Preface

The multiple purpose, broad scope and high significance of C-heteroatom bond create a keenness to author to carry out the methodological based work on C-heteroatom bond forming reaction. C-heteroatom bond has occupied distinctive position in organic chemistry as far as its medicinal value and material properties concern. Most of the pharmaceuticals often contain C–N bonds and almost all natural products contain C–O bonds. Heterocyclic compounds in which C–N, C–O or C–S bonds are present in the ring structure are found in all applications of chemistry. Extensive research has been done on exploring the importance of C-hetero bond in the area of biological chemistry by designing new class of drugs and material properties associated with these classes of compounds.

The area of C-heteroatom bond forming reactions has experience an enormous application due to their wide range of application in designing the compound with chemical or biological interest. Numerous works have been done and substantial amount of new methodologies have been developed for their synthesis. Most of the reported methodological works are not straight-forward, easy or environmentally benign. The development of new methodologies is still going on to reach the mild and green approach for the sustainable development. As there are numerous varieties of compounds having carbon-heteroatom, the methodological based works on some of them are covered in this thesis. This thesis covered the synthesis of epoxy-derivatives of few steroids by *m*CPBA on silica or $CHCl_3$, selective synthesis of mono and dioximes on silica, $FeCl_3$ mediated organo nitrile synthesis, $MgCl_2.6H_2O$ catalyzed synthesis of 2-substituted benzimidazoles and synthesis of substituted imidazole on titanium-silica solid support. The unique structural or biological features of these selected carbon-heteroatom compounds prompted author to carry out the present methodological work.

The major aim of this thesis is to offer new literature on methodological work on carbon-heteroatom bond forming reaction. The new methodologies described in this thesis are mild, cost-effective, environment friendly which definitely meet the present demand under the aspect of green and sustainable development.