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National and International News

<p>Ethanol Blending Program</p>	<p>Why in the news?</p> <ul style="list-style-type: none"> India is advancing towards its target of achieving 20% ethanol blending with petrol by 2025-26. <p>About Ethanol Blending Program:</p> <ul style="list-style-type: none"> Ethanol: A biofuel produced through fermentation of sugars or via petrochemical processes (e.g., ethylene hydration). Ethanol Blending: Mixing ethanol derived from agricultural products with petrol to create a blended motor fuel. Benefits: Ethanol is rich in oxygen content, leading to more efficient fuel combustion in engines. Production of Ethanol in India: <ul style="list-style-type: none"> Promoting Agency: The Department of Food and Public Distribution (DFPD) is the primary agency promoting fuel-grade ethanol distilleries. Raw Materials: Ethanol is produced from sugarcane-based materials (C & B heavy molasses, sugarcane juice, sugar syrup), surplus rice from the Food Corporation of India (FCI), and maize. India's Biofuel Policy: Policy Amendment: The Central government amended the Biofuel Policy in 2021-22, targeting 20% ethanol and 5% biodiesel blending by 2025. Major Contributors: Uttar Pradesh is a significant contributor, with distilleries producing both sugarcane and grain-based ethanol.
<p>Hayflick limit</p>	<p>Why in the news?</p> <ul style="list-style-type: none"> Leonard Hayflick, the biomedical researcher who discovered that normal somatic cells can only divide a certain number of times, recently passed away. <p>About Hayflick limit:</p> <ul style="list-style-type: none"> Refers to the maximum number of times a cell can divide.



	<ul style="list-style-type: none"> • Named after scientist Leonard Hayflick, who discovered this phenomenon. • Plays a crucial role in aging and the development of age-related diseases. • Cell Division Phases: <ul style="list-style-type: none"> ○ Phase 1: Rapid, healthy cell division. ○ Phase 2: Mitosis slows down. ○ Phase 3: Senescence, where cells stop dividing entirely but remain alive for a time. • Apoptosis: After cells stop dividing, they undergo a programmed cellular death called apoptosis. • Telomeres: <ul style="list-style-type: none"> ○ Telomeres are repetitive DNA sequences at the end of chromosomes, protecting them during cell division. ○ With each cell division, telomeres shorten, eventually reaching a critical point where cell division ends.
Discovery of Liquid Water on Mars	<p>Why in the news?</p> <ul style="list-style-type: none"> • A recent study has made a significant breakthrough by discovering vast amounts of liquid water hidden deep within Mars' rocky outer crust, enhancing our understanding of the Red Planet. <p>Key points:</p> <ul style="list-style-type: none"> • First Discovery: Scientists have found evidence of liquid water on the Martian surface, beyond the previously known presence of water ice at the planet's poles. • Study Title: "Liquid water in the Martian mid-crust." • Publication: The study was published in the prestigious journal Proceedings of the National Academy of Sciences (PNAS). • Research Team: The research was conducted by scientists from the University of California.
Telecommunications Act, 2023	<p>Why in the news?</p> <ul style="list-style-type: none"> • The new Telecommunication Act has sparked debate over the definition of "telecommunication services." • Telecom operators and social media companies are in disagreement over whether over-the-top (OTT)



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	<p>platforms like WhatsApp and Google Meet should be included in this definition.</p> <p>About Telecommunications Act, 2023:</p> <ul style="list-style-type: none"> • The Act defines telecom services as the "transmission, emission, or reception of any messages by wire, radio, optical, or other electromagnetic systems." • It broadly defines messages to include "any sign, signal, writing, text, image, sound, video, data stream, intelligence, or information." • Objective: <ul style="list-style-type: none"> ○ Modernize and unify laws for the development, expansion, and operation of telecommunication services and networks. ○ Address spectrum assignment and related matters. • Replacement of Old Laws: Supersedes the Indian Telegraph Act, 1885, and the Indian Wireless Telegraph Act, 1933, due to advancements in telecom technology. • Digital Implementation: Promotes digital frameworks, including online dispute resolution. • Guiding Principles: <ul style="list-style-type: none"> ○ Inclusion (Samavesh) ○ Security (Suraksha) ○ Growth (Vridhhi) ○ Responsiveness (Tvarit)
<p>Vaccine-Derived Polio</p>	<p>Why in the news?</p> <ul style="list-style-type: none"> • A vaccine-derived polio case has been confirmed in a two-year-old child from Tikrikilla, Meghalaya. • Health authorities clarified that this is not caused by the wild poliovirus but is related to an infection occurring in individuals with low immunity. <p>About Vaccine-Derived Polio:</p> <ul style="list-style-type: none"> • India's Polio-Free Status: <ul style="list-style-type: none"> ○ Declaration: India was declared polio-free by the World Health Organization (WHO) in 2014. ○ Last Wild Poliovirus Case: The last case of wild poliovirus in India was reported in 2011. • Understanding Vaccine-Derived Polio (VDPV):



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- **Vaccine Composition:** The **Oral Polio Vaccine (OPV)** contains a weakened form of the poliovirus to stimulate an immune response.
- **cVDPV Development:** In rare cases, in **under-immunized populations, the excreted vaccine virus can circulate**, undergo genetic changes, and potentially revert to a form capable of **causing paralysis**. This is known as **circulating vaccine-derived poliovirus (cVDPV)**.
- **Prevention:** WHO recommends multiple rounds of high-quality immunization campaigns to stop cVDPV transmission.



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