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DAILY NEWSPAPER ANALYSIS

THE HINDU

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Topic: GS2/GS3 - ASAT and Global Regulation of Space

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Seeking the next frontier

Context:-

- Recently, India successfully carried out an **anti-satellite (ASAT) test** using an interceptor missile (as a kinetic kill vehicle) to neutralise a target satellite in *a Low Earth Orbit (LEO)*.
- India is the **fourth country** (after the U.S., Russia/USSR and China) to acquire this capability.
- India's test has **not violated any international norm** as there is no international treaty prohibiting the testing or the development of ASATs.
- Moreover, between 250-270 objects of space debris that were created following the *test did not pose any threat due to debris created by it and they will expected to dissipate in 45 days* and it is also confirmed by US that the **debris did not pose a threat to the International Space Station**, which orbits at an altitude of around 350 km.

About ASAT and Its Need:-

- With developments in **offensive cyber capabilities**, *a promising new area is to disrupt communication links between the satellite and ground control by damaging the transponders or the power source*, there is need of Anti-satellite programme as there are **patchy global regulatory regime in space**.
- An ASAT capability is normally a part of a **Ballistic Missile Defence (BMD) programme**.
- While a BMD targets an incoming ballistic missile, an ASAT interceptor targets a hostile satellite.

- **About BMD Programme:** Faced with Pakistan's growing missile capability in the 1990s (Pakistan acquired the M-9 and the M-11 missiles from China and the No-dong from North Korea), India embarked on its **BMD programme in 1999**. A **modified Prithvi** was to be developed as the intercept missile. The programme gradually expanded the parameters of the system to enable taking on targets at higher altitudes.
- **Anti-sattelite Capabilities of Other Nations:** Both the **U.S**. and **USSR** began to develop ASAT systems as a part and parcel of their anti-ballistic missile programmes.
  - During the 1980s, both countries concluded their kinetic kill interceptor testing.
  - Instead, they began to focus on **co-orbital anti-satellite systems** and *directed energy (laser) systems which could neutralise a satellite without fragmenting it and generating space debris*.
  - After the 2007 test, **China** too has carried out subsequent ASAT development along these lines.
  - **France** and **Israel** are believed to possess the capability, though they did not officially claim it.

Issues of Debris in A crowed Space:-

- Since the **Sputnik** was launched in 1957, more than **8,000 satellites/manmade** orbiting objects have been launched, of which about **5,000 remain in orbit; more than half are non-functional**.
- Currently, more than 50 countries own/operate the nearly 2,000 functional satellites in orbit. Of these 2,000 satellites, **over 300 are dedicated military satellites**.

- Growing amounts of ***space debris pose a real risk to satellites and spacecraft***.
  - There are over 20,000 objects of debris which are the size of golf balls while those of smaller size run into hundreds of thousands, totalling nearly 6,000 tonnes.
- One of the reasons that the international community protested strongly about the 2007 Chinese test was that it added nearly 3,000 pieces of debris as the test was done at a higher altitude (800 km), from where it would take decades to dissipate.
- The debris created by the Indian test, which was undertaken at a low altitude, is expected to dissipate much faster with in 45 days.

International Regulation of Space use:-

- **Need for Regulation- Militarisation of Space:** The salience of space in defence is evident from the fact that all three countries — the U.S., Russia and China — have set up **'Space Commands'**.
  - This has given rise to demands to prevent the **militarisation of space** so that it is preserved **"as the common heritage of mankind"**.
- **Current System of Regulation:** The **1967 Outer Space Treaty** followed by the **1979 Moon Treaty** laid the foundations of the legal regime for space beginning with
  - the rule of law,
  - refraining from appropriating territory,
  - non-placement of any weapons of mass destruction in space, and
  - prohibition of military activities on the moon and other celestial bodies.

- **Issues with the Current Regulations:** These treaties were *negotiated when the technology was still in a nascent stage*.
  - Satellite registration was introduced in the 1970s though **compliance has been patchy**.
  - The U.S. has been adamantly **opposed to negotiating any legally binding instrument** to prevent **'militarisation of space'**, *questioning the very meaning of the term, given that space as a medium is increasingly used for military applications*.
- **Attempt of Effective Regulation of Space:** In **2008**, **Russia** and **China** had proposed a draft to kick off negotiations on the **Treaty on the Prevention of the Placement of Weapons in Outer Space** and of the **Threat or Use of Force Against Outer Space Objects**. It was rejected by the West.
  - The **European Union,** mindful of U.S. allergy to any negotiations on this issue, began to develop **an international code of conduct** based on transparency and confidence-building measures.
  - The **UN General Assembly** has called for **a declaration of political commitment** by all countries that they shall not be the first to place weapons in space. This initiative too has floundered as norm building cannot take place in a political vacuum.
- At present, the U.S. is the dominant presence in space, which reflects its technological lead as well its dependence on space-based assets. It therefore perceives any negotiations as a constraint on its technological lead.

Conclusion:-

- While countries have developed and tested ASATs, they are not known to have stockpiled ASAT weapons.
- Effective use of an ASAT also requires space situational awareness capability, which works best if it is a cooperative effort.
- India's successful ASAT test is therefore a **technology marker**.
- Further development of interceptor technology and long-range tracking radars is necessary for a robust BMD and the Defence Research and Development Organisation also needs to move on to newer technologies to enhance its ASAT capability in the coming years.