8. Short News

1. Quantum Diamond Microscope (QDM)

Recently, India unveiled its first indigenous Quantum Diamond Microscope (QDM).

About Quantum Diamond Microscope (QDM)

The Quantum Diamond Microscope is an advanced quantum sensing instrument designed for dynamic, nanoscale magnetic field imaging. Developed by the P-Quest Group at IIT Bombay under the National Quantum Mission (NQM) of the Department of Science and Technology (DST).

Description and Working Principle

The QDM is based on nitrogen-vacancy (NV) centers in diamond, which are atomic-scale defects capable of maintaining quantum coherence at room temperature. These NV centers detect magnetic, electric, and thermal variations, converting them into optical signals through a process known as Optically Detected Magnetic Resonance (ODMR). The technology enables three-dimensional, nanoscale magnetic field imaging similar to an optical microscope, offering widefield visualization of dynamic magnetic activity.

Applications

Neuroscience - Mapping neural magnetic activity with high precision.
Materials Science - Studying magnetic properties and defects in new materials.
Semiconductor Diagnostics - Performing non-destructive testing of 3D chip architectures and buried current paths.
Energy and Earth Sciences - Investigating magnetization in energy storage systems and geological formations.
Data Processing - Future integration with AI and machine learning will enhance computational imaging and data interpretation.

2. Ammonium Nitrate

Investigators are examining whether ammonium nitrate was the key explosive used in the Red Fort blast.

About Ammonium Nitrate

Composition and Nature - Ammonium nitrate is a chemical compound (NH_4NO_3) widely used as a fertilizer and an industrial explosive when mixed with fuel oil.
Regulation and Licensing - Its access is strictly regulated — possession of up to 30 metric tonnes requires District Magistrate permission, while higher quantities need PESO (Petroleum and Explosives Safety Organisation) approval under the Explosives Act.
Tracking and Control - All legal transactions are monitored through the System for Explosive Tracking and Tracing (SETT), though illegal trade and diversion remain a persistent challenge.

Use in Terror Strikes

Historical Pattern - Before 2012, ammonium nitrate featured in nearly every major terror attack in India, including the 1996–97 Delhi serial blasts.
Role in IEDs - Terror outfits use it to prepare ANFO (Ammonium Nitrate–Fuel Oil) mixtures, where a detonator initiates a massive explosion. A typical ANFO charge is roughly 94% ammonium nitrate and 6% fuel oil; industrial-grade ammonium nitrate can be used to make such a mixture.
Forensic Detection - Residues of ammonium nitrate leave nitrate ions and nitrogen oxides (NO_2), detectable via chromatographic tests even after cleaning the blast site.

3. Bal Sahitya Puraskar 2025

The Bal Sahitya Puraskar 2025 will be presented on 14 November 2025 in New Delhi, honouring outstanding works in children's literature across 24 Indian languages.

About the Bal Sahitya Puraskar

Instituted by the Sahitya Akademi, the Bal Sahitya Puraskar recognises excellence in children's literature written in India's 24 major languages listed under the Akademi's scheme. These 24 languages

include the 22 languages enumerated in the Eighth Schedule of the Indian Constitution, as well as English and Rajasthani.

Components of the Award - Each awardee receives a cash prize of ₹50,000 and a bronze plaque for literary merit.

Languages and Genres Awarded - Awards span poetry, stories, plays, novels, and memoirs, showcasing India's multilingual creative richness.

Notable Winners (2025) - Total 24 children were awarded this year.

English - Dakshin - South Indian Myths and Fables Retold – Nitin Kushalappa MP

Hindi - Ek Batey Barah – Susheel Shukla

Tamil - Ottrai Siragu Oviya – Vishnupuram Sarvanan

Malayalam - Penguinukalude Vankaravil – Sreejith Moothedath

Punjabi - Jaddu Patta – Pali Khadim

Significance - The Bal Sahitya Puraskar 2025 reinforces India's literary inclusivity, celebrating regional voices and encouraging a new generation of writers in children's literature.

4. India to Get 8 Cheetahs from Botswana

President Droupadi Murmu and Botswana's President Duma Boko announced that Botswana will donate 8 cheetahs to India under Project Cheetah.

About Project Cheetah

Aim - Reintroduce cheetahs in India, which went extinct in 1952, through intercontinental translocation from African countries.

Launch & Partners - Started in 2022, with cheetahs brought from Namibia and South Africa.

Nodal Agency - National Tiger Conservation Authority (NTCA), under the Ministry of Environment.

Objectives - Restore a viable cheetah population, revive grassland ecosystems, and enhance eco-tourism and community benefits.

About Botswana

Location - Landlocked country in Southern Africa.

Bordering Countries -

North and West - Namibia

Northeast - Zambia

South and Southeast - South Africa

Northeast - Zimbabwe (via a small quadripoint with Zambia and Zimbabwe)

Climate -

Type - Semi-arid climate with seasonal rainfall.

Temperature - Hot summers with temperatures often exceeding 30°C, and cool winters with temperatures ranging from 10°C to 20°C.

Terrain - Predominantly flat or gently undulating plains.

Rivers-Zambezi River, Okavango River, Limpopo River.