Science & Technology · GS - III

“Semiconductor technology has emerged as a strategic instrument of geopolitical competition, blurring the distinction between economic interests and national security.” Examine in the context of US–China technology rivalry. Discuss its implications for India.

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MARKS	WORD LIMIT
10	~150 words

Answer Hint

Discuss strategic semiconductors, AI applications, espionage risks, export controls, technological sovereignty, US-China rivalry, supply-chain vulnerabilities, legislative oversight, India's semiconductor mission and strategic autonomy.

Model Answer

Semiconductors constitute critical infrastructure for artificial intelligence, telecommunications, defence systems and advanced computing. Consequently, their control has become central to geopolitical competition, particularly between the United States and China.

The Nvidia controversy highlights potential intersections between corporate leadership, foreign intelligence activities and national security. Allegations involving suspected espionage have prompted congressional scrutiny regarding technology exports, corporate security protocols and access to advanced AI chips. However, allegations must be distinguished from established findings.

Export controls increasingly function as instruments of economic statecraft, restricting adversaries' access to strategically sensitive technologies. Such measures can protect technological advantages but may also fragment

global supply chains, increase costs and intensify geopolitical tensions.

For India, this rivalry creates opportunities to attract semiconductor manufacturing, diversify supply chains and strengthen technological sovereignty. The India Semiconductor Mission, strategic partnerships and domestic research capabilities can reduce import dependence.

Nevertheless, India must balance national security, innovation, investment attractiveness and international cooperation.

Ultimately, resilient semiconductor ecosystems require secure supply chains, skilled manpower, research investment and transparent regulatory frameworks, alongside responsible corporate governance and effective national security oversight.