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China Three Child Policy

- After China's census data showed population growth slipping to its slowest rate since the 1950s, China has announced that it will now allow three children per married couple.
- From 1980 to 2016, China had a one-child policy enforced by then-leader Deng Xiaoping. This policy was enforced as China's growing population at that time was approaching one billion.
- The policy, which was implemented more effectively in urban areas, was enforced through several means,
    1. Incentivising families financially to have one child,
    2. Making contraceptives widely available,
    3. Brutal tactics of the state like forced abortions and sterilisations,
    4. Imposing sanctions against those who violated the policy.
- The one-child policy was relaxed to two-child policy in 2016, when fears of a rapidly ageing population undermining economic growth forced the ruling Communist Party to allow two children per married couple.
- **Reality** - China's 2020 census data shows the country's rate of population growth falling rapidly despite the 2016 relaxation.
- The country's fertility rate has dropped to 1.3, far below the replacement level of 2.1 necessary for each generation to be fully replenished.
- By 2025, the country is set to lose its 'most populous' tag to India, which in 2020 had an estimated 138 crore people, 1.5 per cent behind China.

Baby Squids and Water Bears Sent to ISS

- NASA will send 128 glow-in-the-dark baby squids and 5,000 tardigrades (or water bears) to the International Space Station for research purposes.
- These water animals will be sent in a semi-frozen state to the ISS aboard SpaceX's 22nd cargo resupply mission to the ISS. In the ISS, they will be revived and grown in a special bio culture system.
- They are part of experiments that could help scientists design improved protective measures for astronauts going on long-duration space travel.
- **Studies on water bears** - One of the studies involves looking at how the water bears would behave in a spaceflight environment.
- [Water bears are chosen because they can adapt to extreme conditions on

Earth, including high pressure, temperature and radiation.]

- Their hardiness will be studied to identify the genes that allow them to become so resilient.
- By learning how the water bears can survive in low gravity conditions, better techniques could be designed to keep astronauts healthy on long-duration space missions.
- **Study on squids** - Understanding of Microgravity on Animal-Microbe Interactions (UMAMI) study will look at how microgravity conditions affect the relationship between the bobtail squid and beneficial microbes.
- Studying this relationship is important as microbes play a crucial role in the normal development of animal tissues and in maintaining human health.
- In space, the findings will help space agencies develop better measures to protect astronauts from adverse host-microbe alterations on long-duration missions.

AmbiTAG

- Indian Institute of Technology, Ropar has developed a first-of-its-kind IoT device called AmbiTag (Available at the production cost of Rs. 400).
- AmbiTag records real-time ambient temperature during the transportation of perishable products (like vegetables, meat and dairy products), vaccines (like COVID vaccine), body organs and blood.
- It generates an alert when the temperature goes beyond a pre-set limit.
- That recorded temperature further helps to know whether that particular item transported from anywhere in the world is still usable or perished because of temperature variation.
- Shaped as USB device, AmbiTag continuously records the temperature of its immediate surroundings from -40 to +80 degrees in any time zone for a full 90 days on a single charge.
- Most of the similar devices available in the international market record data only for duration of 30- 60 days.
- The device has been developed under IIT Ropar Technology Innovation Hub - AWaDH (Agriculture and Water Technology Development Hub) and its Startup ScratchNest. AWaDH is a Govt of India project.

Central Deputation of IAS officers

- The outgoing West Bengal Chief Secretary Bandyopadhyay has been the subject of a tussle between the Centre and the West Bengal government as the state government appointed him as Chief Advisor to the CM.
- He was due to begin an extension of three months after retiring as Chief Secretary, but the Centre instead asked him to join the Government of India. But he did not join.

- **Extension** - Rule 16(1) of Death-cum-Retirement Benefit (DCRB) Rules provides the conditions for the extension of service.
- A member of the Service dealing with budget work or working as a full-time member of a Committee which is to be wound up within a short period may be given extension of service for a period not exceeding 3 months in public interest, with prior approval of Central Government.
- For an officer posted as Chief Secretary of a state, this extension can be for six months.
- **Central deputation -** In normal practice, the Centre asks every year for an "offer list" of officers of the All India Services willing to go on central deputation, after which it selects officers from that list.
- Rule 6(1) of the IAS Cadre Rules - An officer may, with the concurrence of the State Governments concerned and the Central Government, be deputed for service under the Central Govt or another State Govt.
- It says "In case of any disagreement, the matter shall be decided by the Central Government and the State Government(s) concerned shall give effect to the decision of the Central Government."
- **Punishment** - The Centre cannot take action against civil service officials who are posted under the state government, unless the latter agrees.
- All India Services (Discipline and Appeal) Rules, 1969 - The authority to institute proceedings and to impose penalty will be the state government if the officer is serving in connection with the affairs of a state.
- For any action to be taken against an officer of the All India Services, the state and the Centre both need to agree.

Indimimus Jayanti

- Indimimus Jayanti has become the twelfth subgenus, or species, of spider cricket identified under the genus Arachnomimus Saussure, 1897.
- Found in the Kurra caves of Chhattisgarh, the new subgenus was named Jayanti after Professor Jayant Biswas, a leading cave explorer in India.
- **Difference** - Indimimus subgenu is different from the Arachnomimus and Euarachnomimus subgenera because of the male genitalia structure.
- Insects have a lock-and-key model genitalia structure which is unique to each subgenus.
- **Sounds** - Crickets are noticeable for their loud calls, especially at night.
- Male crickets produce this sound by rubbing their wings against each other. Females listen to these calls using ears located on their legs and approach the males for mating and reproduction.
- **Significance** - Interestingly, males of the Jayanti subgenus cannot produce sound and their females don't have ears.

- They may be communicating by beating their abdomen or any other body part on the cave walls (Vibrational communication).
- Further studies on their skills of vibrational communication may help in designing hearing aids for human which can capture quietest signals and amplify to an audible hearing range.

Arachnomimus Saussure, 1897

- Arachnomimus is the genus name given by Swiss Entomologist Henri Louis Frédéric de Saussure in 1878 to crickets that resembled spiders.
- This is apt because crickets of this group are commonly called spider crickets because of their smaller body size and long legs.

Vibrational Communication

- Vibrational communication is one of the softest but fastest modes of signal transmission.
- Vibrational communication can be regarded as an interaction between the physical properties of the environment and insect's anatomy and physiology and resulting behavior.

CD8 T Cells

- A study was conducted on hospitalised patients with both solid tumours and hematologic cancers admitted to hospitals to better understand the immune determinants of Covid-19 deaths.
- **Finding** - Blood cancer patients with Covid-19 who had higher CD8 T cells were more than 3 times likelier to survive than patients with fewer CD8 T cells.
- [CD8 T cells are a type of white blood cells that can kill cancer cells and other invaders.]
- Patients with blood cancers, in particular patients treated with anti-CD20 antibodies, had decreased B cells and antibodies compared to patients with solid cancers and patients without cancer.
- To know more about T-cells, click here.

International Nitrogen Initiative

- The United Nations (UN) Sustainable Development Goals (SDGs) are the main focus of the eighth triennial conference of the International Nitrogen Initiative (INI).
- The International Nitrogen Initiative (INI) was set up in 2003 under the sponsorship of Scientific Committee on Problems of the Environment (SCOPE) and the International Geosphere-Biosphere Program (IGBP).

- The key aims of the INI are to:
    1. Optimize nitrogen's beneficial role in sustainable food production,
    2. Minimize nitrogen's negative effects on human health and the environment resulting from food and energy production.
- The program is currently a sustained partner of Future Earth.
- INI is coordinated by a **Steering Committee**, led by a chair and six regional centre directors representing, Africa, Europe, Latin America, North America, South Asia and East Asia.
- Steering Committee members serve a ~four year term.
- To know more about International Nitrogen Initiative, click here.

Source: PIB, The Indian Express, Science Direct