

UPSC Prelims- 2019

Environment and Biodiversity



Questions Asked



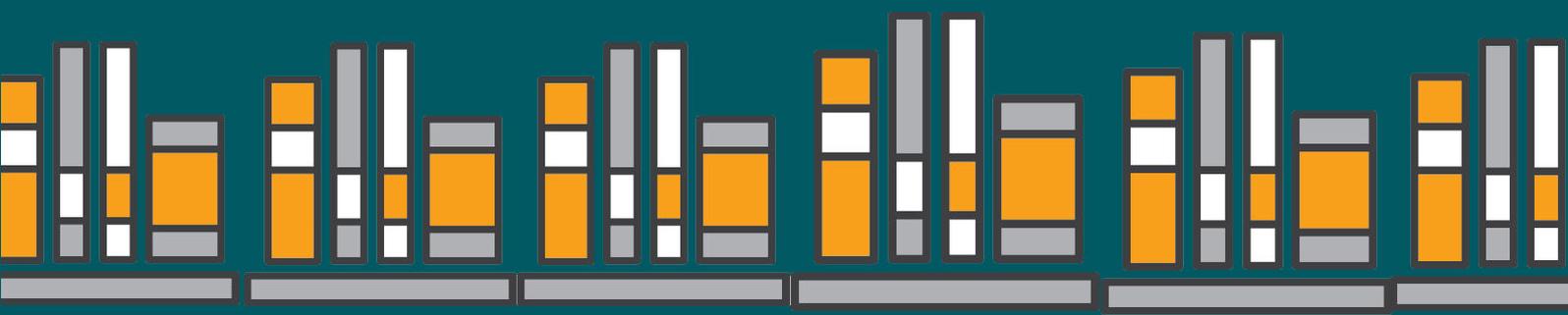
Detailed Solutions



Right Approach



PrepMate Environment
and Biodiversity
Book Performance



1. In India, 'extended producer responsibility' was introduced as an important feature in which of the following?

- (a) The Bio-medical Waste (Management and Handling) Rules, 1998
- (b) The Recycled plastic (Manufacturing and Usage) Rules, 1999
- (c) The e-Waste (Management and Handling) Rules, 2011
- (d) The Food Safety and Standard Regulations, 2011

Sol. 1 (c) The e-Waste (Management and Handling) Rules, 2011

Source: PrepMate Environment & Biodiversity, Chapter 5, Page 90



Extended Producer Responsibility

The Ministry of Environment, Forest and Climate Change (MoEFCC) has notified **e-waste** management rules, 2016. These rules for the first time prescribed extended producers' responsibility (EPR), applicable on producers of electronic products.

According to the rules, the producers shall collect and channelize e-waste to the extent of 30% of the quantity of waste generated during first two year of implementation of rules, followed by 40% during third and fourth years, 50% during fifth and sixth years and 70% during seventh year onwards.

2. Consider the following statements:

The Environment Protection Act, 1986 empowers the Government of India to

- 1. state the requirement of public participation in the process of environmental protection, and the procedure and manner in which it is sought
- 2. lay down the standards for emission or discharge of environmental pollutants from various sources

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

Sol. 2 (b) 2 only

Topic: Environment

Statement 2 is correct. The Environment Protection Act, 1986 empowers the Government of India to lay down the standards for emission or discharge of environmental pollutants from various sources.

Statement 1 is incorrect. There is no provision in the act which empowers the Government of India to state the requirement of public participation in the process of environmental protection, and the procedure and manner in which it is sought.

3. Consider the following statements:

1. Asiatic lion is naturally found in India only.
2. Double-humped camel is naturally found in India only.
3. One-horned rhinoceros is naturally found in India only.

Which of the statements given above is / are correct?

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

Sol. 3 (a) 1 only

Source: PrepMate Environment & Biodiversity book, Chapter 14, Page 233 and PrepMate Current affairs

Statement 1 is correct.

Gujarat, where there is a concern over disappearing lions (Relevant for GS Mains Paper III and GS Prelims)

April 9, 2018

By Admin

Gir in Gujarat, the **last abode of Asiatic lions** in Asia, has lost an alarmingly large number of the endangered wild cats in two years. On March 28, a report of the Comptroller and Auditor-General of India (CAG) was tabled in the Gujarat Assembly. It listed huge "flaws" in lion conservation efforts in the State.

What happened?

Forest Minister Ganpat Vasava told the Assembly that 184 lions had died in two years: 104 in 2016 and 80 in 2017. As many as 32 died of "unnatural causes" like falling into wells or getting run over by trains in the same period at the Gir Wildlife Sanctuary. The dead included cubs too. The high number of deaths prompted the High Court to take suo motu cognizance of the issue. The court took the authorities to task this March, directing them to get back on measures being taken by the Environment and Forest Department to ensure adequate protection

Add us on SNS.

Statement 3 is incorrect. One-horned rhinoceros is not found only in India.

4 INDIAN RHINO VISION 2020

Launched in 2005, Indian Rhino Vision 2020 is an ambitious effort to attain a wild population of at least 3,000 one-horned rhinos, spread over seven protected areas in the Indian state of Assam by the year 2020.

Kaziranga National Park in Assam, India, holds about **70% of the world population** of rhinos. This is worrisome for two reasons: The park may have reached its carrying capacity and might not be able to support any more rhinos; and the entire species' population can decimate because of a disease outbreak, natural disaster, or any other acute threat.

4. Which of the following are in Agasthyamala Biosphere Reserve?

- (a) Neyyar, Peppara and Shendurney Wildlife Sanctuaries; and Kalakad Mundanthurai Tiger Reserve
- (b) Mudumalai, Sathyamangalam and Wayanad Wildlife Sanctuaries; and Silent Valley National Park
- (c) Kaundinya, Gundla Brahme-swaram and Papikonda Wildlife Sanctuaries; and Mukurthi National Park
- (d) Kawal and Sri Venkateswara Wildlife Sanctuaries; and Nagarjunasagar-Srisailem Tiger Reserve

Sol. 4 (a) Neyyar, Peppara and Shendurney Wildlife Sanctuaries; and Kalakad Mundanthurai Tiger Reserve

Source: PrepMate Environment & Biodiversity Book, Chapter 13, Page 212

	Name	Location	State	Type
2005	Achanakmar-Amarkantak Biosphere Reserve	Part of Anupur, Dindori and Bilaspur districts	Madhya Pradesh, Chhattisgarh	Maikala Hills
2008	Great Rann of Kutch	Part of Kutch, Rajkot, Surendranagar and Patan districts	Gujarat	Desert
2009	Cold Desert	Pin Valley National Park and surroundings, Chandratol and Sarchu & Kibber Wildlife Sanctuary	Himachal Pradesh	Western Himalayas
2000	Kanchenjunga	Parts of Kanchenjunga	Sikkim	East Himalayas
2001	Agasthyamala Biosphere Reserve	Neyyar, Peppara and Shendurung Wildlife Sanctuary and their adjoining areas	Kerala, Tamil Nadu	Western Ghats
1989	Great Nicobar Biosphere Reserve	Southern most islands of Andaman and Nicobar Islands	Andaman and Nicobar Islands	Islands
1997	Dibru-Saikhowa	Part of Dibrugarh and Tinsukia districts	Assam	East Himalayas
2010	Seshachalam Hills	Seshachalam Hill Ranges covering parts of Chittoor and Kadapa districts	Andhra Pradesh	Eastern Ghats
2011	Panna	Part of Panna District and Chhatarpur district	Madhya Pradesh	Catchment area of the Ken river

This question can also be attempted using elimination technique. Candidate can compare the location of given national parks, wildlife sanctuaries and tiger reserves with that of the Agasthyamala biosphere reserve and eliminate wrong answer choices. It is important to note a candidate can learn location of only important national parks, wildlife sanctuaries and tiger reserves. Learning location of all the national parks, wildlife sanctuaries and tiger reserves is cumbersome and is not recommended.

5. Consider the following statements:

1. Some species of turtles are herbivores.
2. Some species of fish are herbivores.
3. Some species of marine mammals are herbivores.
4. Some species of snakes are viviparous.

Which of the statements given above are correct?

- (a) 1 and 3 only

(b) 2, 3 and 4 only

(c) 2 and 4 only

(d) 1, 2, 3 and 4

Sol. 5 (d) 1, 2, 3 and 4

Source of 3rd statement: PrepMate Environment & Biodiversity book, Chapter 12, Page 200

Statement 3 is correct. Dugong is a marine mammal. It survives on sea grass. Thus, we can conclude that some species of marine mammals are herbivores.

2 SEA GRASS

Sea grasses are specialised marine flowering plants that resemble actual grass. They grow in shallow, coastal waters with muddy bottom and require comparatively calm areas.

Sea grasses are the only group of higher plants (flowering plants) adapted to live in sea water. Major sea grass meadows in India are in the south-east coast of Tamil Nadu, coast of Lakshadweep Islands and a few around the Andaman and Nicobar Islands.

Functions of Sea Grass

1. Sea grass reduces the energy of ocean waves. Thus, it provides calm habitat to many species.
2. It filters suspended sediments from water.
3. It stabilises bottom sediments to control coastal sand erosion.
4. It acts as a habitat for many marine species.
5. It helps in the storage of nutrients from ocean water.

Due to its importance, the protection of sea grass has been accorded high priority. Sea grass is present from the inter-tidal zone to nearly eight metre depth of the Continental Shelf.

Dugong (sea cow) is dependent on sea grass for its existence. Fast destruction of sea grass is leading to Dugong's extinction.

Statement 2 is correct. It is a common fact that some species of fish are herbivores.

Statement 1 is correct. There are some turtle species such as green turtles which are herbivores.

We can answer the question by knowing the validity of just these three statements.

6. Consider the following pairs:

Wildlife: Naturally found in

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

Sol. 6 (c) 1 and 3 only

Source: PrepMate Environment & Biodiversity Book, Chapter 14, Page 235

We can solve this question by knowing the validity of statement 2 only.

Statement 2 is incorrect. Freshwater dolphins are present in Ganga and its tributaries, not Chambal.

9 GANGES DOLPHIN

It is a freshwater dolphin. Freshwater dolphins are rare, while saltwater ones are in large numbers. It is found in **Ganga and Brahmaputra**. Its present population is nearly 2000. It is the national aquatic animal of India. It is also known as dolphin Susu, or Shushuk. It is under threat due to the following factors:

- River water pollution.
- Siltation in river.
- Entanglement in fishing nets.
- Reduction in river flow due to construction of dams.
- Poaching for its oil.

Once we rule out statement 2, answer is option (c).

7. Which one of the following National Parks lies completely in the temperate alpine zone?

(a) Manas National Park

(b) Namdapha National Park

(c) Neora Valley National Park

(d) Valley of Flowers National Park

Sol. 7 (d) Valley of Flowers National Park

Source: PrepMate Geography, Chapter 25, Page 314

The question stem asks about national park which lies completely in the temperate alpine zone. Thus, the national park should be completely based in higher Himalayas.



8. Consider the following statements:

1. Agricultural soils release nitrogen oxides into environment.
2. Cattle release ammonia into environment.
3. Poultry industry releases reactive nitrogen compounds into environment.

Which of the statements given above is/are correct?

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

Sol. 8 (b) 2 and 3

Source: PrepMate Environment & Biodiversity, Chapter 2, Page 24 and Current Affairs

Statement 1 is incorrect. Agricultural soils release free atmospheric nitrogen (and not nitrogen oxides) into environment.

During **excretion** and on the death of an organism, the nitrogen is returned to soil in the form of **ammonia**.

Denitrifying bacteria such as *Pseudomonas* **convert the nitrates in the soil to free atmospheric nitrogen**. *Pseudomonas* can reduce the amount of fixed nitrogen by up to 50 percent, depleting the soil fertility and reducing the agricultural productivity. Without denitrification, the Earth's supply of nitrogen would eventually accumulate in the oceans, since nitrates are highly soluble and are continuously leached from the soil into the nearby bodies of water.

Statement 2 is correct. Ammonia is released into the environment on excretion and death of cattle.

Statement 3 is correct. Poultry industry releases reactive nitrogen compounds into environment.

It is interesting to note that the Statements of this question were directly picked from an article published in The Hindu.

Nitrogen emissions going up (Relevant for GS Prelims & Mains Paper III; Environment)

June 6, 2018

By [Shubham](#)

Nitrogen particles make up the largest fraction of PM2.5, the class of pollutants closely linked to cardiovascular and respiratory illness, says the first-ever quantitative assessment of nitrogen pollution in India.

While the burning of crop residue is said to be a key contributor to winter smog in many parts of North India, it contributes over 240 million kg of nitrogen oxides (NOx: a generic term for the nitrogen oxides that are most relevant for air pollution, namely nitric oxide and nitrogen dioxide) and about 7 million kg of nitrous oxide (N₂O) per year.

Sources of nitrogen emissions

Though agriculture remains the largest contributor to nitrogen emissions, the non-agricultural emissions of nitrogen oxides and nitrous oxide are growing rapidly, with sewage and fossil-fuel burning — for power, transport and industry — leading the trend.

Indian NOx emissions grew at 52% from 1991 to 2001 and 69% from 2001 to 2011.

Agricultural soils contributed to over 70% of N₂O emissions from India in 2010, followed by waste water (12%) and residential and commercial activities (6%). Since 2002, N₂O has replaced methane as the second largest Greenhouse Gas (GHG) from Indian agriculture.

Chemical fertilizers (over 82% of it is urea) account for over 77% of all agricultural N₂O emissions in India, while manure, compost and so on make up the rest. Most of the fertilizers consumed (over 70%) go into the production of cereals, especially rice and wheat, which accounts for the bulk of N₂O emissions from India.

Cattle emissions

Cattle account for 80% of the ammonia production, though their annual growth rate is 1%, due to a stable population.

India is globally the biggest source of ammonia emission, nearly double that of NO_x emissions.

But at the current rate of growth, NO_x emissions will exceed ammonia emissions and touch 8.8 tonnes by 2055, the report says.

The poultry industry, on the other hand, with an annual growth rate of 6%, recorded an excretion of reactive nitrogen compounds of 0.415 tonnes in 2016.

That is anticipated to increase to 1.089 tonnes by 2030. The authors suggest that nutrient recovery/recycling from waste water for agriculture could cut down N₂O emissions from sewage and waste water by up to 40%.

9. Consider the following States:

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

With reference to the States mentioned above, in terms of percentage of forest cover to the total area of State, which one of the following is the correct ascending order?

- (a) 2-3-1-4
- (b) 2-3-4-1
- (c) 3-2-4-1
- (d) 3-2-1-4

Sol. 9 (c) 3-2-4-1

Source: PrepMate Environment & Biodiversity, Chapter 3, Page 38

This question has been asked from State of forest report, 2017. The report is included in PrepMate Environment & Biodiversity Book.

In the given states, only Chattisgarh falls in category of 33% to 75% area under forest cover. Thus, it has the maximum percentage of forest cover to the total area.

States/UTs above 33% limit: Fifteen states/UT's have above 33% of the geographical area under forest cover. Among these, seven States/UTs namely Mizoram, Lakshadweep, Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Meghalaya and Manipur have more than 75% of the geographical area under forest cover, while 8 states namely Tripura, Goa, Sikkim, Kerala, Uttarakhand, Dadra & Nagar Haveli, Chhattisgarh and Assam have forest cover between 33% to 75%.

In the given states, Maharashtra has least percentage of forest cover to the total area. The eastern part of Maharashtra has lower rainfall and thus it is in nature of savanna. The western part of Maharashtra is highly urbanized.

10. Consider the following statements:

1. Under Ramsar Convention, it is mandatory on the part of the Government of India to protect and conserve all the wetlands in the territory of India.
2. The Wetlands (Conservation and Management) Rules, 2010 were framed by the Government of India based on the recommendations of Ramsar Convention.
3. The Wetlands (Conservation and Management) Rules, 2010 also encompass the drainage area or catchment regions of the wetlands as determined by the authority.

Which of the statements given above is / are correct?

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

Sol. 10 (c) 3 only

Source of 1st and 2nd Statement: PrepMate Environment & Biodiversity Book, Chapter 22, Page 319

Statement 1 is incorrect.

Ramsar Convention

Ramsar convention is an international convention on conservation of wetlands. Ramsar is a place in Iran, where this convention came into force. The convention was adopted in the year 1971.

The objective of the convention is conservation and sustainable utilisation of wetlands. The convention recognises ecological, economic, cultural, scientific and aesthetic value of the wetlands.

The member nations of the convention meet every three years. There is a secretariat under the convention, headquarters of which is located at Gland, Switzerland. The headquarters is shared with IUCN.

More than 2200 sites, including some sites in India, have been recognised under Ramsar convention. The convention entitles financial assistance for the conservation of wetlands and requires the member nations to share knowledge among themselves for the conservation of wetlands.

Statement 2 is also incorrect. The Wetlands (Conservation and Management) Rules are framed in 2010 and Ramsar Convention came into existence in the year 1971. Moreover,

the agenda of the convention does not mandate nations to frame rules for protection of wetlands.

Once we rule out these statements, clearly option (c) is the right answer.

11. Which of the following statements are correct about the deposits of 'methane hydrate'?

1. Global warming might trigger the release of methane gas from these deposits.
2. Large deposits of 'methane hydrate' are found in Arctic Tundra and under the seafloor.
3. Methane in atmosphere oxidizes to carbon dioxide after a decade or two.

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

Sol. 11 (d) 1, 2 and 3

Source of 1st and 2nd Statement: PrepMate Environment & Biodiversity Book, Chapter 18, Page 267

Statements 1 and 2 are correct.

7. Release of methane in the Arctic: Methane remains stored in the Arctic in the form of Methane clathrates and frozen organic matter. If ice melts, then methane is released into the atmosphere.

Methyl clathrates are molecules of methane that are frozen into ice crystals. They can form deep in the Earth or underwater. They form under special conditions of high pressure and low temperature. If there are changes in temperature or pressure, the ice crystals break apart, and the methane escapes. It is not known exactly how much methane is trapped in methyl clathrates, or how much is in danger of escaping.

Frozen organic matter in the Arctic also contains methane. The organic matter is made of dead plants and animals that have been frozen deep in permafrost for thousands of years. If the organic matter defreezes, it will decay which will release carbon dioxide and methane into the atmosphere.

Statement 3 is also correct. When methane is anthropogenically emitted, methane is oxidized in the atmosphere a decade or two later. Once oxidized, the carbon in each methane molecule is converted to CO₂, which then stays in the atmosphere as CO₂ for another century or more.