Science & Technology · GS - III

“Satellite-based internet services can bridge India's digital divide, but their expansion raises complex questions relating to spectrum allocation, competition, national security and regulatory fairness.” Discuss.

EXAM YEAR	PAPER	SUBJECT
Daily Practice 19/10/2026	GS - III	Science & Technology

MARKS	WORD LIMIT
15	~250 words

Answer Hint

- Introduction: Define satellite internet and explain Starlink's LEO satellite model.
- Digital inclusion: Remote connectivity, disaster communication, education, healthcare and business access.
- Regulatory debate: Administrative spectrum assignment versus auctions; distinguish spectrum allocation from licensing.
- Competition: Incumbent telecom operators versus satellite service providers; level playing field and consumer welfare.
- National security: Network control, lawful interception, data protection, gateway infrastructure and service continuity.
- Challenges: Affordability, orbital congestion, space debris, weather-related limitations and regulatory uncertainty.
- Way forward: Transparent rules, proportionate security requirements, fair competition, affordable access and coordination between terrestrial and satellite networks.

Model Answer

Satellite-based internet can expand broadband connectivity to remote and geographically difficult areas where conventional mobile towers and fibre-optic networks are expensive or impractical. Starlink, operated by SpaceX,

uses a constellation of Low Earth Orbit satellites to provide broadband connectivity with relatively low latency.

Its expansion can support India's digital inclusion by improving access to online education, telemedicine, e-governance, disaster response and commercial services in underserved regions. Satellite networks can also provide connectivity to aircraft, ships and emergency-response teams.

However, the sector presents regulatory challenges. Spectrum is a scarce public resource, and its assignment must balance efficient utilisation, interference management, competition and public interest. The debate over administrative allocation versus auctions reflects differing views about how satellite operators should access spectrum and how their obligations should compare with those of terrestrial telecom companies.

National security is equally important because satellite networks involve foreign-controlled infrastructure, ground gateways and cross-border data flows. Licensing, security assessments and lawful access requirements must therefore be implemented transparently and proportionately.

Competition policy should prevent both exclusionary conduct by dominant incumbents and unfair advantages for new entrants. Satellite connectivity also faces affordability constraints, orbital congestion and space-debris risks.

India should adopt clear and predictable rules, establish objective security standards, promote fair competition and encourage cooperation between satellite and terrestrial networks. Public policy must ensure that innovation serves universal connectivity without compromising national security or consumer interests.

Thus, satellite internet should be treated as a complement to India's existing digital infrastructure, supported by transparent regulation and a strong public-interest framework.

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