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Daily Current Affairs Encyclopedia

02 April 2024

National and International News

Kalam-250



Context:

- The recent successful **test firing of Stage-2, named Kalam-250, of the Vikram-1 space launch vehicle by Skyroot Aerospace marks a significant advancement in India's space industry.**
- **Importance:** Stage-2 is crucial in propelling the launch vehicle from the atmospheric phase to the deep vacuum of outer space, playing a pivotal role in achieving the desired trajectory.

Key points:

- **Kalam-250 is a high-strength carbon composite rocket motor using solid fuel.**
- It features a **high-performance Ethylene-Propylene-Diene terpolymers (EPDM) Thermal Protection System (TPS).**
- The stage-2 includes a carbon ablative flex nozzle and high-precision electro-mechanical actuators for thrust vector control, ensuring **precise trajectory adjustments.**
- The solid propellant for Kalam-250 was processed by **Solar Industries at their Nagpur facility.**
- The successful test firing brings Skyroot Aerospace **closer to the upcoming orbital launch of the Vikram-1 rocket.**

Vikram I Details

- Vikram I is the **first rocket in the series, featuring three solid-fuel-powered stages and a final stage equipped with Raman engines.**
- The Raman engines, powered by MMH and NTO liquid fuels, are used for final orbit adjustments.
- Vikram I is designed to lift payloads of up to 290 kg to a 500 km Sun synchronous polar orbit (SSPO) or **480 kg to a 500 km low Earth orbit (LEO) with a 45° inclination.**



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Asteroid 2015 MB54



Context:

- NASA has been tracking a massive **170-foot asteroid(Asteroid 2015 MB54)** that is moving towards Earth at a speed of **13,798 kilometers per hour**.
- On March 29, NASA's Jet Propulsion Laboratory predicted the passage of **four asteroids near Earth**.
- **Monitoring celestial objects is crucial to protect Earth from potential impacts and damage.**

Key points:

- NASA reassures that Asteroid 2015 MB54 poses no threat to Earth due to its relatively small stature.
- According to **NASA's criteria**, only asteroids **approaching within 4.6 million miles** and measuring larger than approximately 150 meters are considered **potentially hazardous**.

Asteroids:

- Asteroids, also known as **minor planets**, are **rocky remnants from the early stages** of the solar system's formation around **4.6 billion years ago**.
- These space rocks are primarily located in the **main asteroid belt, a region between Mars and Jupiter, and their total count exceeds 1,351,400**.
- These celestial objects vary **greatly in size**, with the largest asteroid, **Vesta, measuring about 329 miles (530 kilometers) in diameter**, while the smallest are less than 33 feet (10 meters) across. Their shapes range from nearly spherical to irregular double-lobed peanut shapes.
- Asteroids **follow highly elliptical orbits around the Sun**, often rotating unpredictably and tumbling through space.
- Despite their abundance, the combined mass of all asteroids is less than that of **Earth's Moon**. Interestingly, many large asteroids have small moons orbiting them.



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<p>USSD</p>	<p>Context:</p> <ul style="list-style-type: none">• The Department of Telecom (DoT) has issued a directive to telecom operators regarding the deactivation of USSD-based call forwarding services, effective from April 15, to prevent fraud and online crimes. <p>Key points:</p> <ul style="list-style-type: none">• USSD (Unstructured Supplementary Service Data) is a protocol used by GSM cellular telephones to communicate with service provider computers.• It allows users to interact with various services using short codes, initiating a session between the user's phone and the service provider's system. <p>Reasoning and Impact:</p> <ul style="list-style-type: none">• The directive aims to prevent fraud and enhance security for subscribers by suspending USSD-based call forwarding services.• Telecom operators can mitigate risks associated with fraudulent activities.
<p>Plastic Waste Management Amendment Rules 2024</p>	<p>Context:</p> <ul style="list-style-type: none">• The Union Environment Ministry has recently introduced stricter rules to regulate "biodegradable" plastics in response to the growing concern over microplastic pollution.• These rules aim to ensure that the environmental impact of disposable plastic ware is accurately communicated through labelling. <p>Key points:</p> <ul style="list-style-type: none">• Biodegradable plastics were initially seen as a solution to plastic waste, as they were expected to decompose naturally after use, reducing plastic accumulation in landfills and the environment.• However, previous regulations in India lacked clear definitions for "biodegradable," leading to incomplete breakdowns and the potential for microplastics to remain.• The new rules require complete biodegradation, with no microplastics left behind, representing a significant step towards preventing further plastic waste pollution. <p>Microplastics:</p> <ul style="list-style-type: none">• Microplastics are small plastic pieces less than five millimeters long which can be harmful to our ocean and aquatic life.



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India's Defence Exports Reach Record High

Context:

- India's defence exports exceeded ₹21,000 crore for the first time.

Key points:

- The Defence Ministry reported a 31-fold increase in exports over the past decade compared to FY 2013-14.
- Mr. Singh expressed his delight, highlighting the significant milestone in India's defence exports.
- The exports reached ₹21,083 crore in FY 2023-24, marking a remarkable 32.5% growth from the previous fiscal year.

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