Precision guided long range weapons in Indian military's arsenal

HAMMER:

- Highly Agile and Manoeuvrable Munition Extended Range (HAMMER) air-to-ground precision-guided weapon system for the Rafale fighter aircraft has a range of up to 70 km and can also be fitted to bombs and various guided systems.
- Built by the French aerospace, defence, and security corporation Safran, the HAMMER weapon system is highly versatile, and can be used for precision strikes against a range of targets in medium-range tactical operations.
- According to the Safran Group, the system is autonomous and insensitive to jamming and can be launched from a low altitude over rough terrain.

SCALP:

- This is an air-launched cruise missile with stealth features, designed for long-range deep strikes. SCALP-EG (Système de Croisière Autonome à Longue Portée — Emploi Général), known as Storm Shadow in Britain, can be operated at night and in all weather conditions.
- The missile, manufactured by the European multinational MBDA, has a range of 450 km, and is difficult to detect due to its low-flying capability when fired from an aircraft.
- Its advanced and highly accurate navigation system, which uses Inertial Navigation System (INS), Global Positioning System (GPS) and terrain referencing, can penetrate bunkers and ammunition stores.

METEOR:

- The Meteor is a new-generation Beyond Visual Range Air-to-Air Missile (BVRAAM) system which is effective in dense electronic-warfare environments.
- According to its manufacturer MBDA, the missile's solid-fuel 'ramjet' motor provides it with thrust all the way to the target intercept, and thus the largest 'No Escape Zone' of any air-to-air missile system.

BRAHMOS:

- These supersonic cruise missiles, which have been operationalised in all three defence services, are built by BrahMos Aerospace, a joint venture between India's Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya.
- BrahMos missiles operate at close to Mach 3 speed in the cruise phase, which ensures reduced flight time, lower dispersion of targets, and quicker engagement time and non-interception.
- The missile operates on a 'Fire and Forget Principle', adopting varieties of flights on its way to the target. As per its website, cruising altitude could be up to 15 km and terminal altitude as low as 10 metres. The missile carries a conventional warhead weighing 200-300 kg.

What is Loitering Munition or LMS?

- A notable aspect of Operation Sindoor was the deployment of loitering munitions, also known as 'suicide drones.'
- These unmanned aerial vehicles are designed to hover over a target area, identify threats, and engage them precisely.
- Unlike traditional missiles, loitering munitions can wait for the optimal moment to strike, reducing the risk of collateral damage. Once they lock onto a target, they crash into it and explode.
- These weapons are often called suicide drones, kamikaze drones, or exploding drones.