DAILY CURRENT AFFAIRS 15-02-2024

GS-1

1. **Mohammad Quli Qutb Shah**

GS-3

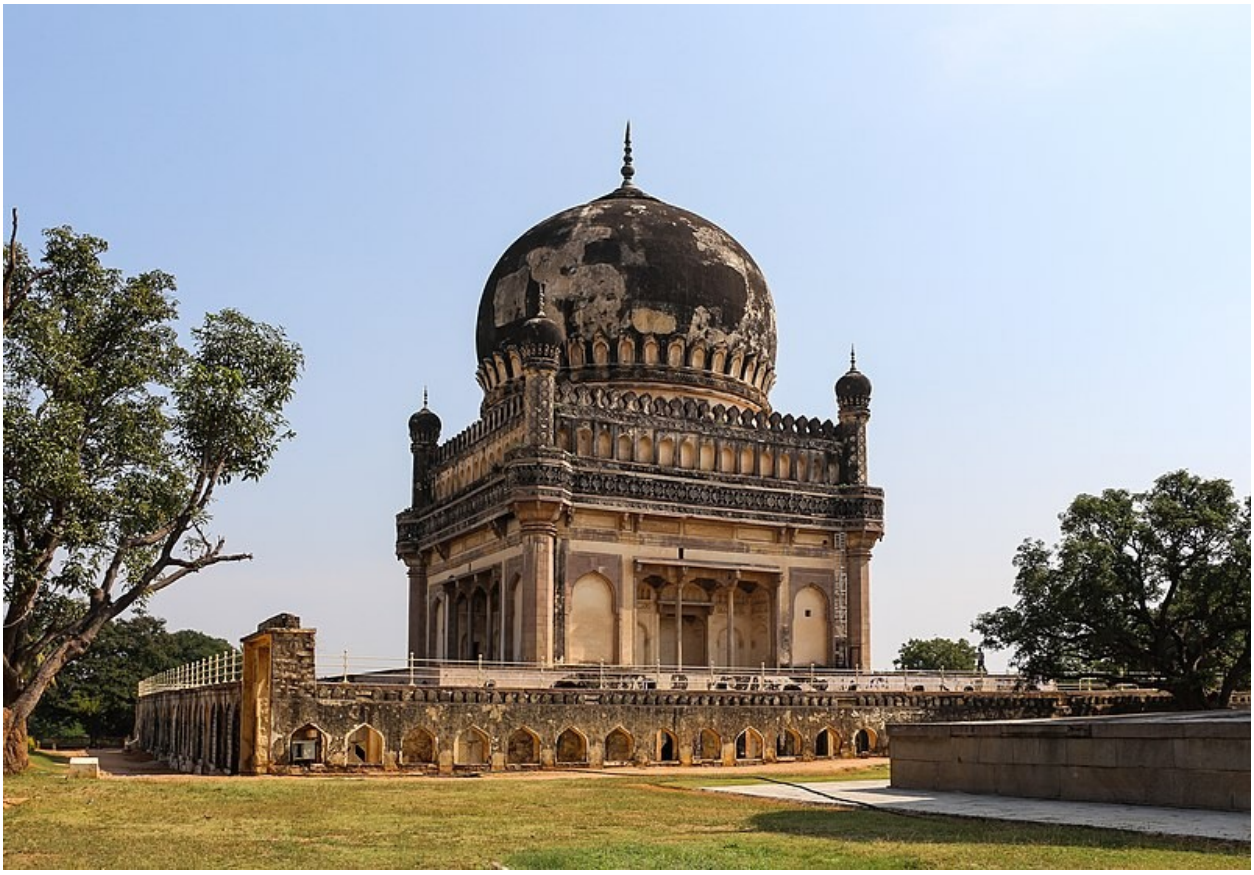
2. **Why India needs deep industrialization**
3. **Minimum Support Price**
4. **High altitude Pseudo satellite**
5. **The role of X chromosome in auto-immune diseases**

Mohammad Quli Qutb Shah

Syllabus: GS-1; Medival Indian History.

Context

- *Recently, A digital twin of the Mohammed Quli Qutb Shah's tomb was unveiled by a reality technology company, Hexagon in Hyderabad.*



About

- *Muhammad Quli Qutb Shah was the fifth sultan of the* **Qutb Shahi dynasty of Golkonda** *and founded the city of Hyderabad, in South-central India and* **built its architectural centerpiece, the Charminar.**
- *He was an able administrator and his reign is considered one of the high points of the Qutb Shahi dynasty.*
- *As the* **first author in the Urdu language**, *he composed his verses in the Persian diwan style, and his poems consisted of verses relating to a single topic,* **gazal-i musalsal.**
- *His rule lasted for 31 years, his contemporaries were* **Akbar the Great, Jagat Guru and Ibrahim Adil Shah.**

- *In 1591, Qutb Shah* **built the city of Hyderabad on the east bank of the Musi River**, *not far from Golconda.*
- *The city's centerpiece is the Charminar, a grand Indo-Saracenic structure with four minarets and open arches.*
- *Hyderabad became a major center for culture and trade in diamonds and pearls.*
- *Qutb Shah's tomb is located in Ibrahim Bagh, Hyderabad, among other royal tombs. It has a square base, pointed arches, and an ornate dome that was once covered in green and turquoise tiles. The tomb is built in* **Persian, Hindu, and Pathani architectural styles**.
- *Qutb Shah is also known for his love of flora and fauna, his people, and himself. He is thought to be the subject of a Deccani painting that depicts a sultan carrying his Hindu bride in a nighttime procession. The pair are believed to be Qutb Shah and Bhagmati, legendary lovers of Golconda.*

Digital twin technology

- *A digital twin is* **a digital representation of a physical object, person, or process, contextualized in a digital version of its environment.**
- *Digital twins can help an organization simulate real situations and their outcomes, ultimately allowing it to make better decisions.*

Why India needs deep industrialization

Syllabus: GS-3: Indian Economy – Industrialisation.

Context:

If economic development and not growth were our priority, manufacturing that takes along the service sector maybe the solution to India's problems.

Background:

The COVID-19 pandemic has shifted global economic perspectives, **leading to a retreat from globalization.**
Countries are adopting industrial policies and **state-led economic interventions**.
Examples include the Inflation Reduction Act in the U.S., the European Green Deal, and India's Atmanirbhar Bharat initiative.
India experienced sustained growth momentum post-pandemic but is facing **"premature deindustrialization."**

The **benefits of high growth are unevenly distributed**, *with a small minority benefiting while many struggle with high food prices.*
This **inequality reflects** *underlying issues in India's growth structure.*
There's a longstanding question: *why hasn't India broken out of industrial stagnation to generate employment?*
Raghuram Rajan and Rohit Lamba propose an alternative perspective in **"Breaking the Mould: Reimagining India's Economic Future."**
They suggest **prioritizing high-skill, services-driven growth** *over manufacturing-led growth.*

Why break the mould now?

India has struggled to **industrialize sufficiently over 75 years**, *with manufacturing* **consistently below 20% of output and employment**.
Economic reforms in 1991 *aimed at labour-intensive industrialization* **did not significantly change this reality.**
India faces **stagnating industrial investment**, *high unemployment, and chronic disguised unemployment.*
The widening trade deficit *is fueled by imported goods, indicating a lack of domestic production.*
Rajan and Lamba propose promoting high-skill services *powered by information technology to stimulate manufacturing, which challenges the traditional view that services growth depends on manufacturing growth.*

However, there are concerns that this approach may exacerbate existing issues:

Services-led growth has poor employment elasticity *and cannot absorb labour exiting agriculture as effectively as manufacturing.*
The service sector **requires a highly skilled workforce**, *leading to* **inequality in wages and opportunities.**
Early investments in higher education *led to the neglect of mass school education, creating unequal access to education and contributing to industrial stagnation.*
Returns to education vary across social groups, with traditional elites benefiting more from **high-skill services growth than rural and small-town graduates**.
These issues deepen class divides *in India and are linked to historical inequalities rooted in the caste system.*

A culturally rooted diagnosis

The stagnation of industrialization in India can be attributed partly to a **lack of mass education**, *which is seen as a* **crucial cultural prerequisite for industrialization**.
Economic historian Joel Mokyr suggests *that technological progress and economic growth in modern economies are fueled by the rise of useful knowledge.*

Foreign direct investment in India, *intended to bring technology, was limited and did not spread widely except in certain areas.*

A culture of growth necessitates *a re-evaluation of labour, production, and technology, which India has historically not fully embraced.*

Certain occupations, especially those deemed essential for manufacturing, have been undervalued, hindering organic innovation.

Industrialists argue that **India fails to appreciate the vocational skills** *crucial for manufacturing, even when they command higher wages.*

Artisanal knowledge lacks social respect *compared to academic pursuits, impacting innovation and efficiency.*

Mass education and collective absorptive capacity *are essential for innovation and its diffusion, which in turn drive increasing returns and efficiency.*

India needs to focus on deep industrialization, *not solely on the service sector, in order to fundamentally transform societal foundations.*

Industrialisation Vs Deep Industrialisation:

Industrialization focuses on developing industries, while **deep industrialization emphasizes sustainable and inclusive growth.**

Traditional industrialization *aims for industrial development in a region or country, whereas deep industrialization integrates advanced technologies and fosters innovation.*

Deep industrialization *prioritizes environmental and social responsibility alongside economic growth.*

Unlike **traditional industrialization**, *deep industrialization aims for long-term economic stability and societal well-being rather than rapid expansion.*

Practice Question

Q. If economic development and not growth were our priority, manufacturing that takes along the service sector maybe the solution to India's problems. Analyse. (10 marks, 150 words).

Minimum Support Price

Syllabus: GS-3; Agriculture, GS-2; Government policies and Interventions

Context

- *After nearly two years, farmers from Punjab, Haryana, and Uttar Pradesh represented by over 200 unions, are* **marching towards Delhi** *to push for their demands, which* **include a legal guarantee for the minimum support price (MSP),** *based on the* **Swaminathan Commission formula.**

What is Minimum Support Price (MSP)?

- *Minimum Support Price (MSP) is the* **lowest rate at which government procurement agencies buy crops from farmers**.
- **It shields farmers from market fluctuations, offering stability and income security.**
- *MSP is crucial for ensuring fair prices for farmers and is determined by the* **Commission for Agricultural Costs and Prices (CACP),** *considering factors like production costs, market trends, and demand-supply dynamics.*
- *Established in 1965, CACP operates under the Ministry of Agriculture and Farmers Welfare.*
- *After the CACP submits its recommendations, the Cabinet Committee on Economic Affairs (CCEA), chaired by the Prime Minister of India, makes the final decision on MSP levels.*

How is MSP calculated?

- *The Minimum Support Price (MSP) is calculated by considering both the* **explicit and implicit costs incurred by farmers.**
- *Explicit costs cover expenses like chemicals, fertilisers, seeds, and hired labour, while implicit costs include factors such as family labour and rent.*
- *These variables are represented by* **A2, FL, and C2.**
- **A2** *refers to the expenses for inputs like chemicals, fertilisers, seeds, and hired labour for crop growth, production, and maintenance.*
- *A2 + FL includes both actual and implicit costs, such as family labour.*
- **C2** *incorporates A2 + FL along with fixed capital assets and rent paid by farmers.*
- *Additionally, the Commission for Agricultural Costs and Prices (CACP) takes into account various other factors:*
    - *Cost of cultivation per hectare and crop costs in different regions.*
    - *Cost of production per quintal and regional differences.*
    - *Market prices of relevant crops and their fluctuations.*
    - *Other production and labour costs, along with associated changes.*
    - *Prices of commodities bought or sold by farmers and any fluctuations.*
    - *Information on product supply, including area, yield, production, imports, exports, and stocks with public agencies or industries.*

- *Demand information across regions, including total and per capita consumption, processing industry trends, and capacity.*

What does Swaminathan Committee report say about MSP?

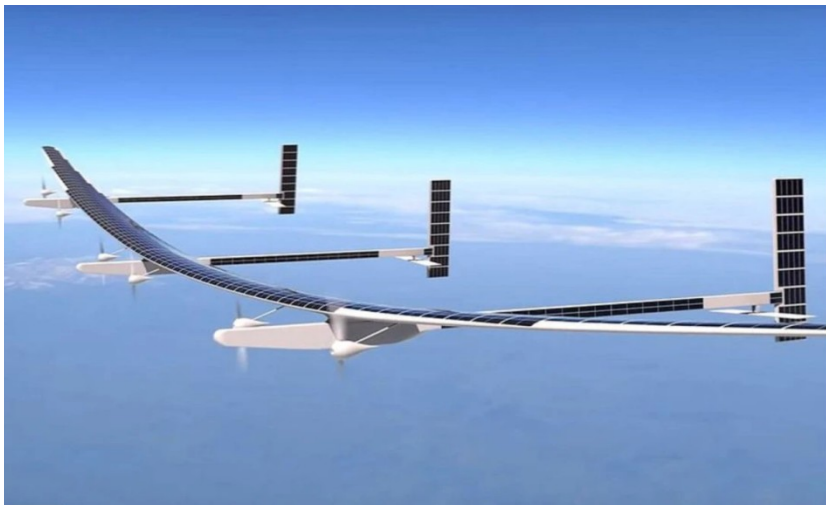
- **The National Commission of Farmers (NCF),** *led by MS Swaminathan, recommended that the* **MSP should be at least 50 per cent more than the weighted average cost of production.**
- *This was also known as the* **C2+50 per cent formula**. *This includes the input cost of capital and the rent on the land, to give the farmers 50 per cent of the returns.*
- *C2 is the actual cost of production, including account rent and interest foregone on land and machinery owned by farmers. According to the commission, the formula to calculate MSP would be* **MSP= C2+ 50 per cent of C2**. *The commission recommended that the MSP should be 1.5 times the farmers' input costs.*
- *In 2004, then* **Prime Minister Manmohan Singh** *constituted a commission under the chairmanship of famous agricultural scientist MS Swaminathan to study the problems of farmers. It was named as National Commission on Farmers (NCF).*
- *The committee submitted six reports to the government from December 2004 to October 2006.*

High altitude Pseudo satellite

Syllabus: GS-3; Science and Technology

Context

- *Recently, the Bengaluru-based* **National Aerospace Laboratories (NAL)** *successfully flew a* **prototype of a new-generation unmanned aerial vehicle (UAV)** *that is being seen as a huge technology breakthrough.*



What is High Altitude Pseudo-Satellite (HAPS)?

- *The High Altitude Pseudo-Satellite (HAPS) is a s*olar-powered unmanned aerial vehicle (UAV)*.*
- *They were conceptualized in the 1990s to operate in the stratosphere about 20 kilometres above ground. These do not require a rocket to launch. They are powered by solar energy and rechargeable batteries.*
- *The full-scale version is designed to feature a wingspan of approximately 30 meters and a weight of 150 kg.*
- *It will operate as a* **slow-flying aircraft,** *maintaining speeds between 80-100 km per hour.*
- *Despite its modest pace, it will have the capability to remain airborne for up to 90 days, cruising at altitudes ranging from 17-20 km.*
- *Additionally, it will have the capacity to carry payloads of up to 15 kg.*

What are the benefits of HAPS?

- *HAPS are called pseudo-satellites because they can* **conduct the operations of a satellite.** *However, unlike a satellite which has a predetermined path, HAPS can be easily moved to a location.*
- *The costs of building, launching and operating a single HAPS are comparatively lower than satellites.*
- *HAPS also* **enable coverage of very large areas** *(around 500 km diameter).*
- *They can also be linked to multiple ground stations simultaneously.*
- *Since they operate closer to the ground, they allow greater two-way transmission speeds and lower latency.*
- *Furthermore, HAPS can undergo refurbishment and reutilization, with their payloads reconfigured periodically.*

What are the applications of HAPS?

- *HAPS offer versatile intelligence, surveillance, and reconnaissance (ISR) capabilities, serving as valuable assets in various applications.*
- *Their primary uses lie* **in telecommunications and remote sensing, catering to both civilian and military needs.**
- *HAPS excel in providing communication services in remote regions lacking traditional infrastructure, or in deep seas environments.*
- *Additionally, they play pivotal roles in* **disaster relief efforts**, *search and rescue missions (SAR), smart city management, and precision agriculture.*
- *According to a study conducted by the European Space Agency, HAPS have the potential to deliver "***emergency communications and broadband internet services***" during major events such as the Olympics, establishing secure communication bubbles to ensure seamless connectivity.*

The role of X chromosome in auto-immune diseases

Syllabus: GS-3; Science and Technology

Context

- *In recent times several international celebrities have spoken up about their diagnosis and subsequent struggles with autoimmune diseases.*
- *A majority of these celebrities are women. This bias is not just a fluke of nature but a reflection of a worldwide phenomenon.*
- *A 2023 study by the University of Oxford stated that about* **10% of the population they had studied had autoimmune diseases of which 13% were women and 7% were men.**

What is Autoimmune disease?

- *Autoimmune disease occurs when the* **body's immune system mistakenly attacks healthy cells, tissues, and organs.**
- *This can happen when the body senses danger from a virus or infection. Autoimmune disease can affect any part of the body, weakening bodily function and even turning life-threatening.*
- *There's* **no cure for autoimmune diseases**, *but there are treatments to help manage their symptoms. In the large majority of cases, autoimmune diseases are not fatal, and those living with an autoimmune disease can expect to live a regular lifespan.*

Susceptibility of Women

- *The higher susceptibility of women to autoimmune diseases has puzzled researchers for decades.*
- *Several factors can cause autoimmune disease such as* **environmental factors, genetics, hormonal imbalance and lifestyle habits.**
- *However, since women are more susceptible to these diseases, scientists previously thought that it could be related to* **sex hormones or faulty regulation of the X chromosome**.
- *Now, a group of scientists have found a molecular coating that is found in half of the X chromosomes in women might be the reason behind this phenomenon.*
- *Human females (and most mammals) contain two X chromosomes while the males of of the species contain one X and one Y chromosome.*
- *The* **molecular coating of the X chromosome is a combination of RNA and proteins** *and is crucial to a process called* **X-chromosome inactivation** *which ensures that one set of X chromosomes in females remains active and functional in all the cells of the body while the other is muffled.*

How is this achieved?

- *The chromosome is wrapped in long strands of RNA called* **XIST** *that attract proteins and tamp down the expression of the gene inside.*
- *However, not all genes are muffled in this manner and the ones that escape the X inactivation process are thought to be the cause of autoimmune diseases. Not only this, the XIST molecule too has been known to elicit inflammatory immune responses.*
- *Additionally, one of the co-authors, Howard Chnag noted that many of the proteins that are attracted to the XIST also induced the response of* **auto-antibodies,** *a type of antibody that reacts with self-antigens.*
- *To see if these auto-antibodies attacking the XIST molecule were another reason for autoimmune diseases, Dr Chang, bioengineered male mice to produce a modified version of XIST which did muffle the gene expression but still retained the ability to form the RNA and proteins that covered the gene.*
- *They found that when a lupus-like disease was introduced in the mice, the ones that* **expressed** *XIST had higher levels of autoantibody levels than the ones that didn't. Their immune cells were also on higher alert which suggests a proneness to autoimmune attacks.*
- *Since XIST is expressed only in cells with two X chromosomes, women are more susceptible to autoimmune diseases and attacks. Further studies in this field would help in determining exactly which XIST-related antigens contribute to sex-biased immunity resulting in expedited detection and diagnosis, the authors noted.*