



Mains Marathon

Day 39: The fifth-generation mobile network (5G) is the next level of mobile network that will shape the Fourth Industrial Revolution, quality of service delivery, innovation. Critically analyze in Indian context. (250 Words)

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Approach / Explanation / Answer

Approach

- Briefly introduce by describing 5G.
- Discuss the advantages of 5G.
- Explain the issues associated with 5G in Indian context.
- Suggest some measures to solve the issues.

Answer

5G is the **fifth-generation cellular network technology**. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. It is designed to **improve network connections by addressing the legacy issues of speed, latency and utility**. 5G is promised to deliver **data speed at a rate 100 times faster than 4G networks**. Importantly, it is designed **to transmit data almost instantly with a network latency of less than 10ms**. It will also have an enhanced throughput to handle more simultaneous connections at a time than current-generation networks. In India, network operators like **Airtel, Vodafone Idea, Reliance Jio, etc**, have already partnered with vendors like **Ericsson, Huawei and Samsung for planned trials**.

Advantages of Fifth Generation (5G) Technology:

- **High Speed Technology:** In the high-band spectrum of 5G, internet speeds have been tested to be as high as 20 Gbps (gigabits per second) as compared to the maximum internet data speed in 4G recorded at 1 Gbps. 5G will also reduce the latency i.e., the time taken by a network to respond.
- **Machine-to-Machine Interaction:** 5G will be the first technology to facilitate machine-to-machine communication, the foundation of Internet of Things (IoT). Combined with IoT, cloud, big data, AI, and edge computing, 5G could be a **critical enabler of the fourth industrial revolution**.
- **Boost to the Economy:** 5G is expected to create a cumulative **economic impact of USD1 trillion in India by 2035**. It will give a huge amount of **economic boost to India** by increased connectivity between machines and various sectors which will in turn increase efficiency.

Production will also increase, which would lead to huge revenue collections.

- **Collaborative Network Deployment:** 5G will lead to, for the first time, the business verticals and technical verticals come together for network deployment.
- **Focus on Capacity:** In 5G, the focus has been exerted upon the capacity rather than the range of the network. However, in the rural areas, the range of the network is required more than bandwidth as the areas are not as densely populated and industrialized as the urban areas. The range will be compensated for by deploying more small cells in the required areas.

Issues Associated

- **India as a Late Adopter:** Countries in the Asia-Pacific region, including India, Bangladesh and Indonesia are late in adopting 5G technology, hence, will get insignificant revenue from the service.
- **Lesser Government Subsidies:** A low likelihood of government subsidies is expected, given the history of high reserve prices set by the governments for spectrum auctions amid ongoing fiscal deficits.
- **Digital Divide:** 5G will not bridge the digital divide among the rural and urban areas in the short term, rather increase it as the business case of 5G even in urban areas does not have maximum accessibility. Therefore, it will not be easily available in rural areas too.
- **5G, A Niche Service:** 5G will be a niche service unlike 3G and 4G which were pervasive services. It will get intensified over a comparatively longer period of time. The rollout of 5G technology will be different from the one seen in 4G; it will be introduced in specific sectors and areas.
- **Inadequate Accessibility of Previous Technology:** There are still areas where 4G networks have not stabilized causing frequent disruptions in internet services. It is important to meet the quality-of-service parameters of existing 4G networks before embarking on a new 5G platform.
- **Enabling Critical Infrastructures:** 5G will require a fundamental change to the core architecture of the communication system. The major flaw of data transfer using 5G is that it can't carry data over long distances. Hence, even 5G technology needs to be augmented to enable infrastructure.
- **Financial Liability on Consumers:** For transition from 4G to 5G technology, one has to upgrade to the latest cellular technology, thereby creating financial liability on consumers.

Way Forward

- **Bridging the Rural-urban Gap:** 5G can be deployed at different band spectrums and at the low band spectrum, the range is much longer which is helpful for the rural areas.
- **Government's Assistance:** The government shall support the telecom companies to roll out networks which are sustainable and affordable for the public.
- **Tackling the Spectrum Pricing Issue:** The pricing will have to be worked out keeping in mind the financial stress in the sector and affordability of services.
- **Enabling the Manufacturing Sector in India:** It is important to strengthen India's domestic telecommunication manufacturing market so that it is not only the users of 5G in India, but also the manufacturers and providers of these technologies who will be able to make a mark in the global arena.
- **Viable Technology from Consumers' Perspective:** For widespread 5G deployment, it needs to become financially viable otherwise rural integration will remain a pipe dream. Also, 5G technology has to be viable to the telecom operators too.

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