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INDEX

SN.	TOPIC
1	What is a Solar Storm?
2	Urban Infrastructure Development Fund
3	Exercise CINBAX
4	Varkala cliff
5	Madhav National Park
6	Red-breasted Flycatcher
7	Key Facts about Vadhavan Port
8	What is Anthrax?
9	Key Facts about Uganda
10	What is RS-28 Sarmat?



What is a Solar Storm?



Overview:

Scientists have uncovered evidence of an immense solar storm that struck Earth around 664–663 BCE.

About Solar Storm:

- A solar storm is a **sudden explosion of particles, energy, magnetic fields**, and material blasted **into the solar system by the Sun**.
- **What causes a solar storm?**
 - The **sun's tangled magnetic fields get twisted up as the Sun rotates** — with its equator rotating faster than its poles.
 - Solar storms typically begin when these **twisted magnetic fields** on the Sun **get contorted and stretched** so much that they snap and **reconnect** (in a process called magnetic reconnection), **releasing large amounts of energy**.
- These powerful eruptions **can generate any or all of the following:**
 - a bright flash of light called a **solar flare**.
 - a **radiation storm**, or flurry of solar particles propelled into space at high speeds.
 - an enormous cloud of solar material, called a **coronal mass ejection**, that billows away from the Sun.
- **Effects on Earth:**
 - When directed toward Earth, a solar storm can create a major disturbance in Earth's magnetic field, called a **geomagnetic storm**, that can **produce effects** such as **radio blackouts, power outages, and beautiful auroras**.
 - They do **not cause direct harm to anyone** on Earth, however, as our planet's magnetic field and atmosphere protect us from the worst of these storms.



Q1: What is the Sun's Corona?

The Sun's corona is the outermost part of the Sun's atmosphere. The corona is usually hidden by the bright light of the Sun's surface. That makes it difficult to see without using special instruments. However, the corona can be viewed during a total solar eclipse.



Urban Infrastructure Development Fund

Overview:

Recently, the Minister of State in the Ministry of Housing and Urban Affairs informed in Lok Sabha that the government has set up the Urban Infrastructure Development Fund (UIDF) through use of priority sector lending shortfall for creating urban infrastructure in Tier 2 and Tier 3 cities.

About Urban Infrastructure Development Fund:

- It is established through the use of **priority sector lending shortfall**.
- **Purpose:** The Fund will be used by public agencies to create urban **infrastructure in tier-2 and tier-3 cities**.
- It aims to **supplement the efforts of the State Governments / UTs** for urban infrastructure development works implemented through Public/ State Agencies, Municipal Corporations and Urban Local Bodies, by providing a stable and predictable source of financing for providing basic services like **Sewerage and Solid Waste Management, Water Supply and Sanitation**, construction and improvement of drains/ storm water drains, etc.
- It is managed by the **National Housing Bank**.
- The initial corpus for **this Fund is ₹10,000 crore**.
- It is established on the lines of the **Rural Infrastructure Development Fund (RIDF)**.
- States will be encouraged to leverage resources from the grants of the 15th Finance Commission, as well as existing schemes, to adopt appropriate user charges while accessing the UIDF.
- It currently covers 459 tier-2 cities and 580 tier-3 cities.
- **UIDF Loans:**
 - The interest rate on UIDF loans has been **kept at Bank Rate minus 1.5 per cent**.
 - The loan (Principal) will be repayable in **five equal annual instalments** within seven years from the date of draw, including a moratorium period of two years.
 - Interest will be payable on a quarterly basis.

Q1: What is National Housing Bank (NHB)?

NHB is an All-India Financial Institution (AIFI) established under the National Housing Bank Act, 1987. It is wholly owned by the Government of India.



Exercise CINBAX



Overview:

The 1st edition of Joint Table Top Exercise, CINBAX commenced at Foreign Training Node, Pune.

About Exercise CINBAX:

- It is conducted between the **Indian Army and the Cambodian Army**.
- The Cambodian Army contingent will comprise personnel and the Indian Army contingent is also composed of personnel from **an Infantry Brigade**.
- Exercise CINBAX is a planning exercise aimed at wargame **conduct of joint Counter Terrorism (CT)** operations under Chapter VII of the United Nations Charter.
- The exercise will focus on discussions pertaining to establishment of Joint Training Task Force for Intelligence, Surveillance and Reconnaissance besides planning of operations in the CT environment.
- The exercise will also involve discussion on information operations, **cyber warfare, hybrid warfare**, logistics and **casualty management, HADR operations** etc.
- The exercise will be conducted in three phases.
 - **Phase-I** will focus on preparations and orientation of participants for CT operations during UN peacekeeping missions.
 - **Phase-II** will involve conduct of the Table Top exercises
 - **Phase-III** will involve finalisation of plans and summing up. This will bring out practical aspects of the theme-based training and aims to enable the participants to comprehend the procedures through situation-based discussions and tactical exercises.
- The exercise will also showcase weapons and equipment of Indian origin promoting 'Atmanirbharta' and indigenous capabilities in defence production.

- The inaugural edition of Exercise CINBAX will focus on enhancing trust, camaraderie and achieving desired level of interoperability between troops of both sides.

Q1: What is UN Peacekeeping?

The UN Charter gives the Security Council primary responsibility for the maintenance of international peace and security. In fulfilling this responsibility, the Council can establish a UN peace operation.



Varkala cliff



Overview:

The National Green Tribunal (NGT) has sought a reply from the Geological Survey of India (GSI) and others over the deteriorating condition of Varkala cliff, a designated national geo-heritage site.

About Varkala cliff:

- **Location:** It is a beautiful natural formation located in Varkala, a coastal town in Thiruvananthapuram district of **Kerala**.
- The cliff, including both northern and southern ones, covering a total distance of 3 km exposes the sedimentary rock **formation of the Mio-pliocene Age**.
- Varkala was the only place in the west coast of the country where **sediments in the Mio-Pliocene age** (13 lakh to 2.5 crore years ago) had been exposed.
- The cliff, also known as the North Cliff, stretches along the coast for about one kilometre, towering up to 80 metres above the sea level at some points.
- The **Papanasam Beach**, located at the base of the cliff, is revered for its natural springs and believed to have therapeutic properties.
- It is a crucial **aquifer and natural water harvesting system** for coastal communities, hosted unique biodiversity in its microhabitat, and supports underwater reefs essential for local fishing communities.
- It is the **27th national geological monument** in the country and the second in the State after the Angadipuram Laterite.

Key facts about the Geological Survey of India

- It was **set up in 1851** primarily to find coal deposits for the Railways.
- Over the years, it has grown into a **repository of geo-science information** required in various fields in the country.

- Its main role includes providing objective, impartial and up-to-date geological expertise and geoscientific information of all kinds, with a focus on policy-making decisions, and commercial and socio-economic needs.
- It is **headquartered in Kolkata** and has six regional offices located at Lucknow, Jaipur, Nagpur, Hyderabad, Shillong and Kolkata. Every state has a state unit.
- It is an attached office to the **Ministry of Mines**.

Q1: What is Geology?

The word geology means 'Study of the Earth'. Also known as geoscience or earth science, Geology is the primary Earth science and looks at how the earth formed, its structure and composition, and the types of processes acting on it.





Madhav National Park



Overview:

In a landmark conservation move, the National Tiger Conservation Authority has granted in-principle approval for the designation of Madhav National Park in Shivapuri district as tiger reserve.

About Madhav National Park:

- **Location:** It is located in the state of **Madhya Pradesh**.
- It is situated on the northern fringe of the Central Highlands of India forming a part of the **Upper Vindhyan Hills** intermixed with plateaus, and valley sections.
- **Lakes:** Sakhya Sagar and Madhav Sagar are the two lakes in the southern part of the park, providing the aquatic biodiversity and lifeline for the terrestrial species.
- **Rivers:**
 - The drainage pattern is towards **north and northeast** in the northern area of the park forming the catchment **of Amarnadi**.
 - The park area forms a catchment **of the Sind river** which flows along the **eastern boundary** of the park.
- The **eastern part** of the park has sedimentary **rocks of Vindhyan system**, which are mostly sandstone, shale and limestones.
- **Vegetation:** The forests of the park fall within the category of Northern tropical dry deciduous mixed forests as well as Dry Thorn Forests typical of North – Western Madhya Pradesh.
- **Flora:** Kardhai, Salai, Dhaora and Khair. The understory comprises almost entirely of Ber, Makor and Karonda. .The jamun and mahua are found along the nullahs.
- **Fauna:** Nilgai, Chinkara and Chowsinga and Deer including Chital, Sambar and Barking Deer. Animals like the Leopard, Wolf, Jackal, Fox, Wild Dog etc.



Q1: What is the National Tiger Conservation Authority (NTCA)?

It is a statutory body under the Ministry of Environment, Forest, and Climate Change (MoEFCC) constituted for strengthening tiger conservation. NCTA was created in 2005 following the recommendation of the tiger task force and was given the status of statutory authority under Section 38L of the Wild Life (Protection) Amendment Act, 2006.





Red-breasted Flycatcher



Overview:

Recently, the Red-Breasted Flycatcher bird which migrates from Eastern Europe to escape the harsh winter was found in the Ameenpur Lake in Hyderabad.

About Red-breasted Flycatcher:

- **Scientific name:** Ficedula parva.
- It is a small (11-12 cm) **passerine bird** of the Old World Flycatcher family.
- It can be found occasionally feeding on figs (banyan, peepal) in our urban gardens.
- **Appearance:** Males have a **reddish-orange throat** that extends till the upper breast, whereas the females are overall brown.
- They can be distinguished from other orders by the arrangement of their toes — three pointing forward and one backward, a design that helps them to cling onto branches efficiently.
- It generally **migrates from Eastern Europe** to escape the harsh winter there and enjoy the moderate temperatures with abundance of food in South Asia.
- **Breeding:** The bird breeds from spring to summer, in the **deciduous mixed forests of Eastern Europe and across Central Asia**. In **winter months** (September to March mostly), it migrates to forests, woodlands, orchards, parks, and roadside trees of the **Indian Subcontinent**.
- It can be found in peninsular India during the winter season from October to March.
- **Conservation status**
- **IUCN:** Least Concern

Q1: What is a passerine bird?

A passerine or passeriform is a member of the order Passeriformes, the largest order of birds, containing more than half of all species. They are also known as perching birds or, less accurately, as songbirds.

Key Facts about VadHAVAN Port



Overview:

The VadHAVAN greenfield port, which is under construction near Dahanu in Maharashtra, will double India's container trade from the current levels upon completion.

About VadHAVAN Port:

- The VadHAVAN Port will be developed as an **all-weather Greenfield deep draft major port** in **VadHAVAN**, Palghar District, **Maharashtra**.
- The project will be constructed by **VadHAVAN Port Project Limited (VPPL)**, a special purpose vehicle (SPV) formed by **Jawaharlal Nehru Port Authority (JNPA)** and **Maharashtra Maritime Board (MMB)** with a shareholding of **74% and 26%, respectively**.
- The total project cost, including the land acquisition component, is **Rs.76,220 Crore**.
- Scheduled **to be finished by 2034**, it is projected **to be among the top 10 ports in the world**.
- The port will comprise **nine container terminals**, each 1000 meters long, four multipurpose berths, including the coastal berth, four liquid cargo berths, a Ro-Ro berth, and a Coast Guard berth.
- By 2029, four terminals will be completed and five terminals will be added by 2034.
- The Project will create a cumulative capacity of 298 million metric tons (MMT) per annum, including around 23.2 million TEUs (twenty-foot equivalents) of container handling capacity.
- The capacities created will also **aid EXIM trade flow through IMEEC (India Middle East Europe Economic Corridor) and INSTC (International North South Transportation Corridor)**.

Q1: What is INSTC (International North South Transportation Corridor)?

It is a multimodal transportation agreement formed with a trilateral agreement between India, Iran and Russia at the Euro-Asian Conference on Transport in 2000. It links the Indian Ocean to the Caspian Sea via the Persian Gulf onwards into Russia and Northern Europe. The corridor encompasses sea, road and rail routes.



What is Anthrax?



Overview:

A female elephant died due to suspected anthrax at the Bandipur Tiger Reserve recently.

About Anthrax:

- Anthrax is a **rare but serious** illness caused by a **spore-forming bacterium, Bacillus anthracis**.
 - It's **found naturally in soil** around the world and **commonly affects livestock** and wild animals. The **bacteria produce spores** that **can live in the ground for years**.
- **Transmission:**
 - Livestock and wild animals can become **infected when they breathe in, eat, or drink bacteria spores** in contaminated soil, plants, or water.
 - **People usually get sick** with anthrax if they **come in contact with infected animals** or contaminated animal products.
 - **People can breathe in anthrax spores**, eat food or drink water contaminated with spores, or get spores in a cut or scrape in the skin.
 - Anthrax **isn't contagious** like chickenpox or the flu. You can't catch anthrax from being around someone who's infected.
- The disease manifests in **three forms depending on the route of infection: cutaneous, gastrointestinal, and inhalational**.
- **Infection in humans** most often **involves the skin, gastrointestinal tract, or lungs**.
- **Symptoms:** Depending on the type, symptoms include:
 - **Chest pain** and trouble breathing.
 - Fatigue.
 - **Fever** and profuse sweating.



- Headache or muscle aches.
- **Itchy blisters** or bumps.
- **Skin ulcer (sore) with a black center.**
- Nausea and vomiting, abdominal pain, and bloody diarrhea.
- **Swollen lymph nodes.**
- **Treatment:**
 - **Antibiotic treatment** is effective if given at an early stage.
 - **Vaccination** against anthrax is **only recommended for at-risk individuals**, such as those working in anthrax-endemic areas.

Q1: What is an Ulcer?

An ulcer is an open, painful sore. Peptic ulcers affect the stomach and the upper part of the small intestine, called the duodenum. Ulcers in the stomach are also called stomach ulcers or gastric ulcers. Those in the duodenum are also called duodenal ulcers.



Key Facts about Uganda



Overview:

At least 15 people were killed and over 100 others went missing after heavy rains led to landslides in eastern Uganda in Africa.

About Uganda:

- It is a **landlocked country** in **east-central Africa**.
- Bordering Countries: **Democratic Republic of the Congo (DRC), Kenya, Rwanda, South Sudan, and Tanzania**.
- Equator passes through Uganda.
- **Capital: Kampala**
- Uganda gained **independence from Britain in 1962**.
- Uganda has as many as **65 ethnic groups**. The **official languages** are **English and Swahili**, which facilitate communication among its diverse population.
- Form of Government: **Democracy**, with the President as the head of government.
- **Geography:**
 - It mostly **sits on a central plateau covered by rainforest**. It has high volcanic mountains to the eastern and western borders.
 - The **Virunga and Ruwenzori Mountains** and the **Western Rift Valley** form the western boundaries of the country. The country's **highest peak**, the 5,109 m **Margherita Peak**, is part of the **Ruwenzori Range**.



- **Inselbergs** are a **common geographical feature** across Uganda. Meaning "rock island" in German, these strange yet stunning **rock structures** tower above the savannahs and plateaus throughout the nation.
- **Lake Victoria** (Africa's largest lake and the **world's second-largest freshwater lake**) forms the southern boundary of the country with Tanzania and Kenya.
- Uganda has **eight major rivers**: the **Victoria Nile, Achwa, Okok, Pager, Albert Nile, Kafu, Mpongo, and Katonga**.
- **Wildlife:**
 - Uganda has **11% of the world's birds**.
 - **8% of the world's mammals** can be found here.
 - It has the **highest concentration of primates** than any other country in the world.
 - It has the **world's half population of endangered mountain gorillas**.

Q1: What are Inselbergs?

Inselbergs are isolated hills or mountains that rise abruptly from the surrounding plain, typically formed through the process of erosion. They are often remnants of more extensive mountain ranges, where softer materials have eroded away, leaving behind these harder rock formations.



What is RS-28 Sarmat?



Overview:

Russia is set to deploy the RS-28 Sarmat intercontinental ballistic missile, known as 'Satan 2', to replace older missiles.

About RS-28 Sarmat:

- It is a **liquid-fueled intercontinental ballistic missile** developed by **Russia**.
- It is named after the Sarmatian people of the fourth and fifth century BC. It has also been **referred to in the West as the "Satan II"**.
- **Features:**
 - It is a three-stage, liquid-fueled missile with a **range of 18,000 km**.
 - It has a launch weight of 208.1 metric tons.
 - The missile is 35.3 meters long and 3 meters in diameter.
 - Designated a **"heavy" ICBM**, the Sarmat can **carry a 10-ton payload** and can load a wide variety of warhead options.
 - It can reportedly **load up to 10 heavy nuclear warheads**, 16 smaller ones, a **combination of warheads** and countermeasures, or **hypersonic boost glide vehicles**.
 - It is designed to elude anti-missile defence systems with a short initial boost phase, giving enemy surveillance systems a narrow window to track it down.

Q1: What are ballistic missiles?

A ballistic missile is a rocket-propelled, self-guided strategic-weapons system that follows a ballistic trajectory to deliver a payload from its launch site to a predetermined target. They are powered initially by a rocket or series of rockets in stages, but then follow an unpowered trajectory that arches upwards before descending to reach its intended target. They can carry conventional high explosives as well as chemical, biological, or nuclear munitions.