# Prelim Bits 04-03-2022 | Daily UPSC Current Affairs

## 6G

*Minister for Communication said that the 6G development has already started. That will be seen somewhere in the time frame 2024 or 2023-end.*

> Wireless generations (G) are standardized by the International Telecommunication Union (ITU) and occur every 10 years or so.
>
> They're generally marked by a break in the "air interface," meaning a change in transmission or encoding.
>
> This is done so previous-generation devices can't be upgraded to the new generation.

- 6G is the sixth generation of wireless communication and networking technology. It is a mostly theoretical concept.
- It is built upon the infrastructure of 5G, and will accomplish more than 5G in terms of adoption, reduction of cost, and better service.
- While 5G provided less than 1ms latency, 6G provides less than 0.1ms latency.
- 6G will operate on the mid bands (7 – 20 GHz) for places that are crowded, low bands (460 – 694 MHz) for long-distance coverage, and use sub-THz for peak data rates in the short range of up to 100 Gbps.
- 6G will also used significantly advanced network devices, including MIMO (multiple input, multiple output) antennaes.
- While 4G uses 2x2 MIMO and 4x4MIMO, and 5G uses around 200 antenna elements, 6G may support upto 1024 antenna elements.
- **Characteristics** - Higher speed than 5G, horizontal foundation of various industries in a society, low latency (10-100 micro seconds), etc
- 6G will be a collection of the **heterogeneous networks**, like cellular networks covering large outdoor space; WiFi for indoor or low-speed outdoor use, satellite networks such as low earth orbit constellation.
- It is part of "**edge computing**," which moves network management away from centralized clouds towards more localized devices, making everything work way smoother and reducing response times.
- **Benefits** - The important areas that will benefit from this technology are the likes of smart devices and self-driving cars.
- 6G will also be beneficial to the advancement of Artificial Intelligence and Machine Learning.

**Reference**


1. https://www.thehindu.com/sci-tech/technology/what-is-6g-the-next-level-in-communication/article65184756.ece?homepage=true
2. https://in.pcmag.com/news/139707/what-is-6g
3. https://www.forbes.com/sites/mungchiang/2021/09/30/what-is-6g/?sh=575da32733db

4. https://www.highspeedinternet.com/resources/6g-internet

# War Crime

*The International Criminal Court (ICC) would open an investigation against Russia into possible war crimes or crimes against humanity in Ukraine.*

- War crimes are those serious violations of international humanitarian law (treaty or customary law) that incurs individual criminal responsibility under international law. This occurs during a conflict.
- War crimes contain two main elements:
    1. Contextual element - The conduct took place in the context of and was associated with an international/non-international armed conflict";
    2. Mental element - The intent and knowledge both with regards to the individual act and the contextual element.
- The definition of war crimes was established by the Rome Statute of the ICC is derived from the 1949 Geneva Conventions.
- This definition is based on the idea that individuals can be held liable for the actions of a state or it's military.
- The UN Office on Genocide Prevention and the Responsibility to Protect separates war crimes from genocide and crimes against humanity.
- War crimes are defined as occurring in a domestic conflict or a war between two states.
- But genocide and crimes against humanity can happen in peacetime or during the unilateral aggression of a military towards a group of unarmed people.
- **Declaring a war crime** - The laws of war do not always protect civilians from death. Not every civilian death is necessarily illegal.
- Raids on cities or villages, bombing residential buildings or schools, and even the killing of groups of civilians do not necessarily amount to war crimes - not if their military necessity is justified.
- The same act can become a war crime if it results in **unnecessary destruction, suffering and casualties** that exceed the military gain from the attack.

## Principles of Declaration of War Crime

- To decide whether an individual or a military has committed a war crime, international humanitarian law lays down three principles: distinction, proportionality and precaution.
- **Proportionality** prohibits armies from responding to an attack with excessive violence.
- It is also illegal to target objectives that are "expected to injure or cause incidental loss of civilian life, damage to civilian objectives, which would be excessive in relation to the concrete and direct military advantage anticipated," according to the International Committee of the Red Cross.
- **Precaution** requires parties to a conflict to avoid or minimize the harm done to the civilian population.
- **Principle of distinction** says that you have to be constantly trying to distinguish between civilian and belligerent populations and objects.

**Reference**


1. https://indianexpress.com/article/explained/explained-what-constitutes-a-war-crime/
2. https://frontline.thehindu.com/dispatches/explained-what-constitutes-a-war-crime/article38446783.ece
3. https://www.un.org/en/genocideprevention/war-crimes.shtml

# Co-location

*Multiple agencies are investigating the NSE co-location scam related to the manipulation of the market at the stock exchange.*

- Also known as “carrier hotel”, Co-location is a type of data centre.
- Co-location center is typically associated with a facility where a third party can lease a rack/server space along with other computer hardware.
- Co-location facility provides infrastructure such as power supply, bandwidth, and cooling for setting up servers and storage of data.

**Reference**

1. https://indianexpress.com/article/explained/everyday-explainers/everyday-economics-what-co-location-heart-scam-nse-7799595/
2. https://www.techopedia.com/definition/2485/co-location-colo

# Sagar Parikrama

*Ministry of Fisheries, Animal Husbandry and Dairying is organizing the ‘Sagar Parikrama’.*

- The first leg of ‘Sagar Parikrama’ shall begin from Gujarat for 2 days.
- Sagar Parikrama program is proposed to be celebrated in all coastal states/UTs.
- **Objective** - To focus on the sustainable balance between the utilization of marine fisheries resources for food security of nation and livelihoods of coastal fisher communities and protection of marine ecosystems.
- Sagar Parikrama Program is to be celebrated through a pre-decided sea route.
- Sea routes is from Gujarat, Diu, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha, West Bengal, Andaman & Nicobar and Lakshadweep Islands.

**Reference**

https://pib.gov.in/PressReleasePage.aspx?PRID=1802666

# SARAS 3 Radio Telescope

*SARAS 3 radio telescope refutes the recent claim of the discovery of a radio wave signal from cosmic dawn.*

> Cosmic dawn is the time in the infancy of our Universe when the first stars and galaxies came into existence.
>
> The signal from Cosmic Dawn is expected to arrive on Earth stretched in wavelength to metres and lowered in frequency by the expansion of the Universe to lie in the radio frequency band 50-200 MHz.

- SARAS is a precision radio telescope that is used to detect extremely faint radio wave signals from the depths of time, from our “Cosmic Dawn” when the first stars and galaxies formed in the early Universe.
- It was invented and built by the astronomers at Raman Research Institute (RRI).

- The SARAS radio telescope was deployed by the RRI team in isolated sites in India to gather celestial radio waves with **minimum terrestrial man-made radio interference**.
- It is the first telescope worldwide to reach the required sensitivity.

**Reference**


1. https://pib.gov.in/PressReleasePage.aspx?PRID=1802645
2. https://www.rri.res.in/DISTORTION/saras.html



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