

Prelim Bits 29-01-2024 | UPSC Daily Current Affairs

Nitrogen Hypoxia

Alabama carried out the 1st ever execution using nitrogen gas in the United States.

Nitrogen

- It is denoted by symbol 'N'.
- **Physical properties** - It is a colourless and odourless gas.
- **Importance** - It is the most abundant element in our atmosphere, approximately 78% of the atmosphere.
- It is a constituent of all living tissues as it is a component of DNA and part of a genetic code, it is an essential element of life.
- It is found in nitrates and nitrites in soil and water.
- Generally, it is inhaled by humans from the air and clearly, the gas itself is harmless.

- **Execution method** - Forcing the inmate **to breathe in pure nitrogen** which **deprives the body of oxygen** needed to maintain bodily functions and ultimately causes death.

The Alabama attorney general's office had reported that the nitrogen gas will cause unconsciousness within seconds, and cause death within minutes.

- **Technology used** - NIOSH approved '**Type-C full face piece supplied air respirator**', a type used in industrial settings to deliver life-preserving oxygen was used to deliver the nitrogen.
- **Issues** - Human rights advocates criticise it as a method of cruel and inhumane action.

Execution by Nitrogen hypoxia marks the United States' 1st execution using the method, and the 1st time in over 4 decades that a new method of execution was introduced, since lethal injection was 1st used in 1982.

Reference

[The Indian Express | Execution by Nitrogen Hypoxia](#)

75th anniversary of Supreme Court

Recently, Prime Minister of India inaugurated Diamond Jubilee celebration of Supreme Court (SC).

- **SC** - It is the ***apex judicial body*** under the Constitution of India.

Article 124 of the Indian constitution states that 'there shall be a Supreme Court of India'.

- **Establishment** - It came into ***existence on 26 January 1950*** with the coming into force of the Constitution.
- **Inauguration** - ***28 January 1950***, 2 days after India became a Sovereign Democratic Republic.
- **Location** - It *initially functioned from the old Parliament* building where the Federal Court of India sat for 12 years from 1937 to 1950.
- It moved to the ***present building in New Delhi in 1958*** which encloses a *life size figure of Mahatma Gandhi* and a *7-foot tall statue of Dr. B.R. Ambedkar*.
- **Strength of SC** - ***34 Judges***, including Chief Justice of India.

Harilal J. Kania is the 1st Chief Justice of India.

- **75th Anniversary** - *3 new initiatives* have been launched.
- **Digital Supreme Court Reports (Digi SCR)** - It has 36,308 cases of SC since 1950, accessible *to the public in the digital format*.
- **Digital Courts 2.0** - It enables access of *court records to the Judges of the district courts* in digital form, it is coupled with the use of AI for *transcribing speech to text on a real-time basis*.
- **New website of the SC** - It will be in *bilingual format in English and Hindi* and has been redesigned with a user-friendly interface.

Measures taken by India for improving judicial system

- Over Rs. 7,000 crore has been disbursed since 2014 for *bettering physical infrastructure*.
- A fund of Rs 800 crore had been approved for the *expansion of the Supreme Court building and other facilities*.
- Initiatives to translate *SC judgments into regional languages*.
- *Abolished the outdated colonial criminal laws* and introduced new legislation such as the Bhartiya Nagrik Suraksha Samhita, Bhartiya Nyaya Samhita, and Bhartiya Sakshya Adhinyam.
- Enacted the *Jan Vishwas Bill* to help in reducing the number of pending cases, thereby alleviating pressure on the judiciary.

References

1. [PIB| Diamond Jubilee celebration of SC of India](#)
2. [SC of India| History of SC of India](#)
3. [Business Standard| Initiatives for SC of India](#)

E Ink Displays

E Ink displays are a special type of screen technology often used in e-readers like the Amazon Kindle.

- **Development** - In 1990s at MIT, now owned by E Ink Corporation.
- **Working** - It is made of a *thin film on top of millions of microcapsules* filled with particles floating in a clear fluid.
- They are *charged black or white particles* which are set to *move around depending on what type of electric charge* they receive.
 - **For example**, black will rise when exposed to a negative charge, and white will rise when exposed to a positive charge.
- Rising of particles to the surface creates the text and images on the display.



	E Paper	E Ink
Design	It uses a low-power LCD with a reflective layer to look like paper.	It uses tiny microcapsules filled with charged particles suspended in a clear fluid.
Example	Pebble smartwatch	Amazon Kindle

- **Other applications** - In Mobile devices, bus stop displays, walking direction signs and E Ink menu boards in restaurants.
- **Advantages** - They *consume very little power* compared to LCD and OLED displays, draws power only when the image is changed.
- It cause *less eye strain* for the user as there is no backlight.
- The matte surface and high contrast also make them *easily readable outdoors and under bright light*.
- **Disadvantages** - It has a *slow refresh rate* compared to LCD and OLED displays, making them unsuitable for video or animation.
- It has *limitations on colour and resolution* compared to others.
- The niche nature of E Ink manufacturing means the displays *remain expensive*, which limits their use to mostly e-readers and a handful of other products.

References

[The Indian Express| E Ink Displays](#)

Modified PKC-ERCP Link Project

Recently, a MoU was signed for implementation of the Modified Parbati-Kalisindh-Chambal-ERCP (Modified PKC-ERCP) Link Project.

- An ***integration of PKC link project with ERCP*** of Rajasthan.
- It is the ***2nd project under the national perspective plan (NPP)*** of interlinking of rivers (ILR) program of India.

- **Signing parties** - Rajasthan, Madhya Pradesh with the Union Ministry of Jal Shakti.
- **Objectives** - To provide *drinking and industrial water in 13 districts* of eastern Rajasthan, Malwa and Chambal regions of Madhya Pradesh.
- To provide *irrigation in 2.8 lakh ha. area* (or more) each in both the states (total of 5.6 lakh ha or more) including *supplementation of enroute tanks* in the states.

Background

- **Eastern Rajasthan Canal Project (ERCP)** - To meet the *drinking and irrigation needs* of the 13 districts of south-eastern *Rajasthan* by harvesting surplus water available during the rainy season in the rivers like Chambal and its tributaries.
- **Parbati-Kalisindh-Chambal (PKC) link Project** - It envisages diversion of *surplus water of Parbati, Newaj and Kalisindh river* for *irrigation* by connecting to the Gandhi Sagar or Rana Pratap Sagar reservoir built across *river Chambal*.
- It will traverse *through Madhya Pradesh and Rajasthan* states.
- **National Perspective Plan (NPP)** - It was prepared by the then Ministry of Irrigation (now Ministry of Jal Shakti) in August 1980 for water resources development through *inter basin transfer of water*, for transferring water from water surplus basins to water-deficit basins.

- **Significance** - *Optimal and economical utilization* of the available water resources of Chambal basin.
- Achievement of consensus amongst both the states strengthens *inter-state cooperation and cooperative federalism*.

River Chambal

- **Origin** - It rises from the *Vindhyan ranges in Madhya Pradesh*.
- It is the largest *tributary of the Yamuna*.
- **Interstate river** - It has a catchment area of 1,32,508 sqkm covering parts of Madhya Pradesh, Rajasthan and Uttar Pradesh.
- **Kalisindh River** - A *principal tributary* which originates in Madhya Pradesh and joins the river Chambal in Rajasthan.
- **Parbati River** - *3rd largest tributary* of Chambal River rising in MP and joins with River Chambal in Rajasthan.
- **Newaj River** - It is a left bank tributary of the river Parwan, a right bank *principal tributary of the Kalisindh River*.

References

1. [PIB| MoU on Modified PKC-ERCP Link Project](#)
2. [NWDA| River Chambal](#)

White Rhinoceros

An international team of researchers from BioRescue, a consortium backed by the German government announced the 1st successful embryo transfer in a white rhinoceros.

- **2 distinct subspecies** - Northern and southern white rhinos.
- **Northern white rhinos** - Despite their name, they are *actually grey*.
- Once roamed freely in several countries in east and central Africa, their numbers fell

sharply due to poaching for their horns.

The last male northern white rhino 'Sudan' died in 2018 with only 2 female members remaining, neither are able to carry a calf to term.

- **Southern white rhinos** - They are more abundant than northern sub species, roughly 20,000 remain in Africa.

IUCN Protection Status of Rhinos

- There are totally 5 species of rhinoceros globally.
- **Critically Endangered** - 3 species, Black, Javan and Sumatran.
- **Near Threatened** - White Rhino (Northern White is Critically Endangered).
- **Vulnerable** - Greater One Horned Rhino.

World Rhino Day is celebrated each year on 22 September.

In-vitro fertilization of Northern White Rhinos

- The eggs of female northern white rhinos were harvested and sperm from dead northern male rhinos of the subspecies was used to produce embryos.
- The embryo was successfully **transferred to southern white rhino surrogate mothers**.
- It was the **world's first IVF rhino pregnancy**.
- **Significance** - It offers hope for saving the critically endangered northern white rhino subspecies from extinction.

References

[The Hindu| World's 1st White Rhino IVF Pregnancy](#)

Other Important Topics

Laughing gull (*Leucophaeus atricilla*)

- Laughing gull, a migratory bird from North America, has been sighted for the **1st time in the Chittari (highly dynamic) Estuary** in Kasaragod district, Kerala.
- The bird is known for its unique **laughter-like calls**, which sounds like "ha-ha-ha-ha-ha-haah-haah-haah".
- It is a **diurnal, coastal bird** that are rarely found inland.
- **Conservation Status**
 - IUCN - Least Concern



Operation Black Gold

- Operation Black Gold is a ***DRI (Directorate of Revenue Intelligence) operation*** that seized an alloy containing gold and silver.

Western Equine Encephalitis Virus (WEEV)

- ***International Health Regulations National Focal Point (IHR NFP)*** in Argentina alerted World Health Organization of a human case of WEEV infection recently.
- Western equine encephalitis (WEE) is a ***rare viral disease*** that affects humans and equines (related to horse).
- It is caused by the western equine encephalitis virus (WEEV), which is a member of the ***Togaviridae family*** of viruses.
- WEE is primarily spread by the ***Culex tarsalis mosquito*** and transmitted to birds, and other vertebrate hosts in an enzootic cycle.

Homi.J.Bhabha

- Homi Jehangir Bhabha (1909 - 1966) was an Indian nuclear physicist and ***the "father of the Indian nuclear program"***.
- He established the ***Tata Institute of Fundamental Research (TIFR)*** in 1945 to conduct nuclear science research.
- He was the ***1st Indian to receive the Adams prize*** most prestigious prizes instituted by Cambridge university.
- He was the chairman of ***India's first Atomic Energy Commission***.

Halwa ceremony

- Ahead of the ***Union Budget 2024 presentation***, the halwa ceremony was performed recently.
- The Halwa ceremony is performed around a week ahead of the Union Budget every year.

Golden tiger

- Rare golden tiger sighted in Kaziranga National Park in Assam recently.
- It is a rare color variant of the Bengal tiger, also known as ***"Tabby tigers" or "Strawberry tigers"***.
- **Conservation Status**
 - IUCN - ***Critically endangered***.
- Kaziranga National Park a ***world heritage site*** and is famous for the Great Indian one horned rhinoceros.

Indigenous paddy varieties in Kerala

- There are some 840 native varieties were documented as indigenous paddy varieties in Kerala.
- Some important varieties are
 - Chenkzhama, Cheruvellari, Chettadi, Chitteni, Gandhakasala, Jeerakasala, Kattamodan, Kuttadan, Rakthasali, Thavalakannan, Thekkan, Vellari and Velutha Navara, Jyothi and Kanchana.
 - Nagasampige, karingajavili, raktasali, jugul and rajamudi.
 - Swarna, Sambha, Basmati, Kuzhiadichan, Karungkuruvai.

Singchung Bugun Village community reserve

- The Singchung Bugun Village Community Reserve (SBVCR) is a biodiversity hotspot in ***Arunachal Pradesh***.
- It was established in ***2017***.
- It is home to critically endangered species such as the passerine bird ***Bugun Liocichla (Liocichlabugunorum)***, which is named after the tribe.
- It is also home to endangered species such as the ***red panda (ailurusfulgens)*** and many other varieties of flora and fauna.

Jaitapur Nuclear power plant

- The Jaitapur Nuclear Power Plant (JNPP) is a proposed nuclear power plant, that would be the ***world's largest nuclear*** power generating station.
- The plant would have a capacity of 9,900 MW and would be located 400 km south of ***Mumbai, in Ratnagiri, Maharashtra***.
- The project is part of a civil nuclear cooperation agreement between ***France and India***.

Nitish kumar, CM of Bihar

- Nitish Kumar took oath as ***Bihar's Chief Minister*** for the 9th time recently.