



PRELIMS QUESTIONS

Q1. 'Fridays For Future' movement recently in news was related to?

- (a) Disarmament of nuclear weapons (b) Preventing Zoonotic Diseases
(c) Global climate strike (d) None of the above

Answer:(C)

Explanation:

Students and youth under the banner of Fridays For Future (FFF), a **Global Movement Demanding Climate Justice** protested outside the Union Environment Ministry.

- Their demand includes Scrapping Draft EIA 2020, saving the Aravallis, improved sewage management plants to prevent pollution of the Yamuna, public participation in policy-making and better environmental education in schools.

About 'Fridays For Future'

- The FFF is a **Global Climate Strike Movement** that started in August 2018, when 15-year-old Greta Thunberg began a strike in Sweden. In the three weeks leading up to the Swedish Election, she sat outside the Swedish Parliament every school day, **demanding urgent action on the climate crisis that turned into a global movement.**
- One of the main goals of the movement is to put **moral pressure on policy-makers, to make them listen to scientists and then to take action to limit global warming.**

Q2. Consider the following statements regarding Green Strategic Partnership;

1. The commission has been jointly started by India and Norway
2. Climate change and circular economy are one of the key aspects of this commission.

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:

Statement 1: The commission has been jointly started by India and Denmark. **So statement 1 is incorrect.**





Explanation:

Option C: Ionizing radiation is radiation that carries enough energy to free electrons from atoms or molecules, thereby ionizing them. It is not relevant here; hence (c) is also wrong.

Option D: High pollution outside may keep vehicle surroundings warm rather than the opposite. So, (d) is also wrong. Learning: A greenhouse is made up of glass. The glass which is transparent to incoming short wave solar radiation is opaque to outgoing long wave radiation. The glass, therefore, allows in more radiation and prevents the longwave radiation from going outside the glasshouse, causing the temperature inside the glasshouse structure warmer than outside. When you enter a car or a bus, during summers, where windows are closed, you feel more heat than outside. Likewise, during winter the vehicles with closed doors and windows remain warmer than the temperature outside.

Q5. Oil Extraction in the Arctic may lead to the release of

1. Black Carbon
2. Methane
3. Carbon Monoxide

Select the correct answer using the codes below.

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

Answer: (C)

Explanation:

Oil Extraction in the Arctic may release black carbon and methane leading to global warming and thawing of Arctic ice. It subsequently causes climate change. Some studies estimate the cost involved as \$60 trillion to the world economy. Apart from the usual emission issues from the Arctic Permafrost (a concept covered in earlier tests), many of the boundary lines in the Arctic remain to be fully demarcated as under EEZ. Therefore, disputes can arise in resource extraction in the Arctic. The short growing season and the low diversity of living organisms make the Arctic ecosystem vulnerable to global warming, climate change, exploratory activities etc.

Q6. As global Temperature increases:

1. Increased frequency of extreme events like drought will reduce crop production.
2. Pest attacks may increase on crops.
3. Acidification of oceans will disturb the marine food chain

Select the correct answer using the codes below.



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

Answer: (D)

Explanation:

Statement 1 and 2: Climate Change is expected to make water resources scarcer and encourages weeds and pests. Increased temperatures provide a better breeding ground for many pests. Moreover, as climates “migrate”, insects and fungi are moving toward the poles to affecting crops in temperate regions.

Statement 3: Seafood is a large part of many people's diets around the world. And many marine species can't survive in the more acidic environment, e.g. planktons which form the basis of the food chain. You can read this link for a better understanding

Q7. A Green House is made up of Glass. What is the property of this glass?

- (a) It is transparent to incoming short wave solar radiation and opaque to outgoing longwave radiation.
(b) It is opaque to incoming short wave solar radiation and transparent to outgoing longwave radiation.
(c) It is transparent to incoming longwave solar radiation and opaque to outgoing short wave radiation.
(d) It is opaque to incoming longwave solar radiation and transparent to outgoing short wave radiation.

Answer: (A)

Explanation:

The glass allows in more radiation and prevents the longwave radiation from going outside the glasshouse, causing the temperature inside the glasshouse structure warmer than outside. When you enter a car or a bus, during summers, where windows are closed, you feel more heat than outside. Likewise, during winter the vehicles with closed doors and windows remain warmer than the temperature outside.

Q8. The total direct radiative Green House Effect of Methane is smaller than that of Carbon Dioxide due to

1. Lower concentration of methane in the atmosphere as compared to CO₂
2. Lower the direct radiative effect of a fixed mass of methane as compared to CO₂



Which of the above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) None

Answer:(A)

Explanation:

The most abundant Green House Gases in Earth's atmosphere are Water vapour, Carbon dioxide, Methane, Nitrous oxide, Ozone, Chlorofluorocarbons (CFCs). The contribution of each gas to the greenhouse effect is affected by the characteristics of that gas, its abundance, and any indirect effects it may cause.

Justification: The direct radiative effect of a mass of methane is about 72 times stronger than the same mass of carbon dioxide over a 20-year time frame but it is present in much smaller concentrations so that the total direct radiative effect is smaller, in part due to its shorter atmospheric lifetime. On the other hand, in addition to its direct radiative impact, methane has a large, indirect radiative effect because it contributes to ozone formation. Ozone itself is a GHG.

Q9. Peak Ground-Level Ozone concentrations are measured usually in which part of the day?

- (a) Early Morning (b) Afternoon
(c) Late Evening (d) Midnight

Answer: (B)

Explanation:

Ozone (O₃) is a colourless, reactive oxidant gas that is a major constituent of atmospheric smog. Many factors impact ground-level ozone development, including temperature, wind speed and direction, time of day, and driving patterns. Tropospheric, or ground-level ozone, is not emitted directly into the air but is created by chemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOC). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. Sunlight is the brightest in the afternoon, hence B is the correct answer.

Learning: Ozone at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in "smog." Ozone can also be transported long distances by wind, so even rural areas can experience high ozone levels. Ground-level ozone is formed by the reaction of NO_x and VOCs under the influence of sunlight hundreds of kilometres from the source of emissions. Ozone concentrations are influenced by the intensity of solar radiation, the absolute concentrations of NO_x and VOCs, and the ratio of NO_x and VOCs.

Anaerobic biological processes, lightning, and volcanic activity are the main natural contributors to atmospheric NO_x, occasionally accounting for as much as 90% of all NO_x emissions.



Q10. The impact of Climate Change on the melting of permafrost would be

1. Increase Carbon content in the Atmosphere
2. Raise Sea Levels
3. Reduce Soil Erosion at higher Latitudes

Select the correct answer using the codes below.

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

Answer: (A)

Explanation:

Permafrost is ground, including rock or soil, at or below the freezing point of water for two or more years. Most permafrost is located in high latitudes. It also occurs subsea on the continental shelves of the continents surrounding the Arctic Ocean, portions of which were exposed during the last glacial period, with global weather implications. Permafrost can also store carbon, both as peat and as methane. The amount of carbon sequestered in permafrost is roughly four times the carbon that has been released into the atmosphere due to human activities in modern time. Melting permafrost would raise water levels in the Earth's oceans and increase erosion. Erosion happens when permafrost melts because the soil and sediment are easily washed away without the ice-binding them together.

Q11. Which of the following bacterium may be used for bio-remediation operations?

- | | |
|----------------|------------------|
| 1. Haemophilus | 2. Mycobacterium |
| 3. Rhodococcus | 4. Ralstonia |

Select the correct answer using the codes 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:

Bacteria are widely diverse organisms, and thus make excellent players in biodegradation and bioremediation. There are few universal toxins to bacteria, so there is likely an organism able to break down any given substrate when provided with the right conditions (anaerobic versus aerobic environment, sufficient electron donors or acceptors, etc.). The fast development of the molecular microbiological tool has enabled the identification of many unculturable microbes and therefore



(7)



Q14. Pantanal was recently in news it is located in which country;

- | | |
|-------------|--------------|
| 1. Brazil | 2. Venezuela |
| 3. Paraguay | 4. Argentina |

Which of the above option/s is/are correct?

Answer: (A)

Explanation:

It is **World's Largest Wetland** and **sprawls over more than 150,000 sq km in Brazil** and also extends into Bolivia and Paraguay. It is burning as **vegetation compacted under the marshy floodwater** during the wet season dries out as ponds and lagoons evaporate, **leaving flammable deposits underground**.

Q15. Medicanes was recently in news;

- | | |
|---|---|
| 1. It is a Tropical Cyclone | 2. It is a new Medicine for COVID-19 |
| 3. It is a new Surgical option for babies | 4. It is a Software Program for Cybersecurity |

Which of the above option/s is/are correct?

Answer: (A)

Explanation:

Recently a medicane named Ianos made landfall along the coast of Greece.

- Medicanes (Mediterranean hurriCANES) refer to tropical stormlike cyclone observed **across the Mediterranean Sea**.

Medicanes **occur more in colder waters than tropical cyclones**, hurricanes and typhoons. Hence, the **cores of these storms are colder in comparison to the warm cores of tropical cyclones**.

- o Since warmer cores tend to carry more moisture (hence rainfall), are the bigger size and have swifter winds, **medicanes are weaker and smaller in size** than the tropical cyclones.
- o Like tropical storms, medicanes have asymmetric structure and a visible eye.

The Mediterranean is a generally dry, evaporative sea and cyclonic storms don't grow as much. According to a study published in 2011, only one or two medicanes occur per year. **Medicanes** are likely to become a **bigger problem with climate change**.



Mains Questions

- Q1. What do you understand by the term biodiversity? What are the major threats to biodiversity caused by humans? What is the possible way forward to overcome these threats?
(15 Marks, 250 Word)
- Q2. Forest fires are a new reality due to climate change. What are the major reasons for forest fires, quote some recent event and what remedies can be followed to prevent such issues in near future?
(10 Marks, 150 Word)
- Q3. What are the impacts of climate change on social and physical environments?
(10 Marks, 150 Word)
- Q4. What are the possible steps did India took to counter climate change. Explain?
(10 Marks, 150 Word)

Snippets

Nagarhole Tiger Reserve, Karnataka

In news due to recent tiger attacks

Geographical features:

1. Nagarhole is exactly located on the junction where the table land of Deccan plateau climbs up on to the Western Ghats Mountains. Nagarhole tiger reserve is situated at the foot hills of Brahmagiri hill range (eastern range) of Western Ghats. Nagarhole tiger reserve is surrounded by Wayanad wildlife sanctuary on the Southwest border and by Kabini reservoir on the South-eastern side which further connects to Bandipur Tiger reserve.
2. Part of nilgiri biosphere reserve
3. Kabini River is one the major source of water here.
4. Vegetation type is Tropical moist deciduous type.
5. Jenu Kuruba and Koraga are the major tribal groups found here



Location in Karnataka, India



WILDFIRES IN SIMILIPAL

In News

- A recent massive fire has threatened to cause enormous damage to the Similipal Biosphere Reserve, Odisha.
- The fire broke out in isolated places of Similipal in the Mayurbhanj district in the first week of February and now it has finally been brought under control.

About Forest Fires

- It is the most common hazard in forests.

Causes

Natural Factors

- Such as lightning, rubbing of dried leaves and tree trunks and increasing temperatures can sometimes result in fires.
- An advanced heatwave with the early onset of summer further deteriorated the condition in Similipal's case.

Anthropogenic Factors

- Dropping a burning matchstick, torchwood or a bidi/cigarette.
- A spark can also be produced when dry pine needles or leaves fall on an electric pole. When temporarily built hearths are left behind with fire, they can lead to massive forest fires. Sometimes the fire spreads to the adjoining forest when people burn their fields to clear them of stubble, dry grass or undergrowth.

Himalayan Serow

- In News: The Himalayan serow has been spotted for the first time in Assam.
- About the species: It has been described as resembling a cross between a goat, a donkey, a cow, and a pig.
- It's a medium-sized mammal with a large head, thick neck, short limbs, long, mule-like ears, and a coat of dark hair.
- There are several species of serows, and all of them are found in Asia.

World Wildlife Day

- In News: World Wildlife Day 2021 is being celebrated on 3rd March with the theme 'Forests and Livelihoods: Sustaining People and Planet'.

Background

- The day was chosen as World Wildlife Day by the UN General Assembly (UNGA) on 20 December 2013 at its 68th session.
- The aim was to celebrate and raise awareness about animals and plants. The reason this date was selected for the occasion was that the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was signed on 3 March 1973.



MARINE SPATIAL PLANNING

In News

- Recently, India and Norway have agreed to jointly work in the area of Marine Spatial Planning (MSP) in the oceanic space for the next five years.
- This is a part of the Indo-Norway Integrated Ocean Initiative under the Memorandum of Understanding (MoU) signed between the two countries in 2019.

About Marine Spatial Planning

- It is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas.
- It aims to achieve ecological, economic, and social objectives.
- **Elements:** Planning along with additional elements of implementation, enforcement, monitoring, evaluation, research, public participation, and financing, all of which must be present to carry out effective management over time.
- **Outcomes:** The process should result in a spatial vision and a comprehensive management plan for a marine area to achieve that vision.