

Mission Chandrayaan



Why in News?

- □ On 22 July 2019, ISRO launched Chandrayaan-2
- ☐ On 22 July 2019, ISRO launched Chandrayas ☐ India's second lunar exploration mission aft Chandrayaan-1 (launched in Oct 2008) ☐ Lunar orbiter, lander, rover type mission, expected to do soft-landing on the Moon ☐ India to become the fourth country to soft-

- land after the USSR, USA and China

 Core objective is to map the location, and abundance of lunar water

Chandrayaan-1

- □ Design and objectives:
 ISRO's first exploratory mission to moon
- Operated for 312 days as opposed to the intended two years
 Mission achieved 95% of its planned
- objectives
 O Confirmed presence of lunar water
- Evidence of lunar caves formed by an ancient lunar lava flow
 Faults and fractures on lunar surface as a
- result of past tectonic activity coupled with meteorite impacts

□ Lander (Vikram):

- Will remain stationary after touching down
 Will mainly study the moon's atmosphere
- and its seismic activity

☐ Rover (Pragyan):

- Solar-powered vehicle, will slowly crawl
- on the surface
 Making observations and collecting data
- for 14 days(1 lunar day) Will study the composition of the surface near the landing site, and determine the abundance of various elements

- Onboard cameras will create highresolution 3-D maps of the surface
- O Will study mineral composition, lunar atmosphere, and also to assess the abundance of water

Mission Objectives

- ☐ Study the extent and distribution of water on the Moon following evidences of Chandrayaan-1
- ☐ Study topography, seismography, composition of lunar surface and the lunar atmosphere
- ☐ Study of ancient rocks and craters to
- understand origin and evolution of the Moon

 Study fossil records at South Pole region to improve understanding of the early solar
- ☐ Map the lunar surface and prepare 3D maps

Mission Challenges

- ☐ Launching its heaviest rocket GSLV-Mark III
- □ Ensuring trajectory accuracy during successive orbital manoeuvres

 Performing soft-landing on safe hazard free
- zone which ISRO has never performed earlier Extremely hostile environment for lander and rover operations: craters, rocks, dust, hot
- gases, extreme surface temperature variations

 Less sunlight in South Pole region, can affect solar-powered instruments

Importance and Benefits of the Mission

- ☐ Help in understanding the origin of the solar
- Can help in future advanced space missions
 Can boost national pride in citizens
- Can boost the morale of scientists, motivate youth to develop scientific temper

 Invoke the spirit of innovation in Indian
- manufacturing industry

 □ Encourage Indian startup industry in space
- sector, promote entrepreneurship

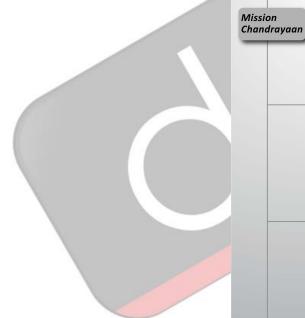
 Chandrayaan-2 mission is led by two women.
 Thus, a symbol of women empowerment

d drishti

- □ Precursor to future missions like Gaganyaan, Aditya-L1, permanent space station in line with the ISS
- with the ISS

 In talks with Japan's JAXA for a future mission
 Chandrayaan-3 in 2024, to bring back soil and
 rock samples from the South Pole of the Moon
 Moon as perfect test-bed to explore new
 areas in deep space technology
 Extracting water from the Moon will pave the
 way for colonization of the Moon.

- Hydrogen and Oxygen from water can be used as fuel for interplanetary missions, particularly to Mars
- □ Show the capability of Indian scientists to protect the interest of mankind and future generations





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