Prelim Bits 28-11-2021 & 29-11-2021 | UPSC Daily Current Affairs

James Webb Space Telescope

The James Webb Space Telescope is scheduled to be sent into orbit no earlier than December 22, 2021.

- The Webb telescope is said to be the scientific successor to the Hubble and Spitzer space telescopes.
- It is NASA's largest and most powerful space science telescope ever constructed.
- The telescope will
    1. Hunt for the unobserved formation of the first galaxies, and
    2. Look inside dust clouds where stars and planetary systems are forming today.
- The collected data will help find answers to questions in 4 areas of modern astronomy - First light, Assembly of galaxies, Birth of stars and protoplanetary systems, and Planetary systems and the origin of life.
- The telescope carries 4 scientific instruments.
    1. Near-Infrared Camera
    2. Near-Infrared Spectrograph
    3. Mid-Infrared Instrument
    4. Near-Infrared Imager and Slitless Spectrograph (To study the planetary systems)
- **Reason to carry infrared cameras** -About 13.8 billion years after the Big Bang, our universe was extremely hot and filled with dense particles.
- As it slowly cooled, it gave rise to the building blocks - helium and hydrogen.
- Studies have suggested that the first stars formed about 150-200 million years after the Big Bang.
- Using infrared cameras, Webb is designed to help us find the answer to the questions like, "How did the Universe's first light or stars look like?"
- **Redshift** - Light from the first stars and galaxies formed nearly 13.6 billion years ago will have to travel through space & time before reaching the telescope.
- By the time this light reaches the telescope, its colour changes, and this phenomenon is called Redshift.
- The visible or UV light from the first stars and galaxies shift to redder wavelengths by the time the telescope sees it. For this reason, Webb is equipped with near- and mid-infrared instruments.
- By studying the earliest galaxies and comparing them to today's galaxies we can understand the growth and evolution of galaxies.
- **Communication** - The Webb telescope will send data to Earth via a high-frequency radio transmitter and large radio antennas part of the NASA Deep Space Network will receive these signals.
- It will be forwarded to the Webb Science and Operation Center at the Space Telescope Science Institute in Baltimore, Maryland, USA

Reference

1. https://indianexpress.com/article/explained/explained-how-james-webb-space-telescope-will-search-for-the-first-formed-galaxies-7645253/

Corticosteroids for MIS-C

The World Health Organization (WHO) recommends using Corticosteroids for treating children who developed multisystem inflammatory syndrome (MIS-C) after being exposed to the novel COVID-19 infection.

- Introduction of corticosteroids along with supportive care resulted in a more effective treatment than either intravenous immunoglobulin plus supportive care or supportive care alone.
- Treatment was also found to be effective in treating children with Kawasaki disease in association to COVID-19.

Multisystem Inflammatory Syndrome

- Multisystem Inflammatory Syndrome (MIS-C) is rare but serious conditions where children with COVID-19 develop inflammation that affects the various organs of the body.
- **Symptoms** - Stomach pain, bloodshot eyes, diarrhea, dizziness or light-headedness (signs of low blood pressure), skin rash and vomiting.
- The patient develops heart problems, the severity of which may determine the line of treatment.
- In severe cases, children need intensive care and pacemakers.
- Although MIS-C is a serious condition, with the right medical care, children with this condition recover.
- **Diagnosis** - Blood tests, Chest x-ray, Heart ultrasound and Abdominal ultrasound.

Reference

1. https://www.downtoearth.org.in/news/health/corticosteroid-can-be-used-for-effective-treatment-of-children-hospitalised-with-mis-c-who-80385
2. https://www.who.int/news/item/23-11-2021-who-issues-guidelines-on-the-treatment-of-children-with-multisystem-inflammatory-syndrome-associated-with-covid-19
3. https://www.cdc.gov/mis/mis-c.html

River Cities Alliance

River Cities Alliance, which is a collaborated effort of National Mission for Clean Ganga (NMCG) and National Institute for Urban Affairs (NIUA), was launched recently.

- The River Cities Alliance (RCA) is a dedicated platform for river cities in India to ideate, discuss and exchange information for sustainable management of Urban Rivers such as,
    1. Minimizing their water footprint,
    2. Reducing impacts on river and water bodies,
    3. Capitalizing on natural, intangible, architectural heritage and associated services and
    4. Develop self-sufficient, self-sustainable water resources through recycle, reuse strategy.
- This Alliance will focus on 3 broad themes - Networking, Capacity Building and Technical Support.
- The Alliance cities will work towards adopting and localizing national policies and instruments with key river-related directions.

- They will prepare their Urban River Management Plans and develop city-specific sectoral strategies that are required for sustainable urban river management.
- **Benefits** - The Alliance gives opportunities to these cities to strengthen governance aspects for river cities.
- It improves their liveability to attract external economic investments, access state of the art knowledge and frameworks.
- It provides an opportunity to serve as the site for unique demonstration projects which will be implemented by NIUA and NMCG.

Reference

1. https://pib.gov.in/PressReleasePage.aspx?PRID=1775142

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