Emerging Technologies in Defence

Why in news?

Emerging technologies like artificial intelligence, cyber technology, etc. are vital for Indian military and defence organisations.

What is emerging technology?

- **Emerging technologies** - It refers to innovative advancements or developments that have the potential to significantly change the way we live and work.
- These technologies arise from cutting-edge research and offer new opportunities for industries, economies, and societies.

What steps were taken to use emerging technologies in Indian defence sector?

- **Chanakya Defence Dialogue**- It was held in 2023 which serves as a forum to *enhance national and regional security* by discussing contemporary issues, including the impact of emerging technologies.
- **Integrated Unmanned Roadmap**- It is a comprehensive plan for the development and deployment of unmanned systems in the *Indian Navy* that aims to achieve standardization, interoperability and jointness.
- **Project Swavlamban**- It is an initiative to promote Atmanirbhar (self-reliance) in the defence sector by encouraging indigenisation of defence equipment and technology.
- **AIDef**- Artificial Intelligence in Defence is a symposium held in 2022 that showcased cutting edge AI enabled solutions developed by industry, start-ups etc.,
- It includes Defence AI Council and Defence AI Project Agency that facilitates AI integration in defence.
- **Defence Cyber Agency**- It was launched in 2018 to handle cyber security threats and to develop cyber warfare doctrine.
- **Defence Space Agency**- It is responsible for operating space warfare and satellite intelligence assets of India.

To know about the AI in defence sector click here

What are the challenges in utilising emerging technologies in India?

- **Financial crunch**- India's defence spending is around ***2.1% of GDP,*** which is insufficient to meet the requirement of armed forces and the defence industry.
- **Lack of innovation**- India invests very little in research and development in emerging technologies compared to its global leaders.

- **Poor governance**- India's defence acquisition and procurement system is plagued by delays, corruption and red tapism.
- **Outdated-** The system is unable to cope with the fast paced and dynamic nature of emerging technologies, which require constant innovation and upgradation.
- **Lack of skills-** India faces a *brain drain* of its talent to foreign countries and industries and faces shortage of skilled and qualified personnel in emerging technologies.
- **Inefficiency-** India's armed forces operate in silos and lack interoperability among themselves and with the civilian sector.
- It hampers the effective integration and utilisation of emerging technologies, which require seamless coordination and collaboration across domains and platforms.
- **Lack of standardization-** India lacks a clear and coherent strategic vision and doctrine for the use of emerging technologies in defence.
- India has not articulated its objectives, priorities, and principles for the development and deployment of these technologies.
- It has not defined its thresholds, norms, and rules of engagement for their employment in conflict scenarios.

What lies ahead?

- **Collaborative defence**- India needs to foster jointness and interoperability among it selves and with the civilian sector, for effective utilisation of emerging technologies.
- **Transparency-** India needs to reform its defence acquisition and procurement system to make it more agile, transparent, and efficient.
- **Disruptive Human Resource-** India needs to improve its education system, create more opportunities for training and learning to retain and attract talent.
- **Doctrinal changes**- India needs to articulate a clear and coherent strategic vision and doctrine for the use of emerging technologies in defence.
- **Promote investment**- India needs to allocate more resources for R&D, especially in emerging technologies, to develop indigenous and cutting-edge capabilities.

References

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