

GOVERNANCE
1. Preservation of Intellectual property (Patent Rules,2021)

Recently, the union government has introduced Patents (Amendment) Rules, 2021 which has reduced the fee for patent filing and prosecution for educational institutions by 80%. It is aimed at promoting innovation and development of new technologies.

Key Points
Patents:

- A patent is a form of preservation of intellectual property. It is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. To get a patent, technical information about the invention must be disclosed to the public in a patent application.

Patentability Criteria for an Invention:

- It should be novel.
- Must involve an inventive step (technical advancement)
- Capable of industrial application

Term of Patent:

- The term of every patent in India is twenty years from the date of filing the patent application, irrespective of whether it is filed with provisional or complete specification.
- Patents Act, 1970 : This principal law for patenting system in India came into force in the year 1972. It replaced the Indian Patents and Designs Act 1911.
- The Act was amended by the Patents (Amendment) Act, 2005, wherein product patent was extended to all fields of technology including food, drugs, chemicals and microorganisms.
- After the amendment, the provisions relating to Exclusive Marketing Rights (EMRs) have been repealed, and a provision for enabling grant of compulsory license has been introduced.
- The provisions relating to pre-grant and post-grant opposition have also been introduced.

Patents (Amendment) Rules, 2021:
Patent Fees for Educational Institutions Reduced:

- Educational institutions engage in many research activities, where professors and teachers and students generate several new technologies which need to be patented for facilitating commercialization of the same.
- At the time of applying for patents, the innovators have to apply these patents in the name of the institutions which have to pay fees for large applicants, which are very high and thus work as a disincentive.
- In this regard and to encourage greater participation of the educational institutions, official fees payable by them in respect of various acts under the Patents Rules, 2003, have been reduced by way of the Patents (Amendment) Rules, 2021.
- Benefits related to 80% reduced fee for patent filing & prosecution have been extended to all educational institutions. This benefit was earlier available to all recognised educational institutions owned by the government.

Extension of Expedited Examination System:

- The fastest granted patent is the one which was granted in 41 days after filing of such request. This facility of Expedited Examination system was initially provided for patent applications filed by Startups.
- It has been **now extended to 8 more categories of Patent Applicants:**
- SME (Small and Medium Enterprises), Female applicants, Government Departments, Institutions established by a Central, Provincial or State Act, Government Company, an Institution wholly or substantially financed by the Government and applicants under Patents Prosecution Highway.
- The Patent Prosecution Highway (PPH) is a set of initiatives for providing accelerated patent prosecution procedures by sharing information between some patent offices/schools within one year.

2. LADAKH ADMINISTRATION ISSUED RESIDENCE CERTIFICATE

Recently, the Ladakh administration has decided to issue Resident Certificate only to the Permanent Resident Certificate holders of the region. This is unlike J&K where new domicile laws also permit outsiders to apply for jobs, land and other facilities. Earlier, when Article 370 and Article 35A of Indian constitution were in vogue in J&K and Ladakh, all jobs in the erstwhile state of J&K including Ladakh were exclusively reserved for permanent residents of the State.

Key Points

- Any person who possesses a Permanent Resident Certificate (PRC) issued by the competent authority (Tehsildars) in the districts of Leh and Kargil or belongs to a category of persons who would have been eligible to be issued PRC shall be eligible to receive the Resident Certificate.
- The Administration also enhanced the upper age limit for entry into government services against all posts. The age relaxation would be a one-time exception and this relaxation shall remain in force for two years.

Objective:

It is to temporarily define Resident of Union Territory of Ladakh for the purpose of appointment to all the non-gazetted posts borne on the establishment of any department or service of administration of Ladakh.

Permanent Residence Certificate (PRC):

It is a kind of domicile certificate which helps people in availing domicile linked quotas in government jobs and admission in educational institutions. PRC in India is issued by states like Arunachal Pradesh, Assam, Mizoram, Meghalaya, Tripura and Manipur.

Purpose:

It is a legal document that serves as a proof of residence and thus must be submitted wherever a residence proof is required.

Use:

- For taking admission in educational organisations and job reservation under specific quotas especially for government jobs, etc. to get local preferences.
- For obtaining a ration card of the respective state and cast the vote in the elections.
- For availing the benefits of various schemes of the state or to claim scholarships of the State.

Biodiversity and Environment**1. Capacity of India's Sewage Treatment Plants**

According to the latest report of the Central Pollution Control Board (CPCB), Sewage Treatment Plants (STPs) in India are able to treat a little more than a third of the sewage generated per day. CPCB is a statutory organisation which was constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act, 1974.

Key Points**Installed Capacity of STPs:**

- India generated 72,368 MLD (million litres per day) whereas the installed capacity of STPs was 31,841 MLD (43.9%).
- 5 states and Union Territories (UT) - Maharashtra, Gujarat, Uttar Pradesh, Delhi and Karnataka - account for 60% of the total installed treatment capacity of the country. Arunachal Pradesh, Andaman & Nicobar Islands, Lakshadweep, Manipur, Meghalaya and Nagaland have not installed sewage treatment plants. **Chandigarh** ranks first in terms of total sewage generated to what is actually treated.

Reuse of Treated Sewage:

- It is maximum in Haryana followed by Puducherry, Delhi, Chandigarh. It has not assumed much importance in the policy planning of many state governments.
- Treated sewage water can be reused for horticulture, irrigation, washing activities (road, vehicles and trains), fire-fighting, industrial cooling, toilet flushing and gardening. This can decrease the water demand from aquatic sources like rivers, ponds, lakes and as well as groundwater sources.

Concerns:**Increased Sewage Generation:**

- CPCB has estimated that sewage generation will increase to over 1,20,000 MLD by 2051.

Gaps in Treatment Capacity:

- The gaps in treatment capacity are amplified at local levels, as STPs are concentrated in larger cities and Common Effluent Treatment Plants (CETPs) are unevenly distributed across states.

Economic Case:

- Modern Wastewater Treatment Plants (WTPs) are capital-intensive and require the use of innovative technology, such as sensors, Internet of Things (IoT) devices and Artificial Intelligence (AI)-based trackers.

- The high upfront capital requirements in machinery and equipment, combined with unpredictable revenue streams, make this a high-risk sector, deterring private sector investment.

Related Government Initiatives:

- Recognising this challenge, the Indian government shifted its focus to solid waste, sludge and greywater management under the Swachh Bharat Mission 2.0 (SBM 2.0) which was announced recently.
- Following a sustained focus on achieving Open Defecation-Free (ODF) status, the Ministry of Housing and Urban Affairs (MoHUA) developed detailed criteria for cities to achieve ODF+, ODF++ and Water+ statuses in May 2020.

2. DECLINE OF ARCTIC ICE

Recently, the Arctic sea ice reached its minimum extent, coming in at 4.72 million square miles. It is the 12th lowest on record and the record minimum melting of the ice occurred in 2012. September marks the end of the summer sea ice melt season and the Arctic sea ice minimum, which means when sea ice over the Northern Hemisphere ocean reaches its lowest extent of the year. The ‘Last Ice Area’ (LIA), located in the Arctic’s Ice north of Greenland, has also started melting earlier than what the scientists had expected.



Key Points

Sea ice cover has dropped by roughly half since the 1980s as a direct result of increased carbon dioxide from human activities. In recent years, Arctic sea ice levels have been at their lowest since at least 1850 for the annual mean and in at least 1,000 years for late summer, according to the Intergovernmental Panel on Climate Change (IPCC).

It concluded that the Arctic is likely to be practically sea ice free in September at least once before 2050. At this stage of the melt season, the sea ice pack is at its weakest and is highly responsive to the weather conditions of a given day or week. Subtle shifts can have big impacts.

Factors Causing Rapid Melting of Ice:

Albedo Feedback Loop:

- Ice is more reflective (has a higher albedo) than land or water surfaces, this is one of several reasons for the Arctic’s warming about three times faster than the planet as a whole. Therefore, as global ice cover decreases, the reflectivity of Earth’s surface decreases, more incoming solar radiation is absorbed by the surface, and the surface warms.

Darker Ocean Surface.

- The Arctic’s bright ice is replaced by a darker open ocean surface, less of the sun’s radiation is reflected back to space, driving additional heating and ice loss.

Counterclockwise Ice Circulation:

- Cyclones entering the Arctic from Siberia generated counterclockwise winds and ice drifts. This pattern generally reduces the amount of sea ice moving out of the Arctic through the Fram Strait, east of Greenland. This likely contributed to the record low summer sea ice conditions observed in the Greenland Sea.

Low Pressure System:

- The low pressure system also increases cloudiness over the Arctic. Clouds generally block incoming solar radiation, reducing sea ice melt, but they can also trap heat lost from the surface, so their impact on sea ice melt can be a mixed bag.

Impact of Melting Arctic Ice

Global Climate Change:

- The Arctic and Antarctic act like the world’s refrigerator. They balance out other parts of the world that absorb heat. The loss of ice and the warming waters will affect sea levels, salinity levels, and current and precipitation patterns.

Danger to Coastal Communities:

- Global average sea level has risen by about 7-8 inches since 1900, and it’s getting worse. Rising seas endanger coastal cities and small island nations by exacerbating Coastal Flooding and storm surge.

Food Security:

- Polar vortexes, increased heat waves, and unpredictability of weather caused by ice loss are already causing significant damage to crops on which global food systems depend.

Loss of Methane Store:

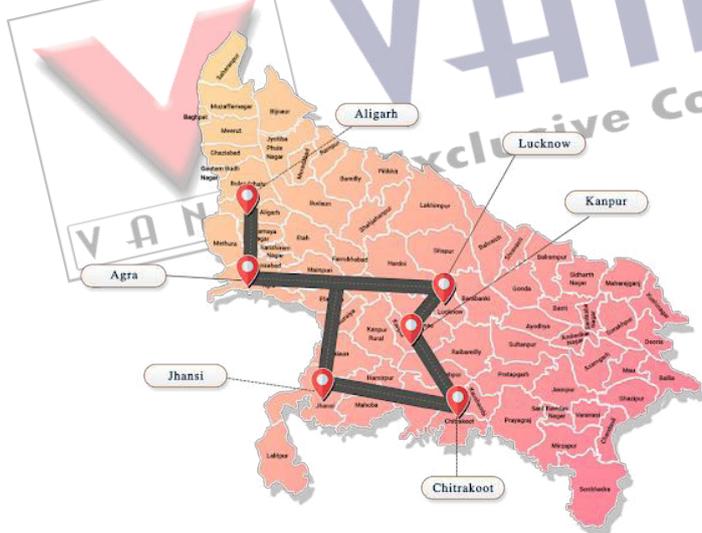
- Permafrost in the Arctic region (ground that is permanently frozen) stores large amounts of methane, which is a greenhouse gas that contributes to climate change. As more quickly the arctic ice is lost, more rapidly permafrost will melt. This will result in a vicious cycle that may result in a climate catastrophe.

Biodiversity Threat:

- Melting of the Arctic ice puts the Arctic region’s vibrant biodiversity under serious threat.

ECONOMY

Recently, the Prime Minister visited the exhibition models of the Aligarh node of the upcoming Uttar Pradesh Defence Industrial Corridor. It was announced by the Prime Minister while inaugurating the UP Investors Summit in Lucknow in 2018. The government has established another Defence Industrial Corridor in Tamil Nadu.



Key Points

Defence Industrial Corridor of UP:

- It is an aspirational project that intends to reduce foreign dependency of the Indian Aerospace & Defence Sector. It will have 6 nodes – Aligarh, Agra, Kanpur, Chitrakoot, Jhansi and Lucknow. The Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) is the nodal agency to execute this project in conjunction with various other state agencies. It aims to bring up the state as one of the largest & advanced Defence manufacturing hubs and put it on the world map.

Features:

- Single Window approvals and clearances to Defence and Aerospace (D&A) manufacturing units via Nivesh Mitra. Nivesh Mitra Portal has been launched by the Government of Uttar Pradesh to ease the Ease of Doing Business in the state.

- Labour Permits for D&A industry towards flexible employment conditions. Simple Procedures and rationalised regulatory regime with easy reimbursement of incentives and subsidies. Assured water supply and uninterrupted electricity. Connectivity with 4-lane heavy-duty highway.

Reason for choosing UP for Defence Corridor:

- Uttar Pradesh is the fourth largest state in India and the third largest economy within the country. With a population of more than 200 million, UP has the highest number of available labour force and is one of the top five manufacturing states in India. The state also ranks first in terms of number of Micro, Small & Medium Enterprises (MSMEs) in the country and ranks 2nd in Ease of Doing Business (EoDB).

Defence Corridors

A defence corridor refers to a route or a path along which domestic productions of defence equipment by public sector, private sector and MSMEs are lined up to enhance the operational capability of the defence forces.

Significance:

It will help in making the nation self-reliant in the field of defense production and promoting 'Make in India', which will reduce our imports and promote the export of these items to other countries. It will provide a fillip to the defence manufacturing ecosystem through synergistic development of technologies, promote the growth of private domestic manufacturers, including MSMEs and Start-Ups.

Challenges:

- **Technological Development in Defence:**

The first challenge in the development of technology is in advanced electronics and materials, which cut across all the verticals. The second challenge is relative immaturity of Material Science to use lighter and stronger intelligent material.

- **Meeting Industries Expectations:**

Meeting expectations of the industry, who not only wants faster clearance of their proposals for setting up or shifting their bases, but also tax benefits like in Special Economic Zones (SEZ), faster decision making etc is a challenge for the government.

- **Less Involvement of Private Players:**

While there is an over-concentration of orders with the public sector (leading to choking and queuing), hardly any orders are actually flowing to the private players.

Human Resource:

- Unavailability of talented human resources is also one of the major issues. Recently, the Prime Minister paid rich tributes to Acharya Vinoba Bhave on his birth Anniversary. **Death:** Died in 1982, Wardha, Maharashtra.

IMPORTANT FACTS FOR PRELIM

1. Arjun Mk-1A for the Indian Army

Recently, the Ministry of Defence (MoD) placed an order with Heavy Vehicles Factory (HVF), Chennai for supply of 118 Main Battle Tanks (MBTs) Arjun Mk-1A for the Indian Army.

Key Points

The state-of-the-art MBT Mk-1A is a new variant of Arjun Tank designed to enhance fire power, mobility and survivability. The Arjun Main Battle Tank project was initiated by DRDO in 1972. Infused with 72 new features and more indigenous content from the Mk-1 variant, the tank would ensure effortless mobility in all terrains, besides precise target engagement during day and night.

Developed By:

Combat Vehicles Research and Development Establishment (CVRDE), along with other laboratories of Defence Research & Development Organisation (DRDO).

Significance:

The order, worth Rs 7,523 crore, will provide further boost to the 'Make in India' initiative in the defence sector and is a big step towards achieving 'Aatmanirbhar Bharat'.

Mk1A and MkII:

- The development of Arjun Mk1 was followed by improved variants - Mk1A and MkII. Arjun Mk1A, which features improved firepower and transmission systems, completed the final integration tests in 2019 and was cleared for production.
- The Arjun MkII variant is a light-weight Futuristic Main Battle Tank (FMBT) with electro-optical sensors and high-power lasers.

2. FAST AND SECURED TRANSMISSION OF ELECTRONICS METHODS

Recently, in a major reform, the Supreme Court has given the go-ahead to implement a system for electronic transmission of its orders. It will ensure effective implementation of Article 21 (right to life). Earlier, the Chief Justice of India (CJI) launched an Artificial Intelligence (AI) based portal 'SUPACE' in the judicial system aimed at assisting judges with legal research.

Key Points

The system proposes transmission of e-authenticated copies of interim orders, stay orders, bail orders and record of proceedings to the duty-holders for compliance and due execution, through a secured electronic communication channel.

Need:

There have been cases where the plight of jail inmates are not released despite bail orders passed by this court due to delay in communication of such orders. So, it was needed to utilise information and communication technology tools for efficient transmission of court's orders.

Significance:

Ensure that undertrials are not made to wait for days on end behind bars to be released because the certified hard copies of their bail orders took time to reach the prison. Undertrials are the people who are yet to be found guilty of the crimes they have been accused of. Prevent unnecessary arrests and custody of people even after the court had already granted them its protection.

Challenges:

The availability of internet connection in jails across the nation as without this facility transmission of such orders to prisons will not be possible.

DAILY ANSWER WRITING PRACTICE

Qns. The AUKUS pact will complement the regional security architecture in the Indo-Pacific but has ramifications extending far beyond it. Analyse. Explain. (250 words)

Ans:

Introduction

The UK, US and Australia have announced a historic security pact in the Asia-Pacific, in what's seen as an effort to counter China. It is called the AUKUS pact and AUKUS alliance. It is a landmark security pact involving the UK, US and Australia that will allow Australia to build nuclear-powered submarines for the first time with technology provided by the US underscores the rapidly shifting realities of the Indo-Pacific.

Body

Overview on AUKUS pact

- Under the AUKUS alliance, the three nations have agreed to enhance the development of joint capabilities and technology sharing, foster deeper integration of security and defence-related science, technology, industrial bases and supply chains.
- Under the first major initiative of AUKUS, Australia would build a fleet of nuclear-powered submarines with the help of the US and the UK, a capability aimed at promoting stability in the Indo-Pacific region.
- In recent years, Beijing has been accused of raising tensions in disputed territories such as the South China Sea.
- Western nations have been wary of China's infrastructure investment on Pacific islands, and have also criticised China's trade sanctions against countries like Australia.
- Australia will be joining a select group of countries, including the US, UK, France, China, India and Russia, that operate nuclear-powered submarines.
- It will also be only the second nation after the UK with which the US will be sharing its submarine technology.

AUKUS pact: Regional security architecture in the Indo-Pacific and beyond

- **Technology transfer to non-nuclear state:** In an extraordinary move, the US and UK are willing to export nuclear technology to a non-nuclear powered nation. Regional security concerns have been the main driver behind this 'Aukus pact' that is being touted as Canberra's biggest defence partnership in decades, involving artificial intelligence, cyber and other cutting-edge defence technologies.
- **Indo-Pacific security:** It described the pact as a "historic opportunity for the three nations, with like-minded allies and partners, to protect shared values and promote security and prosperity in the Indo-Pacific region.

- **Countering Chinese expansionist policy:** For Washington and its allies in the Pacific, a new class of nuclear-powered submarines can be of critical value in challenging Chinese military expansionism. It would also allow the three nations to operate more effectively together undersea across the Pacific.
- **Timing of announcement:** The announcement of this major pact comes against the backdrop of a disastrous withdrawal of American forces from Afghanistan that had raised widespread doubts across the Indo-Pacific about the credibility of American commitments in the region.
- **Brexit and UK's projection as global power:** Britain aims to play a larger role in the Indo-Pacific, especially after its exit from the European Union.
- **India's stance:** The latest developments are largely favourable from an Indian viewpoint and as our focus now shifts to the Quad meeting, it is clear that like-minded regional powers are trying to evolve a partnership that will see closer alignment of regional policies and actions as well as greater integration of their defence forces.

Conclusion

The message from Aukus is that while the current churn in the Indo-Pacific may have begun with Chinese actions, it is now other regional players that are willing to set new terms of engagement with Beijing. They can effectively counter Chinese Aggression and their 'middle kingdom' agenda alongside the Quad.

DAILY QUIZ

Q1. Consider the following statements:

1. In India, the telecom sector was liberalised under the New Economic Strategy in 1991.
2. According to Department of Telecommunications (DoT), the Adjusted Gross Revenue (AGR) comprises all revenue earned by a telecom company.

Which of the statements given above is/are incorrect?

- (a) 1 Only (b) 2 Only (c) **Both 1 and 2** (d) Neither 1 nor 2

Q2. Consider the following statements about the Agriculture Infrastructure Fund:

1. It is a short term debt financing facility for investment in economically justified but not financially viable Agricultural projects.
2. It is a part of India's Aatmanirbhar Bharat Package.

Which of the statements given above is/are correct?

- (a) 1 only (b) **2 only** (c) Both 1 and 2 (d) Neither 1 nor 2

Q3. Consider the following statements:

1. In metallurgy, the process of Forging is termed as shaping metal and increasing its strength by hammering or pressing.
2. In Isothermal forging, the die and the workpiece are maintained at the same temperature throughout the forging cycle.
3. The isothermal forging technology is widely used to forge titanium-based alloys.

Which of the statements given above is/are correct?

- (a) 1 and 2 only (b) 2 and 3 only (c) 1 and 3 only (d) **1, 2 and 3**

Q4. Consider the following statements:

1. In India, Uranium deposits occur in the Dharwar rocks.
2. Till recently, India imported Uranium to meet the shortages of domestic supply, but now India is self-sufficient in Uranium production.

Which of the statements given above is/are correct?

- (a) **1 only** (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2

Q5. Consider the following statements about the Parker Solar Probe:

1. It was built by Lockheed Martin and is operated by NASA's Jet Propulsion Laboratory.
2. It will fly close enough to the Sun to watch the solar wind speed up from subsonic to supersonic.

Which of the given above statements is/are correct?

- (a) 1 only (b) **2 only** (c) Both 1 and 2 (d) Neither 1 nor 2