



Agnibaan SubOrbital Technological Demonstrator (SOrTeD)

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Why in News?

Recently, AgniKul Cosmos, a space tech start-up based in Chennai, set to launch their groundbreaking [Agnibaan SubOrbital Technological Demonstrator \(SOrTeD\)](#), the world's first 3D-printed rocket into space.

- AgniKul Cosmos' journey is supported by the [Indian Space Research Organisation \(ISRO\)](#) and [Indian National Space Promotion and Authorisation Centre \(IN-SPACe\)](#).

What are the Key Highlights of AgniKul's SOrTeD?

- The Agnibaan SOrTeD is a **customisable launch vehicle** that could be launched in **one or two stages**. It is powered by AgniKul's patented Agnilet engine.
 - Agnilet, is a **3D-printed, 6 kilonewton (kN) semi-cryogenic engine** that uses liquid oxygen and kerosene as propellants.
- Unlike **traditional sounding rockets that launch from guide rails**, Agnibaan SOrTeD will **take off vertically and follow a predetermined trajectory**, executing precisely **orchestrated maneuvers during its flight**.
 - It is capable of carrying payloads up to 100 kg to an altitude of 700 km in five different configurations.
- Agnibaan SOrTeD will be the first step towards launching the **world's first 3D-printed rocket into space**.

What is 3D Printing?

- **3D printing is also known as additive manufacturing** which uses materials such as plastics and metals to convert products envisaged on computer-aided design to real three-dimensional items.
 - It is the opposite of **subtractive manufacturing** which is cutting out/hollowing out a piece of metal or plastic with, for instance, a milling machine.
- 3D printing traditionally has been used for prototyping and **has a lot of scope in making artificial limbs, stents, dental crowns, parts of automobiles and consumer goods**, among others.

UPSC Civil Services Examination Previous Year Questions (PYQs)

Q. With reference to India's satellite launch vehicles, consider the following statements: (2018)

1. PSLVs launch the satellites useful for Earth resources monitoring whereas GSLVs are designed

mainly to launch communication satellites.

2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors; and the second and fourth stages using liquid rocket engines.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 2
- (d) 3 only

Ans: (a)

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