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In-vitro Fertilisation

Context: Alabama Supreme Court's ruling on February 16 equating frozen embryos to children has stirred controversy in the ongoing political debate over reproductive rights in the US, particularly concerning IVF.

➤ Overview of IVF:

- In vitro fertilisation, or IVF, is a complex series of procedures aimed at achieving pregnancy.
- It is primarily used as a treatment for infertility, defined as the inability to conceive after at least a year of trying for most couples.
- Additionally, IVF can be employed to prevent the transmission of genetic disorders to offspring.

➤ IVF Procedure:

- During IVF, mature eggs are retrieved from the ovaries and fertilised with sperm in a laboratory setting.
- Fertilised eggs, known as embryos, are then transferred to the uterus for implantation.
- A full cycle of IVF typically spans 2 to 3 weeks, although it may extend longer depending on specific circumstances.

➤ Assisted Reproductive Technology:

- IVF is the most effective form of assisted reproductive technology, involving manipulation of eggs, embryos, and sperm.

➤ IVF Options:

- IVF can utilise a couple's own eggs and sperm or involve reproductive material from donors.
- In some cases, a gestational carrier may carry the embryo to term.

➤ Factors Affecting IVF Success:

- Success rates of IVF vary based on factors such as age and underlying infertility causes.
- IVF procedures can be time-consuming, expensive, and invasive.
- Multiple pregnancies may occur if more than one embryo is implanted.

➤ Indications for IVF:

- IVF is indicated for various conditions, including fallopian tube damage, ovulation disorders, endometriosis, uterine fibroids, and previous surgeries preventing pregnancy.
- It is also employed in cases of unexplained infertility or genetic disorders.

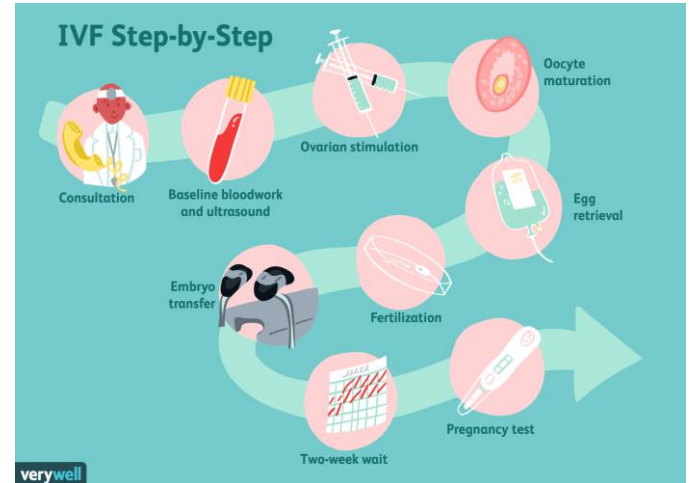
➤ Preservation of Fertility:

- IVF offers options for preserving fertility in individuals facing cancer treatment or other health conditions.
- Eggs or embryos can be harvested and frozen for future use.

➤ Risks Associated with IVF:

- Risks include stress, complications from egg retrieval procedures, ovarian hyper-stimulation syndrome,

miscarriage, ectopic pregnancy, multiple pregnancies, birth defects, premature delivery, low birth weight, and a potential association with certain cancers.



Advance Pricing Agreements

Context: In FY 2023-24, CBDT sealed 125 APAs with Indian taxpayers, marking a record achievement in tax agreements.

- In FY 2023-24, there were 86 Unilateral APAs (UAPAs) and 39 Bilateral APAs (BAPAs), the highest ever recorded.
- This fiscal year saw a 31% increase in APA signings compared to the previous year's 95 APAs.
- The total number of APAs since the inception of the programme is now 641, with 506 UAPAs and 135 BAPAs.
- FY 2023-24 also saw the highest number of BAPAs signed to date.
- BAPAs were established through Mutual Agreements with India's treaty partners: Australia, Canada, Denmark, Japan, Singapore, the UK, and the US.

➤ About APAs:

- **Definition:** An APA is a formal agreement between a taxpayer and a tax authority that outlines the pricing methodology for international transactions between related companies, aiming to prevent disputes over pricing.
- **Example:** Company A in India selling to its US subsidiary, Company B, can establish an APA with both Indian and US tax authorities to agree on pricing for these transactions, ensuring clarity.
- **Objective:** APAs aim to regulate multinational companies, preventing tax evasion by ensuring fair profits based on the arm's length principle in inter-corporate transactions.
- **Guidelines:** APAs are governed by provisions in the Income Tax Act, 1961, particularly in relation to

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transfer pricing—pricing for goods, finance, or services provided between related companies.

- **Types of APAs:** APAs can be unilateral (with one tax authority), bilateral (involving two tax authorities), or multilateral (involving multiple tax authorities).
- **Benefits:** APAs offer certainty in tax liability, streamline audit tasks, and reduce administrative costs for tax authorities.
- **Timeframe:** APAs determine arm's length prices for international transactions for up to five future years, with an option to roll back for four preceding years, providing a total of nine years of tax certainty.
- **Application Process:** Taxpayers file applications for unilateral APAs with the Directorate General of Income Tax (DGIT), while bilateral or multilateral APAs involve negotiations between competent authorities of the relevant tax jurisdictions.

Space Debris

Context: ISRO Chairman S. Somanath declared India's aim for debris-free space missions by 2030.

- **Space Debris Definition:** Refers to defunct human-made objects in Earth's orbit, including derelict spacecraft, abandoned stages, and fragments from collisions.
- **Size and Numbers of Debris:**
 - As of January 2019, over 128 million debris pieces smaller than 1 cm and approximately 900,000 pieces between 1 and 10 cm were estimated.
 - Large debris, defined as 10 cm across or larger, numbered 34,000 in 2019 and at least 37,000 by June 2023.
 - In 2020, there were 8,000 metric tons of debris in orbit, with expectations of further increases.
- **Low Earth Orbit (LEO):**
 - LEO, below 2,000 km orbital altitude, traditionally had few universal orbits, but this is changing with the deployment of satellite internet constellations.
 - LEO is densely populated with satellites, including Sun-synchronous and polar orbits, resulting in frequent approaches between objects.

- Gravitational perturbations and collisions pose risks, with impact speeds averaging 10 km/s and potential for collisions from any direction.

➤ **Kessler Syndrome and Long-term Effects:**

- The Kessler syndrome, a cascade effect of collisions, could render certain low Earth orbits unusable due to increased debris density.
- Crewed missions operate mostly below 400 km altitude, where air drag helps clear fragments, though the upper atmosphere's density varies.

➤ **Higher Altitudes:**

- Orbital decay at higher altitudes takes longer due to reduced air drag, with various factors contributing to debris migration to lower altitudes.
- Geostationary orbits (GEO) pose collision risks, particularly for derelict satellites, though collision debris in GEO orbits pose less immediate risk compared to LEO.
- Efforts to move satellites out of their orbital slots at the end of their lifespan face challenges, and collisions in higher altitudes have occurred.

➤ **Inter-Agency Space Debris Coordination Committee (IADC):**

- The IADC is an international governmental forum aimed at coordinating activities related to both man-made and natural debris in space.

➤ **Member Agencies of the IADC:**

- ASI (Agenzia Spaziale Italiana)
- CNES (Centre National d'Etudes Spatiales)
- CNSA (China National Space Administration)
- CSA (Canadian Space Agency)
- DLR (German Aerospace Center)
- ESA (European Space Agency)
- ISRO (Indian Space Research Organisation)
- JAXA (Japan Aerospace Exploration Agency)
- KARI (Korea Aerospace Research Institute)
- NASA (National Aeronautics and Space Administration)
- ROSCOSMOS (State Space Corporation)
- SSAU (State Space Agency of Ukraine)
- UK Space Agency

- **IADC Structure:** The IADC comprises a Steering Group and four specified Working Groups, covering measurements (WG1), environment and database (WG2), protection (WG3), and mitigation (WG4).

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NEWS IN BETWEEN THE LINES

INS Talwar



Recently, Indian Naval frigate *INS Talwar* on deployment in the Western Arabian Sea for maritime security operations under the ambit of the Bahrain-based Combined Maritime Forces (CMF) apprehended a suspicious dhow recently and recovered 940 kg of narcotics.

About INS Talwar:

- The INS Talwar is a **guided missile frigate** and the **first ship in the Talwar-class** of the Indian Navy.
- It was commissioned into the Indian Navy on **June 18, 2003** and is affiliated with the **16th Cavalry of the Indian Army**.
- The Talwar-class frigates are a series of ships **developed by Russia** for the Indian Navy.
- It is **124.8 meters long**, has a **speed of 56 kilometers per hour** and a range of 7,810 kilometers.
- It is equipped with **anti-air operations, anti-ship/land-attack missiles** and anti-submarine warfare.
- It has been deployed around the Indian Ocean and has participated in several exercises, including **Malabar 2008** with the United States Navy and **Cutlass Express 2021** with the French Navy.
- India joined the **Combined Maritime Forces (CMF)** in July 2022 with the objective of bolstering security, stability, and prosperity in the Indian Ocean Region (IOR), aligning with its broader maritime strategy.
- Besides operational deployments, INS Talwar **engages in bilateral exercises** and **capacity-building operations**, exemplified by its participation in Operation Southern Readiness conducted in **Seychelles**.

Jhelum River



Recently, amidst torrential rains in the Kashmir Valley, a tragic boat capsized occurred in the Jhelum river, resulting in the loss of six lives, including minors.

About the Jhelum River:

- The Jhelum River is a **tributary of the Indus River** that flows through India and Pakistan.
- It is the **largest and westernmost of the five rivers of the Punjab region**, which merge with the Indus River in eastern Pakistan.
- It **originates from a deep spring in Verinag at Anantnag**, which is in the Indian-administered Kashmir region.
- It **flows through Srinagar and Wular Lake** before entering Pakistan-administered Kashmir.
- This river **joins the Chenab River near Trimmu, Pakistan**.
- The Jhelum River's major tributaries include the **Kishenganga (Neelum) River, Kunhar River, Sandran River, Bringi River** and others, which contribute to its flow and hydrological system.

International Monetary Fund



Recently, the International Monetary Fund (IMF) raised India's Gross Domestic Product (GDP) growth projection to 6.8 percent for the financial year (FY) 2024-25.

About the International Monetary Fund:

- The International Monetary Fund (IMF) is an **international organization** founded in **1944** at the **Bretton Woods Conference**.
- It currently consists of **190 member countries**.
- It **provides financial assistance to member countries** facing balance of payments problems, typically with conditions for economic reform.
- It played a crucial role in responding to various global economic crises, including the **1997 Asian financial crisis** and the **global economic crisis of 2008**.
- Its headquarter is in **Washington, D.C.**
- **India is a founding member** of the International Monetary Fund.

NITI Aayog



Recently, NITI Aayog Member Ramesh Chand forecasted that the agriculture and allied sectors are poised to achieve over 6% growth in the fiscal year 2024-25.

About NITI Aayog:


- The National Institution for Transforming India (NITI Aayog) is a **policy think tank** and **government organization** that advises the Indian government on policies and programs.
- It was **established in 2015 to replace the Planning Commission**.
- It is based on the 7 pillars of effective governance-**Pro-People, Pro-Activity, Participation, Empowering, Inclusion of all, Equality and Transparency**.
- The composition of NITI Aayog includes the **Prime Minister as Chairperson, the Vice-Chairperson appointed by the Prime Minister, a Governing Council comprising Chief Ministers of all states and Lt. Governors of Union Territories**,
- Additionally, it consists of a Regional Council addressing specific regional issues chaired by the Prime Minister or his nominee, **ad hoc membership from leading research institutions, ex-officio**

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	<p>membership of up to four members from the Union council of ministers nominated by the Prime Minister, a Chief Executive Officer appointed by the Prime Minister, and special invitees nominated by the Prime Minister, consisting of experts and specialists with domain knowledge.</p> <ul style="list-style-type: none"> NITI Aayog has launched various initiatives and campaigns, such as: Atal Innovation Mission (AIM), Startup India, Digital India, Transforming Urban India (AMRUT, Smart Cities Mission), Sustainable Development Goals (SDGs) localization, etc.
<p>Place in News</p> <p>Armenia</p>	<p>Recently, Armenia accused Azerbaijan of "completed ethnic cleansing" in Nagorno-Karabakh at the UN top court, countered by Baku as "cherry-picking," amid their ongoing legal clash at the International Court of Justice.</p> <p>Armenia: (Capital: Yerevan)</p> <p>Location: Armenia is a landlocked country situated in the Armenian Highlands of West Asia.</p> <p>Political Boundaries: Armenia shares its borders with Azerbaijan (East), Turkey (West), Georgia (North) and Iran and the Azerbaijani exclave of Nakhchivan (South).</p> <p>Physical Features:</p> <ul style="list-style-type: none"> The highest point in Armenia is Mount Aragats. Armenia's major rivers include the Aras, Debed, Hrazdan, and Vorotan, each playing significant roles in the country's geography and water resources. Armenia possesses various minerals, including copper, molybdenum, gold, etc. <p>Membership: Armenia is a member of various international organizations, including the United Nations, the Commonwealth of Independent States (CIS) and the Collective Security Treaty Organization (CSTO).</p> 

POINTS TO PONDER

- What wildlife species in Mudumalai Tiger Reserve (MTR) recently experienced severe exfoliating mixed skin infections? – **Indian Wild Dogs (Dholes)**
- Where did the 23rd session of the UN Permanent Forum on Indigenous Issues recently begin? – **New York, United States**
- Which state recently approached the Supreme Court seeking relief against the Centre regarding the release of financial assistance from the National Disaster Response Fund (NDRF) for drought management? – **Karnataka**
- Jiadhal River's flow is currently facing disruption due to climate change, according to recent reports. Where does the Jiadhal River meet the Brahmaputra? – **The Jiadhal River flows through Assam and meets the Brahmaputra near Majuli Island.**
- Recently, it has been seen that the water levels have dropped to 13% of its capacity in Lake Kariba, due to an El Niño-induced drought. Between which two countries does Lake Kariba lie? – **Lake Kariba is situated between Zambia and Zimbabwe.**

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