

SAMPLE PRELIMS QUESTIONS & SOLUTIONS

Environment & Current Affairs

1. Consider the following

1. Methane
2. Carbon Dioxide
3. Black Carbon
4. HFCs
5. Ozone
6. Tropospheric Ozone

Among these that can be put into the category of Short- Lived Climate Pollutants are

- 1) 1,2, 3, 4 and 5
- 2) 2,3,4 , 5 and 6
- 3) 2, 3,4,5 and 6
- 4) 1, 3, 4, 5 and 6

Solution: 4

Explanation: Recent climate change talks for phasing out HFCs and the tussle between Developed and Developing nations over the inclusion of HFCs in Montreal Protocol. Under Environment you need to prepare important issues related to current happenings.

Short-lived climate pollutants include **black carbon, tropospheric ozone, methane, and hydrofluorocarbons (HFCs)**. Because these pollutants have atmospheric lifetimes of only days to a decade and a half, they are referred to as short-lived climate pollutants (SLCPs), compared to CO₂ which can persist in the atmosphere for millenia. Reducing SLCPs is critical for slowing the rate of climate change over the next several decades and for protecting the people and regions most vulnerable to near-term climate impacts. Cutting SLCPs can reduce the current rate of global warming by almost half, the rate of warming in the Arctic by two-thirds, and the Hindu Kush-Kimalaya region by half for the next 30 or more years while avoiding up to 4.7 million premature deaths each year from outdoor air pollution and up to 1.6 million a year from indoor pollution.

2. Consider the statements:

- A. Summer has reduced level of surface Particulate Matter than winter

B. Winter has elevated level of surface Particulate Matter than summer

Select the correct code

- 1) Only A
- 2) Only B
- 3) Both
- 4) None

Solution: 3

Explanation: Air quality of any area depends on local emissions, long-range transport, local and regional weather patterns, and to some extent the topography of the region. Due to increased buoyancy and efficient ventilation in summer, pollution plumes rise effortlessly to the free atmosphere. **This leads to a reduced level of surface level PM_{2.5} concentration in our breathing zone.** The problem gets aggravated during winter. **Adverse conditions during winter help trapping of pollution leading to elevated level of surface PM concentration.**

- 3. HFCs are posing a great danger to environment as it is a potent global warming gas. Scientists are finding ways to phase out HFCs and looking for its substitution. Among the following, the suitable substitution for HFCs can be**
- A. Carbon dioxide
 - B. Hydrocarbons like Propane and Iso-Butane
 - C. Hydroflouro-Olefins
 - D. Fatty Acids
 - E. Ammonia

Select the correct code

- 1) 1,2,4 and 5
- 2) 2, 4, and 5
- 3) 1, 2, 3 and 5
- 4) All

Solution: 3

Explanation: HFCs are used in refrigerator for cooling but they are potential green house gases. Though not a Ozone Depleting Substance, their phasing out can be substituted with high energy efficient and low Ozone Depleting Substances like

Propane (inflammable)-Used for commercial refrigeration and in cars. Large-scale use in residential air-conditioning and heat pumps **GWP <5 | Energy efficiency High**

Iso-butane (inflammable)-Residential and commercial refrigeration, limited uses in heat pumps **GWP <5 | Energy efficiency High**

Ammonia (toxic) Large refrigeration systems, residential heat pumps, chillers **GWP <1 | Energy efficiency High**

Carbon dioxide. Widely used for commercial refrigeration, chillers and refrigerated trucks. Limited use in cars, heat pumps **GWP 1 | Energy efficiency High**

Hydrofluorolefin (HFO) blends Early stages of use in refrigerated trucks, commercial refrigeration, chillers, cars and residential air-conditioning. However, breakdown of HFOs leads to emission of fluorinated compounds, causing pollution **GWP <50 | Energy efficiency Low to medium**

4. Consider the following

1. Cane Toad
2. Mucuna
3. Tilapia
4. Sucker Catfish
5. American bullfrog

Which of the following are invasive species of animal?

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

Solution: B

An invasive species can be any kind of living organism—an amphibian (like the cane toad), plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs—that is not native to an ecosystem and which causes harm. They can harm the environment, the economy or even, human health. Species that grow and reproduce quickly, and spread aggressively, with potential to cause harm, are given the label of "invasive".

It is important to prepare about Invasive species because it is one of the most important factors for the decline and harm of wildlife throughout the world, even in India.

For more information,

<http://www.thehindu.com/news/national/kerala/ksbb-declares-war-on-invasive-species/article6257298.ece>

<http://www.thehindu.com/news/national/kerala/invasive-plants-a-threat-to-wildlife/article6432731.ece>

5. Consider the following

1. Lanolin
2. Isinglass
3. Sponges
4. Aspirin

Which of the following are animal based products?

- 1) 1 and 4
- 2) 2, 3 and 4
- 3) 1, 2 and 3
- 4) 1, 3 and 4

Solution: c

Explanation: Aspirin is a drug used as an analgesic. It is not an animal based product.

6. Consider the statements with respect to 'Tropospheric Ozone' (TO)

1. The precursors for TO are Carbon monoxide, volatile organic compounds Nitrogen oxides and non-methane volatile organic compounds.
2. TO is the most important primary air pollutant

Correct statement is/are

- 1) Only 1
- 2) Only 2
- 3) Both
- 4) None

Solution: (a)

Explanation: The component of TO formation: The majority of tropospheric ozone formation occurs when nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOCs), such as xylene, react in the atmosphere in the presence of sunlight.

It is a secondary air pollutant because it is formed by the combination of two entities not one.

7. 'Carbon Footprint' is a measure of carbon dioxide emitted due to daily activities.

Consider the statements with reference to Carbon Footprint

1. Five out of six Kyoto Greenhouse gases are considered in Carbon Footprint.
2. It measures the emission in terms of carbon dioxide equivalent.

Correct statement is/are

- 1) Only 1
- 2) Only 2
- 3) Both
- 4) None

Solution: b

Explanation: All the six gases are considered in CF as they all are green house gases.

A **carbon footprint** is historically defined as "the total sets of greenhouse gas emissions caused by an organization, event, product or person." But while actual footprints offer details on size, weight and speed, **carbon footprints** measure how much carbon dioxide (CO₂) we produce just by going about our daily lives.

8. Consider the following

1. Marine Park
2. National Park
3. Coral reefs
4. Mangroves
5. Sand Dunes

Among the following, entities that fall under Coastal Regulation Zone-I (CRZ)

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

Solution: d

Explanation:

The CRZ Notification, 2011 clearly lists out the areas that fall within the category of CRZ-I. It includes:-

(i) Ecologically sensitive areas and the geomorphologic features that play a Primary role in maintaining the integrity of the coast.

- Mangroves, in case mangrove area is more than 1000 square metres, a buffer area of 50 metres shall be provided;
- Corals and coral reefs and associated biodiversity;
- Sand Dunes;
- Mudflats which are biologically active;
- National parks, marine parks, sanctuaries, reserve forests, wildlife habitats and other protected areas under the provisions of Wild Life (Protection) Act, 1972 (53 of 1972), the Forest (Conservation) Act, 1980 (69 of 1980) or Environment (Protection) Act, 1986 (29 of 1986); including Biosphere Reserves encompassing;
 - Salt Marshes;
 - Turtle nesting grounds;
 - Horse shoe crabs habitats;
 - Sea grass beds;
 - Nesting grounds of birds;
 - Areas or structures of archaeological importance and heritage sites;

(ii) The area between Low Tide Line and High Tide Line.

9. Consider the following plants

1. Rhodendron
2. Rose

3. Mulberry
4. Curry leaf Plant

Which of these plants are propagated by stem cuttings?

- 1) 1 and 2
- 2) 2 and 3
- 3) 1, 2 and 4
- 4) 1,2,3 and 4

Solution: d

Explanation: UPSC has asked this concept twice. Learn the basic plants and concept behind this. The link below is for you reference.

<http://content.ces.ncsu.edu/plant-propagation-by-stem-cuttings-instructions-for-the-home-gardener/>

10. Consider the statements with reference to 'Blue Carbon'

1. It is carbon stored in coastal, terrestrial and marine ecosystem
2. The Blue Carbon Initiative focuses on mangroves, salt marshes and seagrasses, which are found on every continent except Antarctica.
3. The rates of blue carbon sequestration and storage capacities in ecosystems are comparable to (and often higher than) those in carbon-rich terrestrial ecosystems such as tropical rainforests and peatlands.

Correct code/s

- 1) Only 1
- 2) Only 3
- 3) 2 and 3
- 4) 1,2 and 3

Solution: c

Explanation: Blue Carbon is stored in coastal and marine ecosystem, not forest. Initiatives focuses on carbon in coastal. Refer to the links below for more information

<http://thebluecarboninitiative.org/>

http://en.wikipedia.org/wiki/Blue_carbon

<http://www.thehindu.com/sci-tech/energy-and-environment/sunderbans-mangrove-trees-losing-capacity-to-absorb-co2-study/article6279469.ece>

www.IASbaba.com