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Daily Mcqs- Jan 21st 2022

1. Kaziranga national park is located in which of the following states?

- a) Assam
- b) Arunachal pradesh
- c) Nagaland
- d) Tripura

2. With reference to the India Meteorological Department (IMD), consider the following statements.

- 1. It is the National Meteorological Service of the country and the principal government agency in all matters relating to meteorology, seismology and allied subjects.
- 2. MAUSAM mobile app is an initiative of the IMD to provide seamless and user-friendly access to different weather products.

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

3. Consider the following statements about Swamp Deer or Barasingha

- 1) It is found now only in India.
- 2) Dudhwa National Park has the largest number of barasingha in the country.

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

4. Consider the following statements about

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India State of Forest Report(ISFR)

- 1) The ISFR is a biennial publication of the Forest Survey of India under the Ministry of Environment, Forests and Climate Change which has been mandated to assess the forest and tree resources of the country.
- 2) In ISFR 2021, the FSI has for the first time assessed forest cover in tiger reserves, tiger corridors and the Gir forest which houses the Asiatic lion.

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

5. As per the India State of Forest Report (ISFR),2021 which of the following states has the highest forest cover with respect to percentage of its geographical area?

- a) Mizoram
- b) Goa
- c) Sikkim
- d) Arunachal Pradesh

1)Answer: A

Explanation:



What's the news?

- According to a survey, the population of the vulnerable eastern swamp deer, extinct elsewhere in South Asia, has **dipped in the Kaziranga National Park and Tiger Reserve.**

About Kaziranga National Park

- Formed in 1908 on the recommendation of Mary Curzon (wife of Lord Curzon), the Kaziranga national park is located in **Assam.**
- In 1985, the park was declared as a **World Heritage Site by UNESCO.**
- Kaziranga was declared as **Tiger Reserve** in 2006 and it is also recognised as an **Important Bird Area** by Birdlife International for conservation of avifaunal organisms.
- In the park one can see **four types of vegetation** like alluvial inundated grasslands, alluvial savanna woodlands, tropical moist mixed deciduous forests, and tropical semi-evergreen forests.
- The park is famous for its **One-horned Rhinoceros**; about 2200 rhinoceros exist in this park, which is **half of the world's one-horned rhino population.**
- The park also harbors significant populations of other threatened species including tigers, elephants, wild water buffalo and bears as well as aquatic species including the Ganges River dolphin.
- **River Brahmaputra** flows adjacent to the park. River fluctuations by the Brahmaputra system result in spectacular examples of riverine and fluvial processes.

2) Answer: C

Explanation:

- **Statement 1 is correct:** The India Meteorological Department (IMD) was established in **1875**. It is the National Meteorological Service of the country and the principal government agency in all matters relating to meteorology, seismology and allied subjects.
- It is an agency of the **Ministry of Earth Sciences**.
- IMD is headquartered in **Delhi** and operates hundreds of observation stations across India and Antarctica. Regional offices are at Mumbai, Kolkata, Nagpur and Pune.
- IMD is also **one of the six Regional Specialised Meteorological Centers** of the World Meteorological Organization.

Main Functions of IMD

- To **take meteorological observations and to provide current and forecast meteorological information** for optimum operation of weather-sensitive activities like agriculture, irrigation, shipping, aviation, offshore oil explorations, etc.
- To **warn against severe weather phenomena** like tropical cyclones, norwesters, dust storms, heavy rains and snow, cold and heat waves, etc., which cause destruction of life and property.
- To **provide meteorological statistics** required for agriculture, water resource management, industries, oil exploration and other nation-building activities.
- To **conduct and promote research** in meteorology and allied disciplines.
- To **detect and locate earthquakes and to evaluate seismicity** in different parts of the country for development projects.

Various mobile apps launched by IMD

Damini for lightning forecast

- Damini Lightning Alert app, developed by the **Indian Institute of Tropical Meteorology (IITM)**, is for giving warning to the user about the lightning on the basis of user location.

MAUSAM for weather forecast

- **Statement 2 is correct:** The MAUSAM mobile App, designed and developed jointly by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), IITM and IMD, has the following 5 services:
 - **Current Weather:** Current temperature, humidity, wind speed and direction for 200 cities updated 8 times a day. Information on Sunrise/ sunset and moonrise/ moonset are also given.
 - **Nowcast:** Three hourly warnings of localized weather phenomena and their intensity issued for about 800 stations, and districts of India by State Meteorological Centres of IMD. In case of severe weather, its impact also is included in the warning.
 - **City Forecast:** Past 24 hours and 7 day forecast of weather conditions around 450 cities in India.

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- **Warnings:** Alerts issued twice a day for all districts for the next five days in colour code (Red, Orange and Yellow) to warn citizens of approaching dangerous weather. The colour code Red is the most severe category urging authorities to take action, Orange code prompts authorities and public to be alert and Yellow code prompts authorities and public to keep them updated.
- **Radar products:** Latest Station wise radar products updated every 10 minutes.

Meghdoot for agrometeorological advisories

- The Meghdoot app is a joint initiative of the IMD and IITM and the Indian Council of Agricultural Research (ICAR).
- It provides forecasts relating to temperature, rainfall, humidity, and wind speed and direction, which play critical roles in agricultural operations and advisories to the farmers on how to take care of their crops and livestock. The information would be updated twice a week on Tuesdays and Fridays.

3) Answer: B

Explanation



- Swamp deer is the **state animal of Uttar Pradesh and Madhya Pradesh.**
- The swamp deer differs from all other Indian deer species in that the antlers carry more than three times (spikes). Because of this distinctive character it is designated "**bārah-singgā**", meaning "twelve-horned".
- **Statement 1 is incorrect:** Swamp deer are already extinct in Pakistan and Bangladesh. It is now found only in **South- Western Nepal and Central and North-Eastern India.**
- There are **three subspecies** of swamp deer found in the Indian Subcontinent.
 - Western swamp deer (*Rucervus duvaucelii*) found in Nepal,
 - Southern swamp deer (*Rucervus duvaucelii branderi*) found in **Central and North India** and
 - Eastern swamp deer (*Rucervus duvaucelii ranjitsinhi*) found in the **Kaziranga and Dudhwa National Parks.**

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- **Statement 2 is correct:** With their numbers estimated at over 3,000, **Dudhwa National Park** has the largest number of barasingha in the country. They are also found in significant numbers in **Kanha National Park** in Madhya Pradesh.
- **Protection Status:** IUCN Red List: **Vulnerable**; CITES: **Appendix I**; Wildlife Protection Act (1972): **Schedule I**.

Conservation Issues

- The swamp deer populations outside protected areas and seasonally migrating populations are threatened by poaching for antlers and meat, which are sold in local markets.
- Swamp deer lost most of its former range because wetlands were converted and used for agriculture so that suitable habitat was reduced to small and isolated fragments.

4) Answer: C

Explanation

About India State of Forest Report(ISFR)

- **Statement 1 is correct:** The ISFR is a **biennial publication of the Forest Survey of India** under the Ministry of Environment, Forests and Climate Change which has been mandated to **assess the forest and tree resources** of the country.
- The first survey was published in 1987, and **ISFR 2021 is the 17th**.
- With data computed through wall-to-wall mapping of India's forest cover through remote sensing techniques, the ISFR is used in planning and formulation of policies in forest management as well as forestry and agroforestry sectors.
- Forest cover is defined as an **area more than one hectare in extent and having tree canopy density of 10% and above**, irrespective of the species and type of land.
- Tree cover includes **land covered by individual trees less than one hectare in extent outside the forests**.
- Green cover is a combination of both.

New features of ISFR 2021

- The ISFR-2021 provides information on **forest cover, tree cover, mangrove cover, growing stock, carbon stock in India's forests, forest fire monitoring, forest cover in tiger reserve areas, above ground estimates of biomass using SAR data & climate change hotspots in Indian forests**.
- **Statement 2 is correct:** In ISFR 2021, the FSI has for the first time **assessed forest cover in tiger reserves, tiger corridors and the Gir forest which houses the Asiatic lion**.
- The forest cover in **tiger corridors has increased by 37.15 sq km (0.32%)** between 2011-2021, but **decreased by 22.6 sq km (0.04%) in tiger reserves**.
- Forest cover has increased in 20 tiger reserves in these 10 years, and decreased in 32.
- Eg: Buxa, Anamalai and Indravati reserves have shown an increase in forest cover while the highest losses have been found in Kawal, Bhadra and the Sundarbans reserves.

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- **Pakke Tiger Reserve in Arunachal Pradesh** has the highest forest cover, at nearly 97%.
- A new initiative of FSI has also been documented where the '**Above Ground Biomass**' has been estimated.

Estimate of Impact of Climate Change

- The report estimates that by 2030, **45-64% of forests in India will experience the effects of climate change and rising temperatures**, and forests in all states (except Assam, Meghalaya, Tripura and Nagaland) will be highly vulnerable climate hot spots.
- **Ladakh** (forest cover 0.1-0.2%) is likely to be the most affected.
- India's forests are already showing **shifting trends of vegetation** types, such as **Sikkim** which has shown a shift in its vegetation pattern for 124 endemic species.
- In 2019-20, 1.2 lakh forest fire hotspots were detected by the SNPP_VIIRS sensor, which increased to 3.4 lakh in 2020-21. The highest numbers of fires were detected in **Odisha, Madhya Pradesh and Chhattisgarh**.

5. Answer: A

Explanation

What's the news?

- According to the **17th India State of Forest Report-2021**, Forest and tree cover in the country has increased by **2,261 square kms** since the last assessment in 2019.

Key Findings

- The Environment Ministry highlighted that the total forest and tree cover was **80.9 million hectares**, which accounted for **24.62%** of the geographical area of the country.
- The report found that there had been a **1,540 sq. km increase in forest cover and 721 sq. km increase in tree cover** since the last report in 2019.
- The report states that **17 States and Union Territories** had more than **33%** of their area under forest cover
- Out of 17 states and UT's, five states/UTs namely Lakshadweep, Mizoram, Andaman & Nicobar Islands, Arunachal Pradesh and Meghalaya have more than 75 percent forest cover while 12 states/UTs namely Manipur, Nagaland, Tripura, Goa, Kerala, Sikkim, Uttarakhand, Chhattisgarh, Dadra & Nagar Haveli and Daman & Diu, Assam, Odisha, have forest cover between 33 percent to 75 percent.

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- Total **mangrove cover** in the country is 4,992 sq km. An increase of **17 sq km in mangrove cover** has been observed as compared to the previous assessment of 2019.
- Top three states showing mangrove cover increase are **Odisha (8 sq km) followed by Maharashtra (4 sq km) and Karnataka (3 sq km).**
- Total **carbon stock** in the country's forest is estimated to be **7,204 million tonnes** and there is an **increase of 79.4 million tonnes** in the carbon stock of the country as compared to the last assessment of 2019. The annual increase in the carbon stock is **39.7 million tonnes.**
- The survey has found that **35.46 % of the forest cover is prone to forest fires.** Out of this, 2.81 % is extremely prone, 7.85% is very highly prone and 11.51 % is highly prone.
- **Bamboo forests** have grown from 13,882 million culms (stems) in 2019 to 53,336 million culms in 2021.

Top States

- The report observed an increase in forest cover in **open forest followed by very dense forest.**
- Top three States showing an increase in forest cover are **Andhra Pradesh (647 sq. km) followed by Telangana (632 sq. km) and Odisha (537 sq. km), Karnataka (155 sq km) and Jharkhand (110 sq km.)**
- **Area-wise Madhya Pradesh had the largest forest cover,** followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra.
- The top five States in terms of forest cover as a percentage of their total geographical area were **Mizoram (84.53%), Arunachal Pradesh (79.33%), Meghalaya (76%), Manipur (74.34%) and Nagaland (73.90%).**

