



P.L.RAJ IAS & IPS ACADEMY

Building Bureaucrats Since 2006

DAILY UPSC PRILIMS MCQ 21.06.2026

1. With reference to Biochar, consider the following statements:

- I. Biochar is produced through the thermal decomposition of biomass under low-oxygen conditions.
- II. Biochar decomposes rapidly in soil, thereby releasing carbon dioxide within a short period.
- III. Biochar can contribute to carbon sequestration and may be integrated with carbon credit mechanisms.

How many of the above statements are correct?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

Answer: (b)

Explanation

Statements I and III are correct, while Statement II is incorrect.

Biochar is a carbon-rich porous material produced by the **pyrolysis of biomass** under oxygen-limited conditions. Unlike ordinary organic matter, biochar is highly stable and decomposes very slowly, allowing carbon to remain locked in the soil for decades or even centuries. This makes it a **carbon-negative technology** capable of mitigating climate change. Biochar also improves soil organic carbon, nutrient retention, microbial activity, and water-holding capacity. Owing to its carbon sequestration potential, biochar projects can participate in **carbon credit markets**, where one tonne of biochar may generate approximately 2–2.8 tonnes of CO₂-equivalent credits.

2. Which one of the following best explains why Biochar is often described as a "carbon-negative" technology?

- (a) It absorbs atmospheric oxygen during agricultural operations.
- (b) It permanently converts atmospheric nitrogen into organic carbon.
- (c) It stores carbon derived from biomass in a stable form for prolonged periods while reducing greenhouse gas emissions.**
- (d) It completely replaces fossil fuels in agricultural activities.

Answer: (c)

Explanation

Biochar is regarded as a **carbon-negative technology** because biomass absorbs atmospheric carbon dioxide during plant growth. When this biomass undergoes **pyrolysis**, a substantial portion of the carbon becomes locked in a stable charcoal-like structure instead of returning immediately to

the atmosphere through decomposition or open burning. When incorporated into soil, this carbon remains stored for long durations while simultaneously improving soil fertility, enhancing crop productivity, reducing dependence on chemical inputs and lowering emissions associated with stubble burning.

3. With reference to *Solanum pandeyi*, recently discovered in India, consider the following statements:

- I. It was discovered in the evergreen forests of Middle Andaman.
- II. It belongs to the genus *Solanum*, which also includes cultivated brinjal.
- III. It was discovered by the Zoological Survey of India.

How many of the above statements are correct?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

Answer: (b)

Explanation

Statements I and II are correct, whereas Statement III is incorrect.

Solanum pandeyi is a newly identified wild brinjal species discovered in the evergreen forests of Middle Andaman. It belongs to the **genus *Solanum***, which includes economically important crops such as brinjal, tomato and potato. The discovery was made by scientists of the **Botanical Survey of India (BSI)**, the country's premier institution for plant taxonomy and biodiversity documentation functioning under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**. The species is also traditionally used by the Great Andamanese community for food and medicinal purposes.

4. Which one of the following is correctly matched?

- (a) Botanical Survey of India — Survey and documentation of India's plant biodiversity**
- (b) Zoological Survey of India — Identification of mineral resources
- (c) Forest Survey of India — Classification of agricultural crops
- (d) National Biodiversity Authority — Conducting Population Census

Answer: (a)

Explanation

The **Botanical Survey of India (BSI)** is the nodal scientific institution responsible for the **survey, exploration, identification, documentation and conservation assessment of India's plant diversity**. Established in 1890, it functions under the **Ministry of Environment, Forest and Climate Change**. The recent discovery of ***Solanum pandeyi*** highlights BSI's role in documenting India's rich floral diversity. The Zoological Survey of India deals with animal diversity, Forest Survey of India

monitors forest cover, while the National Biodiversity Authority regulates access to biological resources under the Biological Diversity Act.

5. With reference to Ammonia (NH_3), consider the following statements:

- I. Ammonia is a colourless gas with a characteristic pungent odour.
- II. It is extensively used in the manufacture of nitrogenous fertilizers and as an industrial refrigerant.
- III. Exposure to high concentrations of ammonia primarily affects only the digestive system.

How many of the above statements are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Answer: (b)

Explanation

Statements I and II are correct, while Statement III is incorrect.

Ammonia (NH_3) is a colourless, alkaline gas with a strong pungent smell, consisting of one nitrogen atom and three hydrogen atoms. It is widely used in the manufacture of **urea, ammonium nitrate, diammonium phosphate (DAP)** and other nitrogenous fertilizers. Owing to its excellent thermodynamic properties, ammonia is also used as an industrial refrigerant in cold storage facilities and food-processing industries. Exposure to high concentrations can cause eye **irritation, skin burns, respiratory distress, pulmonary oedema** and, in severe cases, may be fatal.

6. Which one of the following properties makes ammonia suitable for use as an industrial refrigerant?

(a) High molecular weight and chemical inertness

(b) High latent heat of vaporisation and excellent thermodynamic efficiency

(c) Extremely low solubility in water

(d) Absence of toxicity and corrosiveness

Answer: (b)

Explanation

Ammonia (NH_3) is one of the most efficient industrial refrigerants because of its **high latent heat of vaporisation and excellent thermodynamic properties**. These characteristics enable efficient heat absorption with relatively small quantities of refrigerant, making it widely used in cold storage facilities, food processing plants, dairy industries, and ice manufacturing units.

However, ammonia is also:

- *Highly toxic* at elevated concentrations.
- *Corrosive to certain metals*, particularly copper and its alloys.

- *Highly soluble in water*, forming ammonium hydroxide, which can cause severe chemical burns.
- Classified as a hazardous industrial chemical, requiring strict safety protocols under industrial safety regulations.

7. With reference to the Haj pilgrimage from India, consider the following statements:

- The Haj Committee of India functions under the Ministry of Minority Affairs.
- The Haj Committee Act, 2002 provides the statutory framework governing Haj management in India.
- Haj pilgrimage can be undertaken only through the Haj Committee of India.

How many of the above statements are correct?

- (a) Only one
(b) Only two
 (c) All three
 (d) None

Answer: (b)

Explanation

Statements I and II are correct, whereas Statement III is incorrect.

The **Haj Committee of India (HCOI)** is a statutory body functioning under the **Ministry of Minority Affairs** and derives its authority from the **Haj Committee Act, 2002**.

Indian pilgrims may undertake Haj through:

- **Haj Committee of India (Government quota), or**
- **Private Haj Group Organisers (HGOs) authorised by the Government.**

Therefore, pilgrimage is not restricted exclusively to the Haj Committee of India.

The Haj Policy aims to ensure:

- Transparent allocation of pilgrimage quotas,
- Digital processing of applications,
- Pilgrim welfare,
- Compliance with regulations issued by the Kingdom of Saudi Arabia.

8. Consider the following pairs:

Institution	Primary Function
I. Haj Committee of India	Management of Haj pilgrimage for Indian pilgrims

Institution	Primary Function
II. National Commission for Minorities	Regulation of foreign pilgrimage quotas
III. Ministry of Minority Affairs	Policy formulation relating to Haj administration

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

Answer: (b)

Explanation

Pairs I and III are correctly matched.

The **Haj Committee of India** is responsible for facilitating and coordinating Haj arrangements for pilgrims travelling under the Government quota.

The **Ministry of Minority Affairs** frames policies relating to Haj administration and supervises implementation.

However, the **National Commission for Minorities** is a constitutional/statutory rights body concerned with safeguarding minority rights and does not regulate Haj quotas or pilgrimage administration.

9. With reference to Marshal of the Air Force Arjan Singh, consider the following statements:

- I. He was the first officer of the Indian Air Force to be promoted to the Five-Star rank of Marshal of the Air Force.
- II. He led the Indian Air Force during the 1965 India–Pakistan War.
- III. Marshal of the Air Force is an active service rank in the Indian Air Force.

How many of the above statements are correct?

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

Answer: (b)

Explanation

Statements I and II are correct, whereas Statement III is incorrect.

Marshal of the Air Force Arjan Singh remains the only officer to have been conferred the Five-Star honorary rank of Marshal of the Air Force, equivalent to Field Marshal in the Army and Admiral of the Fleet in the Navy.

As Chief of the Air Staff, he successfully commanded the Indian Air Force during **the 1965 Indo-Pak War**, significantly enhancing India's air power.

The rank of **Marshal of the Air Force** is an honorary ceremonial rank, not an active operational rank used in the normal chain of command.

10. Which one of the following pairs is correctly matched?

- (a) Marshal of the Air Force Arjan Singh — First recipient of the Param Vir Chakra
- (b) Marshal of the Air Force Arjan Singh — Only officer to hold the Five-Star rank in the Indian Air Force**
- (c) Air Chief Marshal Arjan Singh — Founder of the Indian Air Force
- (d) Marshal of the Air Force Arjan Singh — Commander of the Indian Navy during the 1971 War

Answer: (b)

Explanation

Marshal of the Air Force Arjan Singh occupies a unique place in Indian military history as the only officer to have received the Five-Star rank of Marshal of the Air Force.

Additional value-added facts:

- **Commissioned into the Royal Indian Air Force:** 1939
- **Chief of the Air Staff:** 1964–1969
- **Led the IAF during the 1965 Indo-Pak War**
- **Awarded Padma Vibhushan**
- Conferred the Five-Star rank in 2002
- The highest active rank in the Indian Air Force remains Air Chief Marshal, while Marshal of the Air Force is a ceremonial lifetime distinction conferred only in exceptional circumstances.