Hayabusa 2

Hayabusa 2 is an Asteroid exploration mission by the Japanese Aerospace Exploration Agency (JAXA) to study Asteroid 1999 JU3 (Ryugu).

- Hayabusa 2 was launched in December, 2014 and is planned to complete a mission of six years
- It arrived at Ryugu in July 2018 and will spend 18 months studying the asteroid before making its return to Earth in December 2020.
- The mission builds on the original Hayabusa mission that was launched in 2003 and successfully linked up with asteroid Itokawa in 2005.
- It returned samples to Earth in 2010 marking the first time sample materials from an asteroid were brought back to Earth.

The Spacecraft Consists of:

- Two remote sensing spectrometers dedicated to studying the energy balance of the asteroid and its surface composition.
- Four landers – the 10-Kilogram Mobile Asteroid Surface Scout (MASCOT) lander built in Europe (France and Germany) for an in-situ study of surface composition and properties.
- Three MINERVA landers to deliver imagery and temperature measurements. All landers will make several hops across the asteroid's surface to take measurements at different locations.
- An impactor device that will be deployed towards the asteroid and uses high-explosives to generate a high-speed impact that is hoped to expose material from under the asteroid's surface for later collection by Hayabusa 2.

Why Study Asteroids?

- Asteroids, like comets, are primitive bodies that can be considered to be the building blocks of the early solar system.
- They hold a record of the birth and initial evolution of the solar system.

- Larger planets like Earth went through a more complex evolution over which the pristine materials were melted and altered significantly.
- Due to this change, the materials found on large planets do not hold information into their early stages of formation.
- Comets and asteroids, formed early in the evolution of the Solar System, retain a record of when, where and in what conditions they were formed. Exploration of these primitive bodies is essential in gaining insight into the formation of the Solar System.