OBJECTIVES

The objectives of the present research work include the performance analysis of following points:

a. To study and analyze the challenges which have arouse with the continuation and upgradation of third generation wireless communication technologies that have leaded to the path of forth generation technologies.

b. To make the survey of limitations of the existing wireless techniques which are not satisfying the current demand of higher data rate, system capacity as well as improved error rate.

c. To analyze the behavior of atmospheric ambience i.e. different types of wireless channels such as AWGN, Rayleigh, etc. that plays the main role in the efficient wireless communication systems for better system QoS.

d. To study one of the most promising modern wireless communication systems i.e. Digital Video Broadcasting (DVB) system with its different variants such as DVB-T for terrestrial broadcasting, DVB-S and its update i.e. DVB-S2 for satellite broadcasting.

e. To simulate and obtain numerical modeling of DVB-T, DVB-S and DVB-S2 with the real time data transmission using MATLAB platform and to perform comparative analysis of all.

f. To analyze the complete architecture of one of the most futuristic wireless networking standard i.e. IEEE 802.16 that has shown the tremendous potential as the 4th generation wireless communication system.

g. To understand the limitations of the existing structures of the modern wireless communication systems which are the hurdles to cope up with the demands of high data rate along with low error rate thereby analyzing the effects of multiple antenna systems over the challenging phenomenon of fading.

h. To develop various antenna diversity techniques and to investigate the novel transmit-receive architecture of MIMO i.e. BLAST structure known as Spatial Multiplexing for improved system performance with exploitation of fading as an advantage.
i. To have the critical performance analysis of MIMO - BLAST with the existing standard MIMO – STBC by considering the scenario of highest diversity gain as well as highest speed performance.

j. To simulate and model the complete DVB standards as well as IEEE 802.16 standard along with the implementation of antenna diversity techniques with STBC and BLAST so as to compete with the recent demands of achieving high data rate along with lowest bit error rate which results in modern wireless communication standards.

k. Finally to model and to analyze the modern communication systems with the MATLAB platform by adjusting various parameters such as source coder types, channel coder types, modulation techniques, efficient and suitable channel types, symbol rates, etc under the scenario of real time image and data transmission.

Ultimately the main objective of this research work is to investigate, simulate and model the most sophisticated future generation wireless communication standards i.e. DVB and IEEE 802.16 standard with the implementation of antenna diversity techniques along with BLAST structure by observing the improvement in BER and system capacity with the transfer of real time image and speech signals.