

## Big bang

- The Big Bang Theory is the leading explanation for how the universe began.
- Simply put, it says the universe as we know it started with an infinitely hot and dense single point that inflated and stretched first at unimaginable speeds, and then at a more measurable rate over the next 13.7 billion years to the still-expanding cosmos that we know today
- Astronomers can, however, see the "echo" of the expansion through a phenomenon known as the cosmic microwave background.

- **What is CMB??**

- The cosmic microwave background (CMB) is leftover radiation from the Big Bang or the time when the universe began.
- As the theory goes, when the universe was born it underwent rapid inflation, expansion and cooling.
- (The universe is still expanding today, and the expansion rate appears

different depending on where you look).

- The CMB represents the heat leftover from the Big Bang.

### What is the Hubble law??

- Hubble's law, also known as the Hubble Lemaître law, is the observation in physical cosmology that galaxies are moving away from Earth at speeds proportional to their distance.
- In other words, the farther they are, the faster they are moving away from Earth.

- **What is the Signal-to-noise ratio (SNR or S/N) ?**

- Signal-to-noise ratio (SNR or S/N) is a measure used in science and engineering that compares the level of a desired signal to the level of background noise.
- SNR is defined as the ratio of signal power to noise power, often expressed in decibels.

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CBDC'S

- Central bank digital currencies (CBDCs) are a form of digital currency issued by a country's central bank.
- They are similar to cryptocurrencies, except that their value is fixed by the central bank and equivalent to the country's fiat currency.
- Fiat money is a government-issued currency that has no backing from a physical commodity like gold or silver.
- It is considered a form of legal tender that can be used to exchange for goods and services.
- CBDCs would also reduce the risks associated with using digital currencies, or cryptocurrencies, in their current form.
- Cryptocurrencies are highly volatile, with their value constantly fluctuating.
- This volatility could cause severe financial stress in many households and affect the overall stability of an economy.
- CBDCs, backed by a government and controlled by a central bank, would

give households, consumers, and businesses a secure means of exchanging digital currency.

### Wholesale CBDCs

- Wholesale CBDCs are similar to holding reserves in a central bank. The central bank grants an institution an account to deposit funds or use to settle interbank transfers.
- Central banks can then use monetary policy tools, such as reserve requirements or interest on reserve balances, to influence lending and set interest rates.

### Retail CBDCs

- Retail CBDCs are government-backed digital currencies used by consumers and businesses.
- Retail CBDCs eliminate intermediary risk, the risk that private digital currency issuers might become bankrupt and lose customers' assets.

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### Gaming regular authority

- The United Arab Emirates has created a federal authority to potentially run a national lottery and what it describes as “commercial gaming,” likely a sign that it is on the verge of allowing gambling as major casino operators flock to the Gulf Arab nation.
- The staterun WAM news agency carried an announcement late on Sunday on the creation of the General Commercial Gaming Regulatory Authority.  
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### Vikram lander in sleep mode

- After Chandrayaan 3's rover Pragyan, its lander, Vikram, has been put into sleep mode.
- The Indian Space Research Organisation (ISRO) on Monday said that it had put Vikram into sleep mode around 8 a.m.
- Before sleep mode was activated, ChaSTE,

RAMBHALP and ILSA payloads on the lander did in situ experiments at the new location

- The ISRO had said that Vikram would fall asleep next to Pragyan once solar power was depleted and battery drained.
- The agency was hoping that it would wake up Vikram and Pragyan on September 22.
- The lander and the rover, with a mission life of one lunar day (14 earth days), have scientific payloads to carry out experiments on the lunar surface.
- “The lander and the rover will stay on the moon for 14 days until they get sunlight,” ISRO Chairman S. Somanath had said earlier.
- The solar panels on the lander and the rover have stored energy during the lunar day and will recharge their batteries.
- Once the sun sets on the moon, temperature can plunge below minus200 degrees Celsius.  
The Hindu

### One nation one election- critical analysis

- Each of India's States has different political cultures and parties.
- Why should the basic constitutional structure of the country be changed for two national leaders to help balance their campaign and governance schedules.
- Today, an elected Chief Minister of a State has the powers to recommend dissolution of their State legislatures and call for early elections, as Telangana Chief Minister K. Chandrashekar Rao (KCR) did in 2018, breaking the cycle of simultaneous State and Parliament elections in the State.
- Under a 'one election' framework, KCR will not have the right to do this.
- It is a testament to India's plurality and the need for diverse political representation that a plethora of regional parties mushroomed over the last six decades to govern various States as per their own election schedules as the State's politics warranted.

- Various estimates by the Election Commission, NITI Aayog and the government show that the costs of conducting all State and parliamentary elections in a five year cycle work out to the equivalent of ₹10 per voter per year.
  - The NITI Aayog report has also said that when elections are synchronised, it will cost the equivalent of ₹5 per voter per year.
- The Hindu

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### Climate change and women

- The effects of climate change vary according to location, socioeconomic status, and gender.
- An International Labour Organization study (2019) said that "...in 2030, 2.2 percent of total working hours worldwide will be lost to high temperatures, a productivity loss equivalent to 80 million full time jobs".
- The United Nations (2009) highlighted that across genders, women are considered to be highly vulnerable and disproportionately affected

by climate change than men to the impact of climate change.

- Women in developing and less developed countries (especially in low income areas) are more vulnerable to climate change because of their dependence on natural resources and labour intensive work for their livelihood.
- Women are more likely to live in poverty than men,
- Women from low income households are more at risk because they are more responsible for food, water, and other homely unpaid work.
- Due to the climate crisis, more time and effort are needed to obtain basic necessities.
- Rural women often shoulder the burden of ensuring access to clean water, adequate cooking fuel, and nutritious food for their families. Women may be at increased risk for health and safety because they must travel long distances every day to collect water and fuel.
- According to a UN study, most (80%) of those displaced by climate related disasters are women and girls.
- Women, especially those from vulnerable communities, face particular difficulties during and after natural disasters. When women are uprooted, they are more susceptible to prejudice and exploitation.
- For instance, after the earthquake in Nepal in 2015, the United Nations Population Fund (UNFPA) found women were more exposed to trafficking and exploitation.
- Women make up a disproportionately large portion of the agricultural workforce in emerging countries.
- Climate change impacts agricultural productivity negatively and significantly. Heat stress affects workers a lot in this sector, especially in South Asia and Africa.
- According to estimates, 130 million people could be pushed into poverty by 2050 due to climate change risks, natural disasters, and food

inflation, impacting women's inequality.

- When it comes to adjusting to a changing climate, women have a lot to offer.
- Investments in women's education, training, and access to resources are essential if we are to be resilient to the impact of climate change.