Fram2 Polar-Orbiting Mission

Prelims – *General Science.*

Mains (GS III) – *Science and Technology Developments.*

Why in News?

Elon Musk's SpaceX recently launched a crew of four private astronauts, led by a crypto entrepreneur, on a polar-orbiting mission.

- It is a mission to ***orbit Earth from pole to pole***, a novel trajectory in which no humans have travelled before.
- **Nomenclature -** Fram2, a reference to the Norwegian "Fram" ship that pioneered Arctic exploration at the turn of the 20th century.
- **Agency –** SpaceX, American Private Space Technology Company.
- **Carried by -** Falcon rocket and Crew Dragon capsule.
- It is the first instance of astronauts orbiting Earth on a true polar trajectory, at a 90-degree inclination passing directly over ***both the North and South Poles*** rather than following the conventional west-to-east path.
- **Key research objectives**
- Over the orbital mission, the team plans to conduct 22 scientific experiments focused on *studying the polar regions* from space.
- **X-ray in space -** The crew will perform the first-ever x-ray in space, providing insights into how microgravity affects bone and muscle density.
- **Exercise studies -** The astronauts will undergo exercise studies designed to help maintain muscle and skeletal mass during extended periods in space.
- **Growing mushrooms in microgravity -** Another experiment will focus on cultivating mushrooms in space, which could offer valuable insights into sustainable food production for future space missions.
- Also, after safely returning to Earth, the crew plans to exit the Dragon spacecraft unassisted, helping researchers understand astronauts' ability to perform functional tasks without medical or operational assistance after spending time in space.

References

1. The Hindu | Fram2 polar-orbiting mission
2. Business Standard | Fram2 mission