

30– 09 – 2022

News: Govt. app to capture data on groundwater levels

- Recently, Jal doot application was launched by Union Government.

Jal doot – Mobile Application

- Jal doot is a mobile application jointly developed by the Rural Development and Panchayati Raj Ministries to monitor the groundwater levels across the country.
- The app will be used to capture the water levels of two or three open wells in every village twice a year, from May 1 to 31 during the pre monsoon time and from October 1 to 31.
- To ensure transparency, the officers assigned for the task have been told to upload the geo-tagged photographs through the app each time the measurement is done.
- The mobile app will work in online and offline modes to ensure that lack of Internet connectivity does not come in the way of the exercise.
- The regular data from the 'Jaldoots' would be integrated with the database of the National Water Informatics Centre, which can be utilised for analysis and help in conservation efforts.

News: The NASA spacecraft-asteroid collision

- On September 27, at 4:44 am IST, the DART (Double Asteroid Redirection Test) spacecraft collided with the space rock Dimorphos.

Double Asteroid Redirection Test (DART)

- DART, is an **American space mission designed to determine whether an asteroid** can be redirected with a high-speed collision.
- After the mission has collided with the asteroid, scientists will study its impact on the trajectory of the asteroid with a range of telescopes deployed on different regions of the planet.
- DART will be the first demonstration of the kinetic impactor technique to change the motion of an asteroid in space.
- SpaceX will launch the spacecraft towards **a small moonlet called Dimorphos (Greek for "two forms")**, revolving around asteroid named Didymos about **4 million miles from Earth**. It will Dimorphos at about 13,000 mph.
- The DART spacecraft will be **launched on a SpaceX Falcon 9 rocket**.
- It is a **suicide mission and the spacecraft will be completely destroyed**.
- The **collision is expected to take place between 26th September and 1st October, 2022**.
- DART is a **low-cost spacecraft**.

- It has two solar arrays and uses hydrazine propellant for maneuvering the spacecraft.
- It also carries about 10 kg of xenon which will be used to demonstrate the agency's new thrusters called NASA Evolutionary Xenon Thruster–Commercial (NEXT-C) in space.
- NEXT-C gridded ion thruster system provides a combination of performance and spacecraft integration capabilities that make it uniquely suited for deep space robotic missions.
- The spacecraft carries a high-resolution imager called Didymos Reconnaissance and Asteroid Camera for Optical Navigation (DRACO).
- Images from DRACO will be sent to Earth in real-time and will help study the impact site and surface of Dimorphos (the target asteroid).
- DART will also carry a small satellite or CubeSat named LICIAcube (Light Italian CubeSat for Imaging of Asteroids).
- LICIAcube is expected to capture images of the impact and the impact crater formed as a result of the collision.

Reason for Choosing Dimorphos

- Didymos is a perfect system for the test mission because it is an **eclipsing binary**, which means it has a moonlet that regularly orbits the asteroid and which can be seen when it passes in front of the main asteroid.
- Earth-based telescopes can study this variation in brightness to understand how long it takes Dimorphos to orbit Didymos.