



TECHNOLOGICAL ABSORPTION IN DEFENCE SECTOR - GS III MAINS

Q. Successful technology absorption in defence necessitates a holistic approach addressing technological, organizational, and policy challenges. Elucidate (10 marks, 150 words)

News: *Marching ahead with technology absorption*

What's in the news?

- Despite positive strides made by the Indian military, the challenge lies in effectively integrating technology while understanding nuanced requirements.

Disruptive Technology:

- Disruptive technology refers to innovations that significantly alter existing industries or sectors, rendering previous technologies obsolete and reshaping traditional practices.

Characteristics of Disruptive Technology:

1. Game-Changing Impact:

- Disruptive technologies revolutionize warfare by introducing novel capabilities or approaches that significantly alter the balance of power on the battlefield.

2. Rapid Advancement:

- Emerging from fields like AI, robotics, cybersecurity, nanotechnology, and biotechnology, disruptive technologies lead to exponential improvements in military capabilities.

3. Cost-Efficiency:

- These technologies offer cost-effective solutions compared to traditional systems, enabling militaries to achieve greater effectiveness with reduced resources.

Examples of Disruptive Technologies:

1. Unmanned Aerial Vehicles (UAVs):

- Revolutionizing military reconnaissance, surveillance, and strike capabilities with real-time intelligence gathering, precision targeting, and operational flexibility.

2. Cyber Warfare:

- Using computer networks to disrupt, disable, or sabotage enemy systems and infrastructure, posing significant threats to national security.

3. Hypersonic Weapons:

- Traveling at speeds exceeding Mach 5, these weapons provide rapid-strike capabilities against distant targets, challenging conventional warfare dynamics.



Impact on Military Operations:

1. Enhanced Situational Awareness:

- Advanced sensors, data analytics, and AI improve military's situational awareness, enabling informed decisions and adaptability.

2. Precision and Lethality:

- Precision-guided munitions, autonomous systems, and enhanced targeting capabilities ensure greater accuracy and lethality in military operations.

3. Asymmetric Warfare:

- Technologically advanced forces utilize asymmetric warfare tactics like cyberattacks, drone swarms, and electronic warfare to challenge conventional military powers.

Key Initiatives of Atmanirbhar Bharat in Modernising Defence Sector:

1. Defence Acquisition Procedure (DAP) - 2020:

- Prescribes 50% indigenous content in procurement contracts, encouraging foreign OEMs to set up facilities in India.

2. Positive Indigenisation Lists:

- Specify items to be procured only from domestic sources, promoting indigenous production.

3. Make-In-India in Defence Sector:

- Classifies capital acquisition as 'Indian' or 'Not-Indian,' prioritizing products designed, developed, and manufactured in India.

Challenges in Absorption of Technology in the Defence Sector:

1. Low R&D Expenditure:

- India's insufficient focus on defence R&D and low researcher density hinder breakthrough technology development.

2. Ineffective Relevance and Depth of Technology:

- Foreign offers may not align with current and future defence needs, requiring careful scrutiny.

3. Licensing Issues:

- Foreign governments approval requirements and reluctance to share cutting-edge technology impede technology transfer.

4. Cybersecurity Vulnerabilities:

- Growing reliance on digital technologies exposes the defence sector to cyber threats due to inadequate frameworks and preparedness.

5. Technological Obsolescence:



- Delayed modernization and limited technology transfer hamper indigenous defence technology development.

Way Forward:

1. Technological, Operational, and Tactical Adaptations:

- Operational and tactical changes complement technological advancements, ensuring survivability and integration of capabilities.

2. Technological Progress, Together with Conventional Methods:

- Acknowledging vulnerabilities and leveraging technology while consolidating traditional defence lines and strengthening the military industrial base.

3. Understanding the Potential of Latest Technologies:

- Comprehending the latest technologies and their applicability, democratically employing technology at all levels for true transformation.

4. Multiple Aspects Inclusive Technology Absorption:

- Addressing organizational, HR, and policy considerations alongside technology absorption for effective integration.

5. Harnessing Potential of iDEX and DISC:

- Leveraging initiatives like iDEX and DISC to mobilize the Indian startup ecosystem for defence product development.

Successful technology absorption in defence necessitates a holistic approach addressing technological, organizational, and policy challenges. By prioritizing indigenous production, strengthening R&D, and fostering partnerships, defence establishments can effectively integrate new technologies, enhancing capabilities in an evolving security landscape.