

AD-1:long-range interceptor missile

written by iasexam.com | 03/11/2022



Topic- Defence Technology [GS Paper-3]

Context- The Defence Research & Development Organisation (DRDO) has recently conducted the maiden flight-test of Phase-II of the ballistic missile defence (BMD) interceptor missile AD-1 successfully.

Key Highlights

- The maiden flight-test was carried out from APJ Abdul Kalam Island off the coast of Odisha with participation of all BMD weapon system elements located at different geographical locations.
- During the flight-test, all the sub-systems performed as per expectations and were then validated by the data captured by a number of range sensors including Radar, Telemetry and Electro Optical Tracking stations deployed to capture the flight data.
- This interceptor will provide great operational flexibility to the users as it has the capability to engage different types of targets.
- With the successful testing of AD-1, India has become the fourth country in the world after the US, Russia and Israel to successfully build an effective anti-ballistic missile system.

AD-1

- The AD-1 is a long-range interceptor missile designed for both low exo-atmospheric and endo-atmospheric interception of long-range ballistic missiles as well as aircraft.

- The missile is propelled by a two-stage solid motor system.
- It is equipped with an indigenously developed advanced control system, navigation and guidance algorithm to precisely guide the vehicle to the target.
- It can target a weaponised flying object in the range of 1,500 km to 3,000 km.

Ballistic Missile Defense (BMD) system

- India has a double-layered ballistic missile defence (BMD) system that is capable of tracking and destroying hostile missiles both outside (exo) and inside (endo) the earth's atmosphere.
- The system consists of two interceptor missiles, i.e. Advanced Area Defence (AAD) missile for endo-atmosphere or lower altitudes and Prithvi Defence Vehicle for exo-atmospheric ranges.
- The Missile Defense System is being developed in two phases i.e.
- Phase I – The first phase BMD system is capable of killing enemy missiles fired from a distance of 2,000 km away.
 - This has been inducted in the armed forces soon.
- Phase II – The second phase BMD system, capable of destroying enemy missiles fired from 5,000 km away.

Significances of Ballistic missile

- The ballistic missiles have very long range, as they travel above the atmosphere, experience less drag and use gravity and earth's rotation.
- These are highly fuel efficient as only fuel requirements are needed during lift-off phase and during course correction measures.
- The capability of multiple independent targetable re-entry vehicles (MIRV) can be achieved in ballistic missiles.
- Due to fuel efficiency, the payload carrying capacity of the missiles is significantly more than cruise missiles.