Types of EV

- Net-zero for a vehicle includes emissions at both the tailpipe of the vehicle and at the power plant.
- Making vehicles net-zero requires cutting emissions from both new and existing vehicles.
- There are four types of electric vehicles available:
- Battery Electric Vehicle (BEV): Fully powered by electricity. These are more efficient compared to hybrid and plug-in hybrids.

Hybrid Electric Vehicle

- Hybrid Electric Vehicle (HEV): The vehicle uses both the internal combustion (usually petrol) engine and the battery-powered motor powertrain.
- The petrol engine is used both to drive and charge when the battery is empty.
- These vehicles are not as efficient as fully electric or plug-in hybrid vehicles.
- Plug-in Hybrid Electric Vehicle (PHEV): Uses both an internal combustion engine and a battery charged from an external socket (they have a plug). This means the vehicle's battery can be charged with electricity rather than the engine. PHEVs are more efficient than HEVs but less efficient than BEVs.
- Fuel Cell Electric Vehicle (FCEV): Electric energy is produced from chemical energy. For example, a hydrogen FCEV.

THE HINDU

Akira

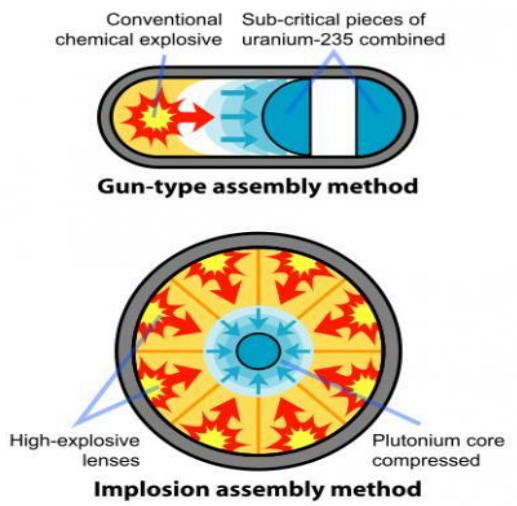
- The Computer Emergency Response Team of India issued an alert for the ransomware dubbed "Akira."
- The ransomware, found to target both Windows and Linux devices, steals and encrypts data, forcing victims to pay double ransom for decryption and recovery.

THE HINDU

Oppenheimer & science of atomic bomb

- Oppenheimer is remembered in history as the "father of the atomic bomb", his greatest contribution as a physicist was on the physics of black holes.
- The work of Oppenheimer and Hartland Snyder helped transform black holes from segments of mathematics to real, physical possibilities something to be found in the cosmos out there.
- With the outbreak of World War II, Oppenheimer became deeply involved in the United States' efforts to build an atomic bomb.

- He was appointed as the scientific director of the Manhattan Project in 1942, overseeing the development of the first nuclear weapons.
- The project's success led to the first test of an atomic bomb on July 16, 1945, at the Trinity test site in New Mexico.
- The immense destructive power of atomic weapons derives from a sudden release of energy produced by splitting the nuclei of the fissile elements making up the bombs' core.
- The U.S. developed two types of atomic bombs during the Second World War.
- The first, Little Boy, was a gun-type weapon with a uranium core. Little Boy was dropped on Hiroshima.
- The second weapon, dropped on Nagasaki, was called Fat Man and was an implosion-type device with a plutonium core.
- The isotopes uranium-235 and plutonium-239 were selected by atomic scientists because they readily undergo fission.
- Fission occurs when a neutron strikes the nucleus of either isotope, splitting the nucleus into fragments or releasing a tremendous amount of energy.
- The fission process becomes self-sustaining as neutrons produced by the splitting of atom strike nearby nuclei and produce more fission.
- This is known as a chain reaction and is what causes an atomic explosion.
- When a uranium-235 atom absorbs a neutron and fissions into two new atoms, it releases three new neutrons and some binding energy.



Criticality

- In order to detonate an atomic weapon, you need a critical mass of fissionable material.
- This means you need enough U-235 or Pu-239 to ensure that neutrons released by fission will strike another nucleus, thus producing a chain reaction.

THE HINDU

PSCV C56

- The launch of PSLV-C56 carrying DS-SAR satellite, along with 6 co-passengers from the first launch-pad

of SDSC-SHAR, Sriharikota is accomplished successfully on July 30, 2023, at 06:30 hrs. IST.

DS-SAR

- The DS-SAR satellite is developed under a partnership between DSTA (representing the Government of Singapore) and ST Engineering.
- Once deployed and operational, it will be used to support the satellite imagery requirements of various agencies within the Government of Singapore.
- ST Engineering will use it for multi-modal and higher responsiveness imagery and geospatial services for their commercial customers

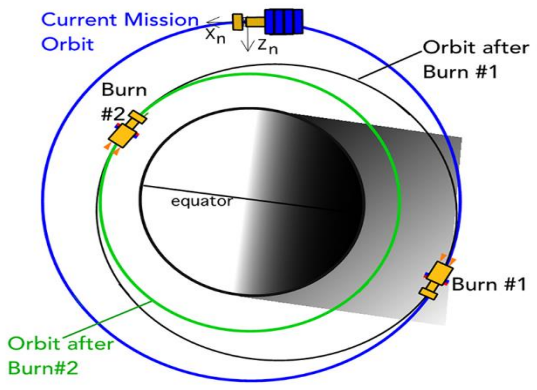
The co-passengers are:

- VELOX-AM, a 23 kg technology demonstration microsatellite.
- ARCADE Atmospheric Coupling and Dynamics Explorer (ARCADE), an experimental satellite
- SCOOB-II, a 3U nanosatellite flying a technology demonstrator payload
- NuLIoN by NuSpace, an advanced 3U nanosatellite enabling seamless IoT connectivity in both urban & remote locations.
- Galassia-2, a 3U nanosatellite that will be orbiting at low earth orbit.
- ORB-12 STRIDER, satellite is developed under an International collaboration
- During the mission, the scientists decided to perform a unique experiment in which the fourth stage of the rocket would be lowered into a 300 km high orbit after placing customer satellites at an altitude of 536 km "to mitigate the space debris problem,"
- According to ISRO, normally, after a successful mission, a rocket stays in orbit
- For "decades" as space debris, before re-entering into Earth's atmosphere.
- But thanks to the orbit lowering, the duration has now been reduced to "two months"

THE HINDU

WHAT IS ORBITAL DECAY?

- Orbital decay is a gradual decrease of the distance between two orbiting bodies at their closest approach (the periapsis) over many orbital periods



THE HINDU