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Institute of Civil Services

Daily Current Affairs

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Mahila Samman Savings Certificate scheme

News: The Centre has authorised all public sector banks and eligible private sector banks — ICICI Bank, Axis Bank, HDFC Bank Ltd. and IDBI Bank — to implement and operationalise the Mahila Samman Savings Certificate scheme.

What is the Mahila Samman Savings Certificate scheme?

- It is a new small savings scheme launched by the government of India in 2023 to commemorate the Azadi ka Amrit Mahotsav. It is a scheme **exclusively for women and girls**, aimed at empowering them financially and increasing their participation in investments.

Key Features:

- It is a **one-time scheme available for two years**, from April 2023 to March 2025.
- It offers a **fixed interest rate of 7.5% per annum**, compounded quarterly but payable at maturity.
- It has a **minimum deposit amount of Rs. 1,000** and a **maximum deposit amount of Rs. 2 lakh per account holder**.
- It has a maturity period of two years, with a partial withdrawal facility of up to 40% of the balance after one year.
- It is **backed by the government** and **does not have any credit risk**.
- It does not have any tax deduction at source (TDS), but the interest income is taxable as per the income tax slab of the account holder.
- An account under this scheme can be opened by a woman for herself or by the guardian on behalf of a minor girl child.

Is 'Mahila Samman Savings Certificate' worth it?

Principal	₹2,00,000
Plus: Year 1 (Interest 7.5%)	₹15,000
Plus: Year 2 (Interest 7.5%)	₹16,125
Value (end of 2 years)	₹2,31,125

Assumes annual compounding of interest

Source - https://www.etmoney.com/learn/saving-schemes/mahila-samman-saving-certificate/

National Sickle Cell Anaemia Elimination Mission

News: Prime Minister Narendra Modi recently launched a national sickle cell anaemia elimination mission aiming to screen more than seven crore young tribals so that the debilitating disease can be detected early and managed with therapies.

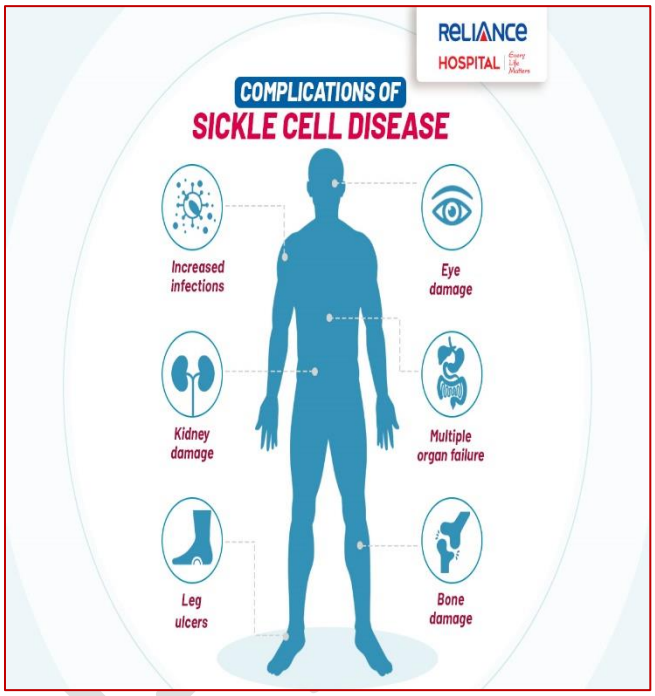
What is Sickle Cell Disease (SCD)?

- Sickle cell disease is a **genetic blood disorder** that affects the **shape** and **function of red blood cells**. It causes them to become **sickle-shaped and sticky**, leading to **blockage of blood vessels** and **reduced oxygen supply** to various organs.
- SCD can cause severe pain, anaemia, infections, organ damage and premature death. SCD is more common in the tribal population of India but also occurs in non-tribals.
- SCD is inherited from both parents.
- It is estimated that about 1.5 crore people in India have SCD or carry the sickle cell gene.

Is there any cure for SCD?

- There is no single cure for sickle cell disease, but treatments are available to help manage the symptoms and complications.

- **Medicines:** There are different types of medicines that can help prevent or reduce the sickling of red blood cells, the frequency of pain crises, the risk of infections and the inflammation of blood vessels.
- **Transfusions** - Blood transfusions can help increase the number of normal red blood cells in the body and improve the oxygen delivery to organs. Transfusions can also lower the risk of stroke, acute chest syndrome and other complications.
- **Bone marrow transplant** – A bone marrow transplant is a procedure that replaces faulty bone marrow (the soft tissue inside the bones that produces blood cells) with healthy bone marrow from a donor. This can cure sickle cell disease in some cases, but it is not widely available and has many challenges such as finding a suitable donor, undergoing chemotherapy or radiation to prepare for the transplant, and dealing with possible rejection or complications after the transplant.



What is the National Sickle Cell Anaemia elimination mission?

- The mission aims to eliminate SCD as a public health problem by 2047, the 100th year of India's independence.
- The mission has strategies – Health promotion (creating awareness about SCD), Prevention (conducting universal screening), Management (strengthening primary, secondary, and tertiary healthcare facilities) and Convergence (co-ordinating with different ministries).
- The mission is implemented by the Ministry of Health and Family Welfare under the National Health Mission (NHM), in collaboration with the Ministry of Tribal Affairs, Ministry of Social Justice and Empowerment, Ministry of Women and Child Development, Ministry of Education, Ministry of Science and Technology, Indian Council of Medical Research (ICMR), National Health Authority (NHA) and other partners.

Source – National Health Mission

Pressurized Heavy Water Reactors

News: Recently, India's first indigenously developed 700 MW nuclear power reactor at the Kakrapar Atomic Power Project (KAPP) in Gujarat started commercial operations.

Background:

- The Nuclear Power Corporation of India Limited (NPCIL) is building two 700 MW pressurised heavy water reactors (PHWRs) at Kakrapar.
- The government has sanctioned the building of 10 indigenously developed PHWRs in fleet mode at four locations -- Gorakhpur in Haryana, Chutka in Madhya Pradesh, Mahi Banswara in Rajasthan and Kaiga in Karnataka.

What are PHWRs?

- A PHWR is a nuclear reactor that uses **heavy water** (**deuterium oxide D2O**) as its coolant and neutron moderator. PHWRs frequently **use natural uranium as fuel**, but sometimes also use very low enriched uranium.
- The heavy water coolant is kept under pressure to avoid boiling, allowing it to reach a higher temperature without forming steam bubbles, exactly as for a pressurized water reactor.

Why PHWR?

- It uses heavy/hard water as compared to soft water (H2O).
- The advantage of using heavy water is that it has low absorption of neutrons, which means that more neutrons can cause further nuclear fission in the fuel and sustain a chain reaction. It also ensures that there is an element of safety.
- Fuel flexibility – It uses Natural Uranium U-238. There is no need for enrichment and therefore no headache of international sanctions as well.
- Stable power supply - They can adjust the amount of electricity they produce based on the needs of the power grid. This helps in keeping the power supply stable, so we don't have sudden changes in electricity availability.
- Produces useful things – Beyond electricity, it also helps in making medical isotopes.

What is the difference between PHWRs and Pressurized water reactors (PWRs)?

PHWR	PWR
PHWRs use heavy water (deuterium oxide D2O) as a coolant and moderator	PWRs use ordinary water (light water H2O).
PHWRs use natural or very low-enriched uranium as fuel	PWRs use low to moderately enriched uranium
PHWRs have a separate primary and secondary loop of coolant	PWRs have a single primary loop
PHWRs have horizontal pressure tubes containing the fuel bundles. It means that PHWRs can refuel online, by replacing individual fuel bundles without shutting down the reactor	PWRs have vertical pressure vessels containing the fuel rods. PWRs have to refuel offline, by opening the pressure vessel and replacing a large number of fuel rods at once

Tam Pa Ling Cave

News: Tam Pà Ling cave provided the earliest evidence of modern humans in mainland South-East Asia.

What is Tam Pa ling cave?

- Tam Pa Ling Cave is a cave in the **Annamite Mountains in northeastern Laos**. It is situated at the top of Pa Hang Mountain, 1,170 m (3,840 ft) above sea level.
- The cave has a single, south-facing opening and descends 65 m (213 ft) to its main gallery. It is part of a network of karst caves, formed by the dissolution of limestone beds that were laid down between the Upper Carboniferous and Permian periods.

What is the cave famous for?

- The cave is famous for being the site of the oldest evidence of modern humans in mainland South-East Asia. Three hominin fossils have been discovered in the cave.
- The fossils were excavated by a team of American, French and Laotian researchers starting in 2009.
- They were found at different depths in the same area of the cave's main gallery, at the base of the sloped entrance.
- The fossils were dated using **radiocarbon, luminescence and uranium-thorium methods**. The researchers are not sure if the bones belonged to the direct ancestors of modern-day human populations, and suggest it was a 'failed migration'.

What are the dating methods used at the caves?

- Luminescence dating - It is a technique that measures the last time crystalline materials, such as stones, were exposed to sunlight or heat. This technique mainly uses two minerals quartz and feldspar.

- Uranium series dating - It works by measuring uranium, and the elements into which it transforms via radioactive decay within the tooth.
- Radiocarbon dating is a method for determining the age of an object containing organic material by using the properties of radiocarbon, a radioactive isotope of carbon. Radiocarbon is continually formed in nature by the interaction of neutrons with nitrogen-14 in the Earth's atmosphere; the neutrons required for this reaction are produced by cosmic rays interacting with the atmosphere.

Places in News

Port of Duqm

News: National Security Advisor Ajit Doval visited the strategic Port of Duqm where Muscat has given access to the Indian Navy to facilitate its presence in the Indian Ocean Region.

About Duqm port:

- Oman's Duqm port is a seaport and road terminal located at Duqm in the Al Wusta governorate of Oman. It is part of the Special Economic Zone at Duqm (SEZAD)
- Duqm port is strategically located on the Arabian Sea and the Indian Ocean, overlooking major shipping lanes and markets in Asia, Africa and Europe.

Why is it important for India?

- First, it is a **strategic location** that overlooks the Gulf of Oman, the Indian Ocean, and the Arabian Sea, giving India access to major shipping lanes and markets in Asia, Africa and Europe.
- Second, it is a part of **India's maritime strategy** to counter China's growing presence and influence in the Indian Ocean Region, where it has been developing its 'string of pearls' strategy of building ports and naval bases in countries such as Pakistan, Sri Lanka, Bangladesh, Myanmar and Djibouti.
- Third, it is a **key component of India's defence and security partnership with Oman**, which is India's oldest and closest ally in West Asia.
- Lastly, it is an **alternative option** for India to enhance its connectivity projects and routes in the region, especially in light of the challenges faced by Chahbahar port in Iran due to US sanctions.

Facts for Prelims

Mautam Famine

News: Every 48-50 years, bamboo-producing states of India, of which Mizoram is one, face a famine known as 'Mautam'.

What is Mautam?

- In Mizo, mau means bamboo and tam means death.
- At a particular time, the **Melocanna baccifera**, a species of bamboo, undergoes flowering across a wide area during Mautam. This leads to a temporary windfall of seeds, from which the bamboo regenerates after it dies.
- Bamboo seeds are also food for rats, who consume these and multiply rapidly. As the rat population explodes and the bamboo seeds get exhausted, the rats leave the forests to forage on stored grain and destroy cultivated crops.

Why does the Bamboo flower suddenly?

- The flowering of bamboo all of a sudden every 48 years is believed to be an **ecological control mechanism of predator satiation**.
- **Predator satiation** is an anti-predator adaptation technique that has been perfected by bamboo after millions of years of predation on its seeds.
- Bamboo undergoes flowering once every half-century in huge numbers as a defence mechanism. Due to flowering in huge quantities, the rats (predators) are flooded with bamboo seeds (prey) to feast on. In this way, the bamboo satiates the predator.
- By occurring at high densities, the prey benefits from a safety-in-numbers effect. Even though most of the seeds may be eaten by rodents, enough will survive to ensure a healthy plant population.

Gravitational Vibrations

News: Scientists have found evidence suggesting the presence of a continuous background of gravitational waves in the universe.

What are Gravitational waves?

- Gravitational waves are disturbances in the fabric of spacetime caused by the movement of large objects, such as the collision of two black holes.
- The waves were first detected in 2015, but this new research indicates that multiple gravitational waves constantly deform and reshape spacetime, influencing the motion of celestial bodies.

Key Findings:

- Scientists have discovered a 'background hum' rumbling throughout the universe. It confirms the presence of low-frequency (long-wavelengths) gravitational waves, thought to be constantly rolling through space noise.
- India's Giant Metre wave Radio Telescope (GMRT, Pune) was among the world's six large telescopes that played a vital role in providing evidence. The other 5 are located in Germany, the UK, France, Italy and the Netherlands.

Energy Transition Index

News: The Energy Transition Index 2023 is a report published by the World Economic Forum (WEF) in collaboration with Accenture.

Key Findings:

- The report finds that after a decade of progress, the global energy transition has plateaued amid the global energy crisis and geopolitical volatilities.
- The report says that while there has been broad progress on clean, sustainable energy, there are emerging challenges to the equity of the transition – just, affordable access to energy and sustained economic development – due to countries shifting their focus to energy security.
- The report ranks Sweden as the top performer on the Energy Transition Index 2023, followed by Denmark, Norway, Finland and Switzerland in the top five. France (7) was the only G20 country in the top 10, followed closely by Germany (11), the U.S. (12), and the U.K. (13).

India-specific findings:

- India is ranked at **67th place globally** on the index. The report says that India is the only major economy with energy transition momentum accelerating across all dimensions.
- India also emerged relatively less affected by the recent energy crisis, largely due to the low share of natural gas in power generation and increased use of existing generation capacities.