/are correct?

- a) 1 only
b) 1 and 3 only
c) 2 and 3 only
d) All of the above

Q.18) Solution (a)

Statement-1: correct	Statement-2: incorrect	Statement-3: incorrect
Gross primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis. A considerable amount of GPP is utilized by plants in respiration.	Secondary productivity is defined as the rate of formation of new organic matter by consumers	Gross primary productivity minus respiration losses, is the net primary productivity (NPP). Net primary productivity is the available biomass for the consumption to heterotrophs (herbivores and decomposers)

Q.19) India's Starry Dwarf Frog is found in the region of?

- Western Himalayas
- Eastern Himalayas
- Western Ghats
- Andaman and Nicobar island region

Q.19) Solution (c)

The thumbnail-sized species was discovered in India's Western Ghats.

- The new species is the only member of an ancient lineage that goes back tens of millions of years and also represents the discovery of a new subfamily
- The researchers have nicknamed them starry dwarf frogs because they're around the size of an adult's thumb, have an orange belly, a brown back and are covered in white spots.

Q.20) Which of the following are Critically Endangered Species In India?

- Great Indian Bustard
- Malabar civet
- Ganges shark
- Red headed Vulture
- Pygmy Hog

Choose correct option from below:

- 1 and 2 only
- 1, 2, 3 and 4 only
- 2, 3, 4 and 5 only
- All of the above.

Q.20) Solution (b)

Some of the critically endangered species

Mammals	<ul style="list-style-type: none"> Large Rock Rat or Elvira Rat
---------	--

	<ul style="list-style-type: none"> • Namdapha Flying Squirrel. • Malabar Civet • Sumatran Rhinoceros and Javan Rhinoceros
Birds	<ul style="list-style-type: none"> • Siberian Crane and Spoon-billed Sandpiper • Bengal Florican • Great Indian Bustard • Indian Vulture, Red-headed Vulture, Slender-billed Vulture and White-backed Vulture.
Fishes	<ul style="list-style-type: none"> • Pondicherry Shark and Ganges Shark. • Large-tooth Sawfish and Long-comb Sawfish or Narrow-snout Sawfish
Recent changes in the IUCN Red List	<ul style="list-style-type: none"> • Pygmy Hog: Status changed from Critically Endangered (CR) to Endangered (EN). • Kondana Rat: Status changed from Critically Endangered (CR) to Endangered (EN) • Leatherback Turtle: Status changed from Critically Endangered (CR) to Vulnerable (VU).

Q.21) With reference to ecological balance, consider the following statements:

1. The stability of an ecosystem increases with the introduction of new species.
2. Ecological balance can happen when the diversity of the living organisms remains relatively stable

Which of the above statement is/are correct?

- e) 1 only
- f) 2 only
- g) Both 1 and 2
- h) Neither 1 nor 2

Q.21) Solution (b)

Ecological balance is a state of dynamic equilibrium within a community. It can happen when the diversity of the living organisms remains relatively stable. Gradual changes do take place but that happens only through natural succession. Any introduction of new species changes balance through change in interaction in the habitat and ecosystem.

Q.22) The global climate finance architecture is channeled through multilateral funds, with respect to this consider the following pairs:

- | Fund | Administered by |
|-----------------------------------|------------------------|
| 1. Biocarbon fund | : World Bank |
| 2. Clean technology fund | : world economic forum |
| 3. Global climate change alliance | : IPCC |
| 4. UN-REDD | : UNEP |

Which of the above is/are correctly matched?

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

Q.22) Solution (a)

funds	Administered by
Strategic Climate Fund	World Bank
Biocarbon Fund	World Bank
Clean Technology Fund	World Bank
Least Developed Countries Fund	GEF
Global Climate Change Alliance	European Commission
UN-REDD Programme	UNDP
Congo Basin Forest Fund	African Development Bank

Q.23) With reference to color coding of industries for their pollution Index, Consider the following pairs:

1. Red industries: Automobile Manufacturing, Sugar Industries
2. Orange industries: Aluminium & copper extraction from scrap, Ayurvedic and homeopathic medicine
3. White industries: cotton and woolen hosiers using dry processes, Brass and bell metal utensils

Which of the above is/are correctly matched?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.23) Solution (b)

In February 2016, the Ministry of Environment, Forest and Climate Change (MoEFCC) unveiled a new categorization of industries based on their pollution load. The new classification is for entire industrial sectors and not for individual units.

Red industries	Orange industries	White industries
<ul style="list-style-type: none"> • Hazardous chemicals • Automobile manufacturing • Sugar industries • Fire crackers • Milk and dairy products 	<ul style="list-style-type: none"> • Aluminium and copper extraction from scrap • Automobile servicing and repairing • Ayurvedic and homeopathic medicine 	<ul style="list-style-type: none"> • Bicycles, baby carriages • Bailing of waste papers • Bio fertilizer / bio-pesticides

Green industries: Brass and bell metal utensils, Small Bakery /confectionery, Small Cotton spinning and weaving

Q.24) Which of the following ecosystem(s) represent Ecotone between marine and terrestrial ecosystems?

1. Mangrove forests
2. River banks
3. Deltas
4. Estuaries

Which of the above is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1, 3 and 4 only
- d) All of the above

Q.24) Solution (c)

An ecotone is a transition area between two biomes. It is where two communities meet and integrate. It may be narrow or wide, and it may be local (the zone between a field and forest) or regional (the transition between forest and grassland ecosystems)

An ecotone may appear on the ground as a gradual blending of the two communities across a broad area, or it may manifest itself as a sharp boundary line. Riverbank, is example for **ecotone between aquatic and terrestrial ecosystem**. Ecotone for marine and terrestrial ecosystem will be Estuary and Mangrove forests and deltas.

Q.25) Consider the following statements with reference to the climate feedback mechanism:

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

Which of the above statement is/are correct?

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

Q.25) Solution (a)

- Climate feedbacks: These are the processes that can either amplify or diminish the effects of climate forcings. Feedback that increases an initial warming is called "positive feedback." A feedback that reduces an initial warming is a "negative feedback."
- The ice albedo effect is simply a name for how ice and snow reflect solar radiation, and thus help keep the Earth cool. Since a cool Earth also tends to have more ice and snow, the ice albedo effect is an example of a positive climate feedback.

Q.26) Which can be the consequences of melting of permafrost in polar regions?

1. It may further aggravate global warming due to release of methane gas.
2. It may pose a threat to local ecosystems.
3. It would add to global inequality

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.26) Solution (d)

- As top soils melt due to global warming which is a great threat as there melt will aggravate the condition of global warming. As permafrost thaws, this carbon is released to the atmosphere in the form of methane, a powerful greenhouse gas. This process leads to more climate change and is an example of a positive feedback loop, which happens when warming causes changes that lead to even more warming.
- As permafrost thaws, it can also cause substantial changes in the local ecosystem, altering the flow of water atop and through the soil, as well as what plant and animal life can thrive in the area.
- It would also add to global inequality because most of the economic burden – equivalent to almost the entire world's current annual GDP – is likely to be borne by countries in warmer poorer regions such as India and Africa, which are most vulnerable to a rise in temperatures.

Q.27) Which among the following are the factors that help in growth of Harmful algal blooms (HABs)?

1. Warming of waters
2. Nitrogen enrichment in water
3. Pollution of water bodies
4. Changes in ocean currents

Choose correct options from below:

- a) 1 only

- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.27) Solution (d)

HABs are caused by organisms called phytoplankton, some of which can produce toxins. A HAB can occur in fresh, marine (salt), and brackish (a mixture of fresh and salt) water bodies around the world.

Various factors can cause rapid growth, or blooming of these organisms, including:

- Increases in nutrient levels (for example phosphorus and nitrates) from fertilizer run-off from residences and agricultural lands, sewage discharges, and run-off from urban areas and industrial facilities
- Changes in nutrient levels associated with ocean upwelling (El Niño, El Niña)
- Low water flows, such as those associated with drought
- Changes in water temperature, particularly increases in temperature
- Changes in chemical factors such as pH or turbidity
- Changes in ocean currents
- Changes in the local ecology (how organisms interact with each other)

Q.28) Consider the following statements regarding Black Carbon:

1. Black carbon is emitted from burning biofuels, fossil fuels, and open biomass burning.
2. Black carbon stays in the atmosphere for years.
3. In India, Project Surya has been launched to reduce black carbon in atmosphere.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.28) Solution (b)

- Approximately 20% of black carbon is emitted from burning biofuels, 40% from fossil fuels, and 40% from open biomass burning.
- Black carbon stays in the atmosphere for only several days to weeks, whereas carbon dioxide (CO₂) has an atmospheric lifetime of more than 100 years.
- Project Surya has been launched to reduce black carbon in atmosphere by introducing efficient stove technologies, solar cookers, solar lamps and biogas plants.

Q.29) Which Pyramid is most suitable to compare the functional roles of the trophic levels in an ecosystem?

- a) Pyramid of Energy
- b) Pyramid of Biomass
- c) Pyramid of Numbers-upright
- d) Pyramid of Numbers-inverted

Q.29) Solution (a)

To compare the functional roles of the trophic levels in an ecosystem, an energy pyramid is most suitable. An **energy pyramid, reflects the laws of thermodynamics**, with conversion of solar energy to chemical energy and heat energy at each trophic level and with loss of energy being depicted at each transfer to another trophic level. Hence the pyramid is always upward, with a large energy base at the bottom. Energy pyramid concept helps to explain the phenomenon of biological magnification--the tendency for toxic substances to increase in concentration progressively at higher levels of the food chain

Q.30) With reference to 'Eco Sensitive Zone' (ESA), consider the following statements.

1. ESA is the area that is declared under the Environment Protection Act, 1986.
2. The purpose of the declaration of ESA is to prohibit all kinds of human activities in these zones except agriculture.

Which of the above statement is/are incorrect?

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

Q.30) Solution (b)

- Eco-Sensitive Zones or Ecologically Fragile Areas are areas within 10 kms around Protected Areas, National Parks and Wildlife Sanctuaries.
- ESZs are notified by MoEFCC, Government of India under Environment Protection Act 1986.
- The section 3(2)(v) of the Act, says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.

Q.31) The 'Forest Carbon Partnership Facility' is related to which among the following?

- a) Man and Biosphere
- b) REDD+
- c) Montreaux Record
- d) Wetland International

Q.31) Solution (b)

The Forest Carbon Partnership Facility is a global partnership of governments, businesses, civil society, and Indigenous Peoples focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries (activities commonly referred to as REDD+).

Some initiatives assisting countries that are engaged in REDD+ include the World Bank's Forest Carbon Partnership Facility, Norway's International Climate and Forest Initiative, the Global Environment Facility, Australia's International Forest Carbon Initiative, the Collaborative Partnership on Forests, and the Green Climate Fund

Q.32) With respect to Biomedical waste rules-2016, Consider the following statements:

1. Biomedical waste comprises of only human anatomical waste, treatment apparatus like needles, syringes and other materials used in health care facilities.
2. The hospitals servicing 1000 patients or more per month are required to obtain authorisation and segregate bio- medical waste
3. Phase-out the use of chlorinated plastic bags, gloves and blood bags within two years

Which of the above statement is/are incorrect?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) None of the above

Q.32) Solution (a)

- Biomedical waste comprises **human & animal anatomical waste**, treatment apparatus like needles, syringes and other materials used in health care facilities in the process of treatment and research
- The hospitals servicing 1000 patients or more per month are required to obtain authorisation and segregate bio- medical waste in to 10 categories, pack five colour backs for disposal.
- Phase-out the use of chlorinated plastic bags, gloves and blood bags within two years;
- Pre-treatment of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on-site in the manner as prescribed by WHO or NACO;

Q.33) Consider the following statements with reference to Wetlands (Conservation and Management) Rules 2017.

1. The new rules have replaced the Central Wetlands Regulatory Authority (CWRA) with the National Wetland Committee, which has decision making

- powers
2. The powers for managing Wetlands have been given to the State governments so that protection and conservation can be done at the local level.
 3. Conservation and management of Wetlands would be based on the principle of wise use

Which of the above statement is/are incorrect?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.33) Solution (a)

Wetlands (Conservation and Management) Rules, 2017 supersede the Wetlands (Conservation and Management) Rules, 2010 for effective conservation and management of wetlands in the country.

Key features:

- Decentralisation of wetland management. Under the new rules, the powers have been given to the State governments so that protection and conservation can be done at the local level. The central government has mainly retained powers regarding monitoring.
- The new rules have replaced the Central Wetlands Regulatory Authority (CWRA) with the National Wetland Committee, which has a merely advisory role.
- The State or UT Wetlands Authority will have to prepare a list of all wetlands and also will develop a comprehensive list of activities to be regulated and permitted within notified wetlands and their zone of influence.
- The new rules also prohibit encroachments on wetlands, solid waste dumping, discharge of untreated waste and effluents from industries and human settlements
- It prescribes that conservation and management would be based on the principle of wise use, which is to be determined by the Wetlands Authority.

Q.34) With reference to convention on the conservation of migratory species (Bonn convention), Consider the following statements.

1. It is the only global convention specializing in the conservation of migratory species (CMS), their habitats and migration routes
2. Migratory species threatened with extinction are listed on Appendix I of the Convention.
3. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.34) Solution (d)

As an environmental treaty of the United Nations, CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats. CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.

- As the only global convention specializing in the conservation of migratory species, their habitats and migration routes, CMS complements and co-operates with a number of other international organizations, NGOs and partners in the media as well as in the corporate sector.
- Migratory species threatened with extinction are listed on Appendix I of the Convention.
- CMS acts as a framework Convention. The agreements may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding, and can be adapted to the requirements of particular regions. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

Q.35) Barbados Programme of Action (BPOA) is related with?

- a) Conservation of migratory species
- b) Conservation of Wetlands
- c) Sustainable development of small Island states
- d) Conference on the Human environment

Q.35) Solution (c)**BPOA (1994) - Barbados Programme of Action:**

Established by UN General Assembly resolution 47/189, the UN Global Conference on the Sustainable Development of small Islands developing states (SIDS) was held in Barbados from 25 April to 6 May 1994.

The Conference reaffirmed the principles and commitments to sustainable development embodied in Agenda 21 and translated these into specific policies, actions and measures to be taken at the national, regional and international levels. The Conference also adopted the Barbados Declaration, a statement of political will underpinning the commitments contained in the BPOA.

Q.36) Consider the following statements with respect to National Green Tribunal (NGT)

1. It is established for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources
2. NGT is mandated to dispose the cases within one year of their respective appeals.

Which of the above statement is/are correct?

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

Q.36) Solution (a)

NATIONAL GREEN TRIBUNAL (NGT):

1. The Preamble of the act provides for the establishment of a National Green Tribunal for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources
2. NGT is mandated to dispose the cases **within six months of their respective appeals.**
3. The specialized architecture of the NGT will facilitate fast track resolution of environmental cases and provide a boost to the implementation of many sustainable development measures

Q.37) The programme Harmony with Nature is Initiative of?

- a) UNFCCC
- b) IUCN
- c) UNCBD
- d) UN General Assembly

Q.37) Solution (d)

In 2009, the United Nations General Assembly proclaimed 22 April as International Mother Earth Day. In so doing, Member States acknowledged that the Earth and its ecosystems are our common home, and expressed their conviction that it is necessary to promote Harmony with Nature in order to achieve a just balance among the economic, social and environmental needs of present and future generations. The same year, the **General Assembly adopted its first resolution on Harmony with Nature.**

Q.38) Which the below statements is/are correct?

1. Farm forestry is where Individual farmers are being encouraged to plant trees on their own farmland to meet the domestic needs of the family.
2. Community forestry is the raising of trees on community land and not on private land as in farm forestry.
3. Extension forestry is Planting of trees on the sides of roads, canals and railways, along with planting on wastelands

Choose correct option from below:

- a) 2 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.38) Solution (d)

SOCIAL FORESTRY	Social forestry also aims at raising plantations by the common man so as to meet the growing demand for food, fuel wood, fodder, fiber and fertilizer etc, thereby reducing the pressure on the traditional forest area.
1. Farm forestry	Farm forestry is where Individual farmers are being encouraged to plant trees on their own farmland to meet the domestic needs of the family.
2. Community forestry	It is the raising of trees on community land and not on private land as in farm forestry. All these programmes aim to provide for the entire community and not for any individual. The government has the responsibility of providing seedlings, fertilizer but the community has to take responsibility of protecting the trees
3. Extension forestry	It is Planting of trees on the sides of roads, canals and rail- ways, along with planting on wastelands is known as 'extension' forestry, increasing the boundaries of forests. Under this project there has been creation of wood lots in the village common lands, government waste- lands and panchayat lands
4. Recreational forestry	Raising of trees with the major objective of recreation alone.

Q.39) Consider the following statements about Lighting a Billion Lives (LABL) initiative.

1. LaBL is a campaign by MoFECC that promotes the use of solar lanterns specially designed and manufactured on a decentralized basis.
2. LaBL has been able to engage with government inter- ventions under Sarva Shiksha Abhiyan, Madhya Pradesh Rural Livelihood Project etc.

Which of the above statement is/are correct?

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

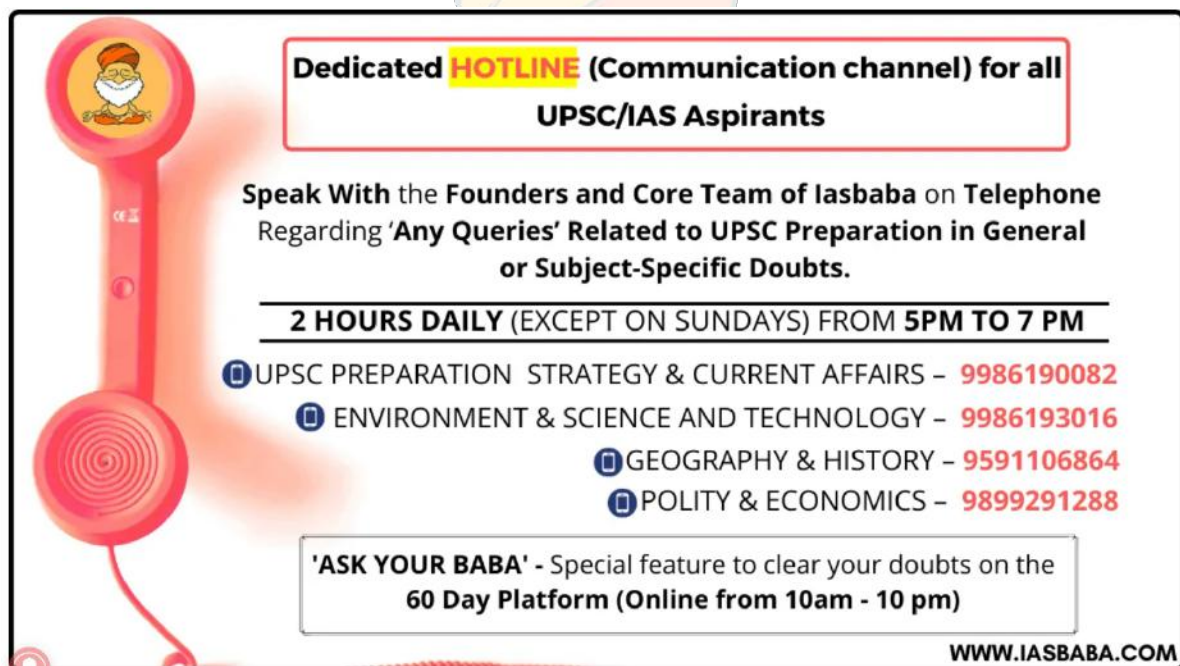
Q.39) Solution (b)

LaBL is a **campaign by TERI** that promotes the use of solar lanterns specially designed and manufactured on a decentralized basis.

- LaBL has been able to engage with government interventions under Sarva Shiksha Abhiyan, Madhya Pradesh Rural Livelihood Project, Rasthriya Gramin Vikas Nidhi, and has facilitated the spread of mobile telephony with support from Department of Telecommunications, Government of India.
- LaBL has successfully engaged the private sector and leveraged Corporate Social Responsibility (CSR)

Q.40) Consider the following statements about The National Biodiversity Authority (NBA).

1. The NBA is a Non-Statutory, Autonomous Body and it performs facilitative, regulatory and advisory function for the Government of India on issues of conservation, sustainable use of biological resources
2. The NBA will impose benefit-sharing conditions.
3. Ensures protection to the knowledge of local people relating to biodiversity



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through measures such as registration of such knowledge.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.40) Solution (c)

The National Biodiversity Authority (NBA) was established in 2003 to implement India's Biological Diversity Act (2002).

- The NBA is a Statutory, Autonomous Body and it performs facilitative, regulatory and advisory function for the Government of India on issues of conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources.

Objectives of the NBA:

- Anybody seeking any kind of intellectual property rights on a research based upon biological resource or knowledge obtained from India has to obtain prior approval of the NBA.
- The NBA will impose benefit-sharing conditions.
- For ensuring equitable sharing of benefits arising from the use of biological resources and associated knowledge, Sections 19 and 21 stipulate prior approval of the National Biodiversity Authority (NBA) before their access.
- Ensures protection to the knowledge of local people relating to biodiversity through measures such as registration of such knowledge.

