

## General Studies-3; Topic: Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

### India's 5G Preparedness

#### 1) Introduction

- 5G is the next generation cellular technology that will provide faster and more reliable communication with ultra-low latency.
- A government panel report points out that with 5G, the peak network data speeds are expected to be in the range of 2-20 Gigabit per second (Gbps).
- While some countries such as South Korea and the U.S. have begun rolling out commercial 5G services, India is yet to begin trial for these even as the government is targeting 2020 as the launch year for 5G in the country.

#### 2) 5G Benefits

- 5G is capable of more capacity, lower latency, faster data delivery rate and better utilisation of spectrum.
- Consumers will be able to download data heavy content such as 8K movies and games with better graphics in just a few seconds.
- 5G will act as the catalyst for Digital India—a watershed moment in digital transformation.
- It provides an opportunity for industry to reach out to global markets, and consumers to gain with the economies of scale.
- It can help in better service delivery, faster access to services and deeper penetration of digital services.
- B2B or business use cases are being seen as the main revenue generating engine for operators with 5G.
- The largest opportunity for revenues created by 5G will be in the manufacturing, energy and utilities sectors.
- According to Department of Telecommunication's report 5G services would have a cumulative economic impact of more than \$1 trillion by 2035.
- The technology is poised to open up a plethora of opportunities in terms of business models, better education, healthcare, smart cities, smart manufacturing, smart logistics and, overall, enhanced lifestyles for one and all.

#### 3) Applications of 5G Network

- Implementation of sensor-embedded network that will allow real time relay of information across fields such as manufacturing, consumer durables and agriculture.
- 5G can help make transport infrastructure more efficient by making it smart.
- 5G will enable vehicle-to-vehicle and vehicle-to-infrastructure communication, making driverless cars, among other things, a reality.
- 5G is the most efficient candidate for Internet of Things.
- 5G will power healthcare industry with smart medical devices, Internet of medical things, smart analytics, and high definition medical imaging technologies.
- 5G may offer 'leapfrog' opportunities by providing 'smart infrastructure' that offers lower cost and faster infrastructure delivery.
- 5G will connect people to everything. It will make possible secure connectivity between devices other than smartphones, such as sensors, vehicles, robots, and drones.

## 4) Concerns / Challenges

- Indian operators have far less spectrum in comparison to international operators. This increases their cost of operations.
- Indian spectrum is also rather expensive.
- The high investment cost which makes telecom companies unsure about Return on Investment.
- Non-availability of funds for investment.
- Moreover, operators have invested huge amounts of money in 4G very recently.
- Faster rounds of new technology introduction when prior technology investments have not been recouped.
- Designing IT architecture that can be deployed globally, while still allowing for localized technology to cater for different regions is a challenge.

## 5) Way Forward

- In India, the telecom sector is facing capital augmentation issues which need to be resolved.
- 5G applications and software will require some form of initial funding by the government.
- Incentivize design and manufacture of 5G technologies, products and solutions in India.
- Allocate funds and incentivise local technology and telecom firms to develop their internal capacities which would in turn help 5G technology succeed in the country.
- Promote 5G start-ups that enable this design and manufacturing capabilities.