



Mains Practice Question

Q: What are the objectives and components of the Samudrayan mission? How will it help in enhancing India's capabilities and interests in the deep ocean exploration? (250 words)

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Approach

- Start your answer with a brief introduction of Samudrayan mission.
- Write its objectives.
- Explain how it can help in enhancing India's capabilities in ocean exploration.
- Conclude accordingly

Introduction:

The Samudrayan mission is an Indian initiative to undertake the deep ocean exploration focused on India's exclusive economic zones and continental shelf. It is a part of the Deep Ocean Mission approved by the Ministry of Earth Sciences (MoES) in June 2021.

Body:

The objectives of the Samudrayan mission are:

- To develop a self-propelled manned submersible vehicle called Matsya 6000 to carry three human beings to a water depth of 6,000 meters in the ocean with a suite of scientific sensors and tools for deep ocean exploration.
- To enhance India's scientific and technological capabilities and human resources in the field of deep sea research and development.
- To explore the potential of ocean resources such as minerals, energy, water, biodiversity, etc. for sustainable use and development.
- To support India's Blue Economy initiatives and maritime security interests in the Indian Ocean Region.

The components of the Samudrayan mission are:

- Design and development of Matsya 6000, which will have a titanium alloy personal sphere of 2.1-meter diameter enclosed space with an endurance of 12 hours and an additional 96 hours in case of emergency situation.
- Qualification and testing of Matsya 6000, which will undergo various trials by December 2024 before being deployed for deep sea missions.
- Operation and maintenance of Matsya 6000, which will involve trained personnel, infrastructure, logistics, etc. for conducting safe and efficient missions.
- Data acquisition and analysis of Matsya 6000, which will involve collection and processing of various types of data such as bathymetry, geology, biology, chemistry, etc. from the deep sea environment.

The Samudrayan mission will help in enhancing India's capabilities and interests in the deep ocean

exploration by:

- Providing India with a niche technology and vehicle to carry out subsea activities that only a few countries such as the US, Russia, France, Japan, and China have.
- Enabling India to access and utilize the vast ocean resources that are estimated to be worth billions of dollars such as polymetallic nodules, gas hydrates, hydrothermal sulfides, cobalt crusts, etc.
- Contributing to India's scientific knowledge and innovation in the field of oceanography, marine biology, geology, etc. that can have various applications and benefits.
- Strengthening India's role and influence in shaping the regional and global order and norms related to the ocean governance, cooperation, and security.

Conclusion:

The Samudrayaan mission is an ambitious undertaking, but it has the potential to make significant contributions to our understanding of the deep ocean and to the development of new technologies for ocean exploration and exploitation. The mission is still in the planning stages, but it is already generating excitement and anticipation among the scientific community.

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