Chang’e-4 spacecraft – China

Why in news?

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China recently launched Chang’e-4 spacecraft, which has landed on the dark side of the moon.

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What is the mission all about?

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- The moon, though has two sides, is tidally locked with Earth.
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- It rotates exactly once every time it circles our planet, thus keeping the same hemisphere pointing toward Earth at all times.
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- Astronomers refer to the side we always see from Earth as the “near side” and the side we can never see as the “far side (dark side).”
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- A Chinese lunar probe named Chang’e-4 made the first-ever landing on the far side of the moon.
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- It carries a rover, which carries out low-frequency radio astronomical observations and probing of structure and mineral composition of the terrain.
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- The instruments include cameras, low-frequency radio spectrum analyser, lunar neutron and radiation dose detectors.
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- With its Chang’e 4 mission, China has possibly become the first country to make a soft landing, which is a landing of a spacecraft during which no serious damage is incurred.
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- Thus, the pioneering landing demonstrates China’s growing ambitions as a space power.
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What is the importance of the launch?

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- **Exploration of** - The mission could answer fundamental questions about Earth's only natural satellite, the moon. **moon**
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- It could reveal formation and early evolution of moon, which could guide astronomers in planetary studies and help in understanding exoplanets.
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- **Radio Astronomy** - Communication devices and satellites have made it too noisy for radio astronomers to easily and accurately interpret signals.
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- The near side of the moon also suffers from this problem of noise.
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- However, the moon's far side is shielded from all the radio waves emanating from earth.
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- Hence, it is an ideal place to set up a radio telescope that could reveal astronomical mysteries, such as the structure of the universe shortly after the Big Bang.
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- Also, the difference in the thickness of the crust between the near side and the far side would be studied.
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- **Human spaceflights** - The probe is the first mini-greenhouse to land on another world in the solar system.
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- The investigations will reveal whether plants can grow on the moon, which is a crucial step toward long-term human missions beyond Earth.
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- Thus, the mission is a step forward in preparing people to return to the moon for longer than a brief visit.
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Source: The Hindu, The Indian Express

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