Requirements of 5G:

The number of devices is increasing day by day this is causing a huge bandwidth requirement for the huge amount of data transmission certainly necessitate the novel enhancement to the current technology. we highlight necessary parts of the future 5G networks.

**Dramatic upsurge in device scalability.** The number of smart phones, gaming consoles, high-resolution TVs, cameras, home appliances, laptops, connected transportation systems, video surveillance systems, robots, sensors, and wearable devices (watches and glasses) is expected to grow exponentially in the near future. Therefore, 5G networks are perceived to support massively connected devices [1, 15].

**Massive data streaming and high data rate.** A vast growth in a number of wireless devices will of course result in a higher amount of data transfer (e.g., videos, audio, Web browsing, social-media data, gaming, real-time signals, photos, busty data, and multimedia) that will be 150-times more as compared to the year 2016 and would overburden the current network. Thus, it is mandatory to have matching data transfer capabilities in terms of new architectures, methods, technologies, and data distribution of indoor and outdoor users [15, 60].

**Spectrum utilization.** The use of two different channels (one for a Up Link and another for a Down Link) seem redundant from the point of view of the spectrum utilization [9]. In addition, the currently allocated spectrums have their significant portions under-utilized [12]. Hence, it is necessary to develop an access control method that can enhance the spectrum utilization. Again, the spectrum utilization and efficiency have already been stretched to the maximum. It definitely requires spectrum broadening (above 3 GHz) along with novel spectrum utilization techniques [34].

**Uninterrupted connectivity.** Uninterrupted connectivity requires UEs to support a variety of radios, RATs, and bands due to the global non-identical operating bands. In addition, the major market split between time division duplex (e.g., India and China) versus frequency division duplex (e.g., US and Europe) so that UEs are required to support different duplex options. Hence, 5G networks are envisioned for seamless connectivity of UEs over HetNets [13].