Prelim Bits 03-01-2019

Scramjet Engine

- The first experimental mission of a sub-scale Scramjet engine was successfully conducted by ISRO in 2016.
- The mission, towards the realization of an Air Breathing Propulsion System, was conducted from Satish Dhawan Space Centre, Sriharikota.
- Launch vehicles use a combination of propellants consisting of oxidiser and fuel for energy.
- In the launch vehicle basically, 86% of the total launch vehicle mass is propellant mass.
- Air-breathing propulsion systems use atmospheric oxygen, which is available up to a height of 50km from the earth's surface, to burn the fuel stored on board.
- As the air from the atmosphere is used in this tech it reduces the need for carrying the oxidizer along with the fuel.
- So it will benefit in bringing down the cost of access to space.
- The technology is an important step towards developing reusable launch vehicles.
- Ramjet, Scramjet and Dual Mode Ramjet (DMRJ) are the three concepts of air-breathing engines which are being developed by various space agencies.

Characteristics	Feature	Speed
Ramjet	Uses the vehicle's forward motion to compress incoming air for combustion without a rotating compressor.	Supersonic speed around Mach 3
Scramjet	An improvement over the ramjet engine, so Supersonic Combustion Ramjet	Hypersonic and Supersonic speed

Dual Mode Ramjet	Type of jet engine where a ramjet transforms into scramjet over Mach 4-8 range.	Subsonic and supersonic combustor modes.

Heritage Preservation in Indian Railways

- Ministry of Railways has initiated several measures to promote heritage preservation in the Railways.
- These include

1. Strengthening Railway museums
2. Digitization of Railway Heritage
3. Bringing it online for universal access etc.

- The Ministry has made a specific provision in the budget outlay for 2018-19 for the revival of steam locomotives including restoration and procurement of spares.
- In addition, maintenance of five hill railways of India is undertaken as per provision of Indian Railways and UNESCO Guidelines.
- Those five hill railways are

a. Darjeeling Himalayan Railway (DHR)
b. Nilgiri Mountain Railway (NMR)
c. Kalka Shimla Railway (KSR)
d. Matheran Light Railway(MLR)
e. Kangra Valley Railway (KVR)

- In addition, a special delegation of powers has been accorded to concerned Divisional Railway Managers for promoting tourism in these five hill railways.

Swap ratio

- When a company pays for an acquisition by issuing its own shares to the shareholders of the target company, this is known as a share swap.
- The number of shares to be issued in lieu of their existing holdings in the target company is called the swap ratio.

- The swap ratios are based on stock prices.
- It is determined by valuing the target company after looking into metrics such as its revenues and profits, as well as its market price.

- **Advantages -** As shareholders of the target company will also be shareholders of the merged entity, the risks and benefits of the expected synergy from the merger will be shared by both the parties. In a cash deal, if the synergies don't materialise, shareholders of the acquiring company alone bear the fallout.
- In a share swap, there is no cash outgo involved for the acquirer, saving the acquirer borrowing costs. Cash rich companies can put their cash to use for investments in the business or for other buyouts.
- **Disadvantages -** Issuing fresh shares could lead to reduction in promoter holding and dilution in earnings for shareholders of the acquiring company.

Invasion of Shola Grasslands

- Shola forest-grassland ecosystem is characterised by patches of forest of stunted evergreen shola trees in the valleys and grasslands on hill slopes.
- They are spread across Western Ghats of Tamilnadu and Karnataka.
- Over four decades, almost one-fourth of the grasslands in the high-altitudes of the ecosystem were lost.
- The exotic invasive trees like pine, acacia and eucalyptus that were earlier used for afforestation in these areas are primary reason behind it.
- Broadly, these grasslands in Tamil Nadu showed the highest rates of invasion than in Karnataka.
- Though the practise has been ceased in 1996, the exotics still invade these ecosystems.
- But the shola forests in the valleys have remained "relatively unchanged" over these years.
- The Anamalai-Munnar areas have also remained stable during this time.

UK Sinha Committee

- RBI has set up an expert committee under former Sebi chairman U K Sinha to suggest long-term solutions for the economic and financial sustainability of the MSME sector.
- They will identify the 'structural problems' affecting the growth of the small scale sector.
- The eight-member committee will also examine the factors impacting credit flow to MSMEs and propose measures for leveraging technology in accelerating growth of the sector.
- Such a high level committee has been assigned to examine MSMEs because these enterprises contribute about 40% to India's export and 45% in the manufacturing sector.
- The report will be submitted by the end of June 2019.

Rock Pigeons

- Rock pigeon is a medium-size compact pigeon with long wings and a short tail.
- This highly variable city pigeon is familiar to all urban dwellers.
- Multicoloured birds were developed over centuries of near domestication.
- The rock pigeon was introduced from Europe by an early settler.
- It is now widespread and common throughout the United States and southern Canada, particularly in urban settings.
- it feeds on handouts and grains during the day in city parks and open fields.
- They form large flocks and roosts on buildings at night.
- It is primarily associated with human development and dependent on people for food and shelter.

Source: PIB, The Hindu

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