Cabinet approves mega 5G auction

(GS Paper 3, Science and Tech)

Why in news?

- Recently, the Union Cabinet has approved the auction of airwaves capable of offering fifth generation, or 5G, telecom services, including ultra high-speed Internet, and gave its nod for setting up of captive 5G networks by big tech firms.
- The auction of over 72 GHz of the spectrum will be held by July-end.

Reserve Prices:

- The Cabinet has approved 5G auctions at **reserve prices recommended by the sector regulator, Telecom Regulatory Authority of India (TRAI).**

Offer to Big Tech Firms:

- While the 5G spectrum in nine frequency bands will be auctioned to telecom operators such as Bharti Airtel and Reliance Jio, the **big tech firms for the time being will be allowed to take the 5G spectrum for their captive non-public network**, on lease from the telecom companies.
- The direct allocation to the big tech companies will follow a demand study and sector regulator TRAI's recommendation on aspects such as pricing and modalities of such allocation.
- Big tech companies like Google have been seeking direct allocation of spectrum for applications such as machine-to-machine communications, IoT and AI, while telecom companies have been opposing direct allocation of 5G spectrum to them saying it will distort the level playing field and rob the government of revenues.

Possible pitfalls:

- The 5G roll out will require crucial infrastructural change in the communication system.
- Consumers will be under a financial liability to upgrade their cellular technology for better transition from 4G to 5G.
- Lack of capital adequacy with telcos such as Bharti Airtel and Vodafone Idea can be considered as a challenge to rapid 5G roll out.

Major govt announcements on 5G spectrum:

- According to DoT, the **5G services will initially be introduced in 13 major cities in India** including Ahmedabad, Bengaluru, Chandigarh, Chennai, Delhi, Gandhinagar, Gurugram, Jamnagar, Hyderabad, Pune, Lucknow, Mumbai, and Kolkata.
- The government has also announced that a total of 72GHz of spectrum will be auctioned across all frequency bands including 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 3300 MHz, and 26 GHz.

Way Forward:

- Telecom industry, being a major part of the Indian economy, is expected to contribute 8% to Indian GDP in 2022.
- While the 5G roll out in India is being considered the beginning of a new era. It is also a step forward to PM Modi's Digital India dream.

Newly developed ultrathin heteroprotein film: better alternative to isolated protein films

(GS Paper 3, Science and Tech)

Why in news?

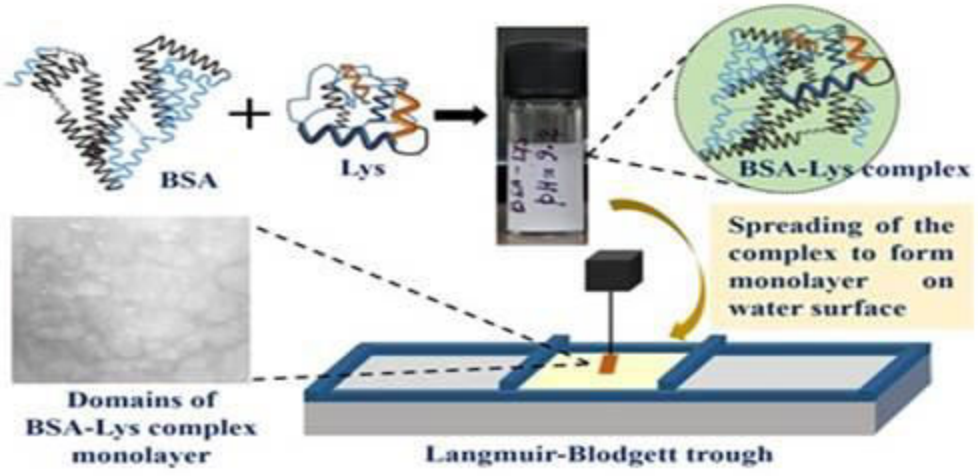
- Recently, researchers from the Institute of Advanced Study in Science and Technology (IASST), Guwahati, has successfully developed **ultrathin monolayer protein films.**

Details:

- **The protein films consist of two globular proteins**: bovine serum albumin (BSA) and lysozyme (Lys).
- They used the technique called using Langmuir-Blodgett (LB) technique which gives the films thickness in the order of nanometer.

Background:

- Scientists have developed ultra-thin heteroprotein films with excellent thermal, mechanical and pH stability which can pave the way for expanding applications of thin films in biomedical and food packaging industries.
- These films are much thinner as compared to the other protein or plastic films. They are soft and thin and have the advantage of being more flexible than the other films.
- In the recent past, several modifications of these protein films with the help of suitable heteroprotein complexes were reported by different research groups. These complexes were usually developed from bulk solutions.



Mechanism:

- They explored the different structures and morphologies of this complex films at variable pH conditions to explore its stability and related properties.
- The complex formation between the two proteins occurred at a unique pH of 9.2 as a result of an electrostatic attraction along with hydrophobic interactions.
- This monolayer complex was formed at the air-water interface, which was later transferred to the silicon substrates at a surface pressure of 18 mN/m for further study.
- It was shown that the monolayers at the air-water interface can hold its intrinsic structure for a sufficiently longer period of time due to the complexation forming a highly stable film.

Future prospects:

- Films of such protein complex of BSA and Lys can be useful for fabricating highly stable biodegradable thin films of different protein complexes for expanding its applications in the area of thin-film technology.
- Diverse physicochemical methods such as parameter alteration or incorporation of different fatty acids or polyol moieties (glycerol, starch, gelatin, etc.) into this protein complex can make the film free standing for diverse applications.

Children born outside wedlock are eligible to get family property: SC

(GS Paper 2, Judiciary)

Why in news?

- Recently, setting aside a Kerala High Court order, the Supreme Court has ruled that the illegitimate children of a couple living together for a long time without getting married can have a share of the family property.

Details:

- The apex court was dealing with a plea filed against the High Court order that denied the property share claim of an alleged illegitimate child citing the parents of the plaintiff did not engage in marriage.
- However, observing that the couple was living together for a long time, it noted that their relationship is as good as marriage.

Key observations:

- It is well settled that if a man and a woman live together for long years as husband and wife, there would be a presumption in favour of wedlock.
- Such a presumption could be drawn under Section 114 of the Evidence Act. Although the presumption is rebuttable, a heavy burden lies on him who seeks to deprive the relationship of legal origin to prove that no marriage took place.

What was the case?

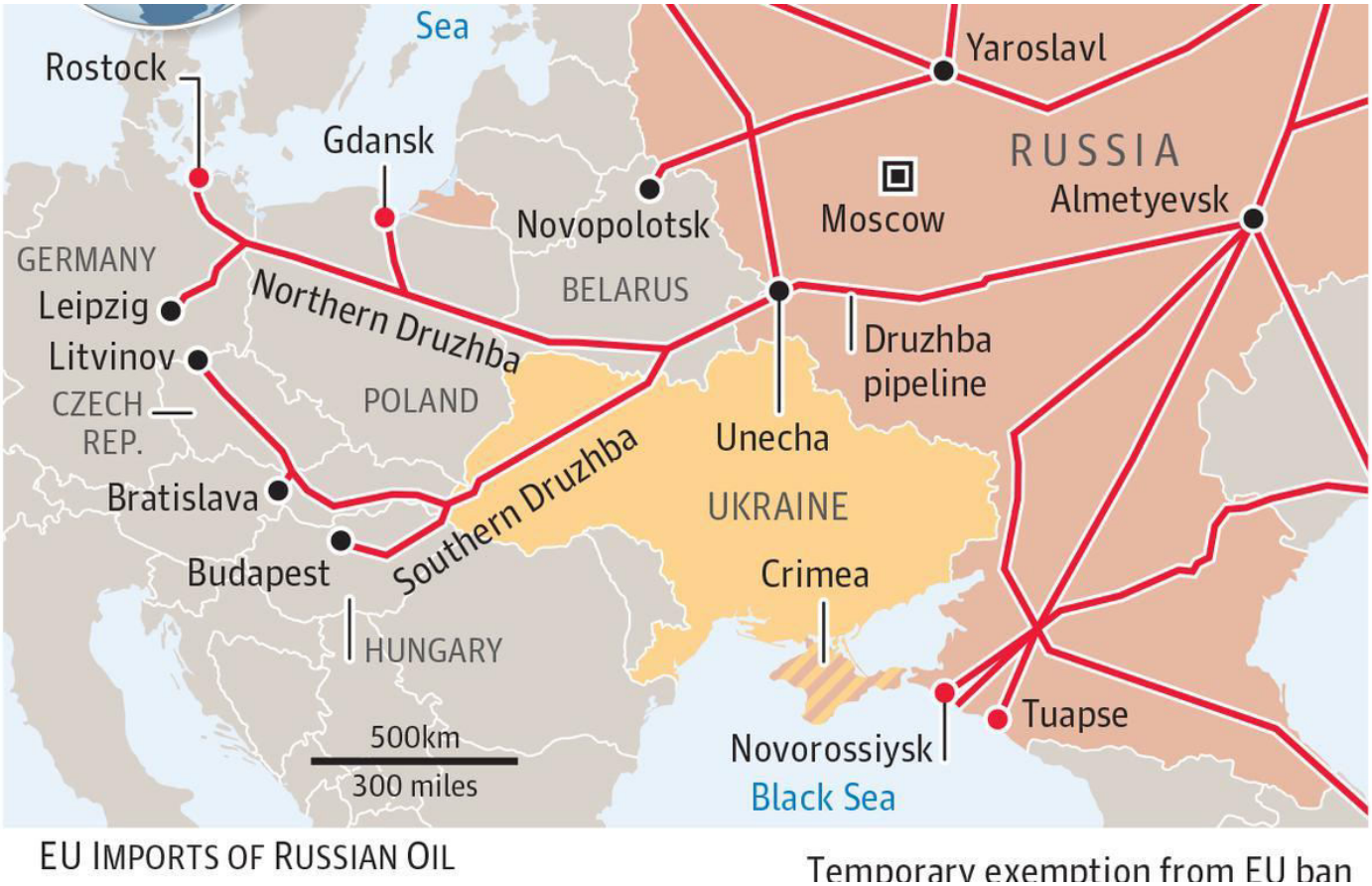
- The Trial Court on examination of the evidence on record held that the couple Damodaranand Chiruthakutty was cohabiting for a long time.
- According to the plaintiffs, Damodaran married Chiruthakutty in 1940. However, there is no direct evidence of their marriage. The first plaintiff Krishnan was born in the year 1942.
- The court also referred to its earlier order in which it was stated that "Law leans in favour of legitimacy and frowns upon the bastardy."

Egypt, Israel to boost gas supply to European Union amid Ukraine war

(GS Paper 2, International Relation)

Why in news?

- Recently, Egypt, Israel, and the European Union signed a deal to **increase liquified natural gas sales to European Union (EU) countries**, who aim to reduce dependence on supply from Russia.
- The deal will see Israel sending more gas via Egypt, which has facilities to liquify it for export via sea.
- In 2021, the EU imported roughly 40% of its gas from Russia and due to that has had difficulty imposing sanctions on Russia over its ongoing invasion of Ukraine.



How gas will be imported from Israel?

- The Israeli gas will be brought **via a pipeline to Egypt's LNG terminal** on the Mediterranean before being transported on tankers to the European shores.

- Israel has two operational gas fields off its Mediterranean coast containing an estimated 690 billion cubic metres of natural gas combined, and a third offshore rig is in the works.
- It has already signed gas export agreements with neighbouring Egypt and Jordan.
- Egypt's extensive natural gas facilities on the Mediterranean have stood largely inactive since the country's 2011 uprising that toppled Hosni Mubarak.

Developments by Egypt:

- In recent years, the government of Egypt rehabilitated and modernised the facilities.
- In 2018, Egypt signed a $15 billion deal with Israeli company Delek Drilling and its U. S. partner, Noble Energy to transport natural gas there. Egypt aims to create a regional energy hub.