Hera Mission

April 26, 2020
Context: NASA and ESA want to hit an asteroid called 'Didymos'

- Hera Mission is the asteroid deflection mission of European Space Agency (ESA)
- Asteroid hit is widely acknowledged as one of the likeliest causes of extinction of life on Earth
- There are around 25,000 near-Earth objects (NEOs) that orbit the Sun on a trajectory that brings them close to our planet's orbit. NASA tracks such near-Earth objects to ensure they do not become threats. However, certain near-Earth objects have been classified as "potentially hazardous" which are 140 metres or more in size and come within 0.05 AU (astronomical unit) to Earth.
- The twin-asteroid system Didymos is a binary near-Earth asteroid. According to NASA, while the primary body of Didymos is approximately 780 meters across, its secondary body or "moonlet" is about 160-meters in size, which is more typical of the size of asteroids that could pose the most likely significant threat to Earth. So, Didymos makes a suitable target for NASA and ESA's mission.
- Scientists have suggested different ways to ward off such a hit, such as blowing up the asteroid before it reaches Earth, or deflecting it off its Earth-bound course by hitting it with a spacecraft
- In an ambitious double-spacecraft mission to deflect an asteroid in space, NASA and the European Space Agency (ESA), have come up with Asteroid Impact Deflection Assessment (AIDA).
- NASA is building the Double Asteroid Impact Test (DART) spacecraft for launch in summer 2021. It is planned to collide with the target at 6.6 km/s in September 2022. Flying along with DART will be an Italian-made miniature

CubeSat, called LICIACube, to record the moment of impact.

- ESA’s contribution is a mission called Hera, which will perform a close-up survey of the post-impact asteroid, acquiring measurements such as the asteroid’s mass and detailed crater shape. Hera will also deploy a pair of CubeSats for close-up asteroid surveys and the very first radar probe of an asteroid. All this would allow researchers to model the efficiency of the collision. This can help turn this experiment into a technique that could be repeated, as needed, in the event of a real threat