

ISRO and its role in Defence

April 12, 2019

Manifest Pedagogy

ISRO and DRDO are the backbones of India's defence preparedness, be it offensive or defensive. Recent ASAT test has been the most debated topic around the world. Hence, we can expect the Mains questions on the synergy of ISRO and DRDO in defence capabilities. Also, we can expect Prelims questions on ISRO and DRDO as 2018 and 2019 are busy years in the field of space and defence.

In news

ISRO to launch many defence satellite this year

Placing it in the syllabus

Awareness in feild of space

Static dimensions

History of ISRO and its role in defence of India

Current dimensions

List of satellites launched by ISRO

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About ISRO

It was estanlished in 1969, presently headquartered in Bengaluru.

Mission

- Design and development of launch vehicles and related technologies for providing access to space.
- Design and development of satellites and related technologies for earth observation, communication, navigation, meteorology and space science.
- Indian National Satellite (INSAT) programme for meeting telecommunication, television broadcasting, and developmental applications.
- Indian Remote Sensing Satellite (IRS) programme for the management of natural resources and monitoring of environment using space-based imagery.
- Space-based Applications for Societal development.
- Research and Development in space science and planetary exploration.

India's space program was initiated with the vision of using outer space for peaceful purposes at a time when Cold War peers were challenging in this domain for military and strategic superiority. Dr. Vikram Sarabhai, the father of India's space program, renounced such competition, stating that space technology should be designed to build a modern society with solid economic foundations in this country.

Accordingly, ISRO concentrated its resources on developing fleets of communications and remote sensing satellites, enabling telecommunications, weather forecasting, transportation, management and conservation of natural resources and natural disasters, urban planning, and more.

But in recent times India's space capabilities helped its armed forces acquire actionable intelligence on the terrorist launch pads in Pakistan-occupied Kashmir that were destroyed during the recent surgical strikes by India's military. After the strikes, the Indian Space Research Organisation (ISRO) highlighted, for the first time its role in India's national security. Its leadership declared that the organization will not be found lacking from securing the country's national interests. There are also some recent surgical strikes where

ISRO played a pivotal role by helping Indian Army to specifically target the terror pads in Pakistan.(Uri and Balakot in Pakistan)

List of satellites

RISAT

RISAT (Radar Imaging Satellite) is a series of satellites built by ISRO for the identification of Indian radar imaging. Using synthetic aperture radars (SAR) they provide all-weather monitoring. The RISAT series are the first all-weather earth observation satellites from ISRO.

RISAT-2 was the first of the RISAT series to reach orbit. It was launched in 2009 with the PSLV rocket (just after 2008 Mumbai attack). It was used for border surveillance, to deter insurgent infiltration and for anti-terrorist operations. And RISAT-1 was launched in 2012, it is an indigenously developed radar imaging satellite launched by PSLV-XL.

CARTOSAT

The **Cartosat** series of earth observation satellites indigenously built by India. ISRO has launched eight Cartosat satellites up till now. The Cartosat series is a part of the Indian Remote Sensing Programme. They were specifically launched for Earth's resource management and monitoring.

EMISAT

Recently, the Indian Space Research Organisation (ISRO) launched the country's first electronic surveillance satellite, EMISAT, from Sriharikota by PSLV C45 (with new variant QL). For the first time the mission would witness ISRO's placement of payloads in three orbits and conducting space experiments.

The mission marks several firsts to the space agency's credit as it would maneuver satellites in different orbits and

orbital experiments, including applications for maritime satellites.

The Spacecraft will add teeth to **situational awareness of the Armed Forces** as it will provide location and information of hostile radars placed at the borders; this will be another dimension to current land or aircraft-based ELINT.

GSAT -6,7,7A

GSAT-6 is India's twenty-fifth geostationary satellite built by ISRO and twelfth in the GSAT series. It provides communication through S-band payload with five spot beams covering whole India for user links and C-band with one beam.

GSAT-7 is an advanced military communication(multiband) satellite of ISRO that provides a wide range of services from low bit rate voice to high bit rate data communication. It is designed to provide communication capabilities to users over a wide oceanic region including the Indian land-mass. It is the first dedicated military communication satellite (unlike earlier dual-use satellites) built by ISRO that will provide services to the Indian defence forces with the main user being the Indian Navy.

GSAT 7A launched by ISRO, It was the 39th communication satellite. The Satellite is built to provide communication capability to the users over the Indian region. It was meant primarily for Indian Air Force with Indian Army using 30% of capacity. It is similar to GSAT 7.

MICROSAT R

Microsat – R was a DRDO – manufactured earth observation satellite launched by the Indian Space Research Organization and was intended for military use. This was the first flight of a new variant of PSLV called PSLV-DL with two strap-ons, each carrying 12.2-tonnes of solid propellant.

A-SAT

India announced the successful launch of India's first ASAT in March 2019. The interceptor was able to strike a test satellite at an altitude of 300 kilometers in low earth orbit (LEO) and thus test its ASAT missile successfully. The operation was called Mission Shakti. Defense Research and Development Organization (DRDO) developed the missile system. With this test, India became the fourth nation with capabilities for anti-satellite missiles.