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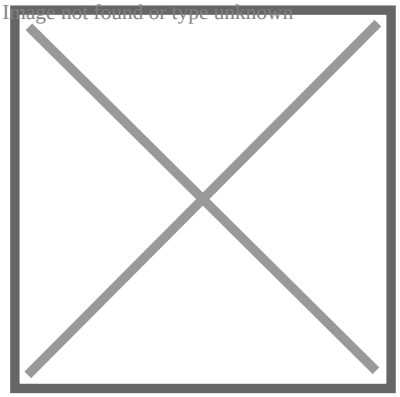

Mission Shakti – India’s Anti-satellite missile test

Description

Theme :-

- Anti-satellite weapons are used to destroy enemy satellites.
- Mission Shakti, an anti-satellite missile test by India, was conducted on March 27, 2019.
- India is the 4th country after the US, Russia & China that have successfully tested A-SAT missile. This has made India 4th Space super Power in the world.

Key features :-

- The technology was indigenously developed and tested by India’s DRDO (Defence Research and Development Organisation). The launch took place from Balasore, Odisha.
- The missile engaged and destroyed a decommissioned Indian satellite in the Lower Earth Orbit at an altitude of nearly 300 km.
- Low Earth Orbit is equal to an altitude up to 2,000 km. An LEO satellite can potentially monitor ground and water surfaces and can be used for spying which compromises country’s security.
- It is important to note that though the target Indian satellite of India’s ASAT test was hit at a range of 283 km, the missile is actually capable of shooting down hostile objects moving at 10 km per second at a far higher altitude of nearly 1200 km.
- It has been made clear by India that the intent of the test is to defend India’s space assets and not to start an arms race in space.

Technology :-

- Apart from gaining global status and a greater say in international negotiations on outer space, the test’s real significance lay in the demonstration of the progress made in the BMD(Ballistic missile development) programme under which the DRDO is developing, in 2 distinct phases, a two-layered shield against hostile missile attacks.
- It is important to note that the missile used for the ASAT test was not part of the BMD

programme's existing interceptor missile inventory, namely the Advanced Air Defence (AAD) missile for endo-atmospheric interception and the Prithvi Delivery Vehicle (PDV) missile for exo-atmospheric interception, though it has benefited from the DRDO's various missile developmental programmes, including BMD.

- A brand new three-stage missile with two solid rocket boosters, weighing 18 ton and measuring 13 meters, was independently developed for the ASAT test after the government go-ahead about two years ago.
- The missile was developed in a short span of time with 150-odd scientists working around the clock for the past 6 months.
- The greater significance of the ASAT lies in its technological spin-off for Phase-II of the BMD under which the DRDO aims to intercept longer-range missiles of 5000 km range at a higher altitude of up to 400 km.

International repercussions :-

- The USA and China have expressed their concerns over peace in outer space. The USA has been particularly worried about the debris of the destroyed satellite left in orbit after the test. Debris in space can cause safety hazards to space stations and other projects. But, India has ensured that the debris will fall back to earth in a matter of weeks due to it being in LEO.
- The anti-satellite space technology shows India's focus on security challenges, emanating beyond Pakistan.
- The most important international Treaty on space is the '1967 Outer Space Treaty'. India signed this treaty and ratified it in 1982. The Outer Space Treaty prohibits only the use of weapons of mass destruction in outer space, not ordinary weapons.
- India is a part of the Missile Technology Control Regime(MTCR). Mission Shakti will not have any effect on India's status in the MTCR or other such treaties.

Future implications of the test for India and the world :-

- India has always advocated the peaceful use of outer space but, the fact remains that space is increasingly being used by countries, particularly the US and China, for military purposes.
- China, which has made a giant stride in space capability, operates nearly 70 military satellites in orbit, which perform the tasks of communication, ISR (Intelligence, Surveillance, and Communication) and navigation.
- China also established a Strategic Support Force (SSF) in 2015, integrating space, cyberspace, and electronic warfare (EW) aspects into a joint command under the Central Military Commission.
- Given this reality of the military utility of outer space, it is only logical that India exploits its new capability in the fourth domain of warfare to further national security interests.
- India made a modest beginning in this regard in 2001 by implementing a space-based surveillance programme. A further impetus was provided when an Integrated Space Cell (ISC) was constituted in 2009 under Headquarters Integrated Defence Staff (HQ IDS) to coordinate the space-related aspects of the three defense forces.
- Now, this Cell needs to be upgraded to a dedicated defense Space Command to cater to all

user services. It may be headed by a senior military officer, with a strong component of specialists from various scientific and technical organizations including DRDO, National Technical Research Organisation (NTRO) and the Indian Space Research Organisation (ISRO).

Defence Space Research Agency (DESRA) :-

In addition to establishing a Space Command, India also needs to create a dedicated Defence Space Research Agency (DESRA) to harness the entire spectrum of space technologies with defense applications. Such an agency may be set up under the DRDO, which has gained a head start in this crucial area. Suffice it to mention that, apart from the ASAT capability, DRDO has also developed an Electro-Magnetic Intelligence Satellite (EMISAT), which was launched on April 01, 2019. Besides, with the successful design, development, and deployment of the Agni series of missiles, the DRDO has the requisite capability to meet the launch-on demand for urgent satellite launches.

Conclusion :-

In light of the above information, it can be safely said that the test was a successful step towards a more robust role of India in space in the future. ISRO and DRDO have, time and again, proved their competence and commitment to put India on the world map as an effective space power. Continuing with the same pace, India can achieve marvels in its space and defense capabilities.

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