Preface

*Heterocyclic Chemistry is much more explored today because of its interesting structural properties and biological potentials. In fact, five membered heterocycles have attracted the attention of pharmaceutical community due to their therapeutic applications. The influence of heterocyclic compounds in day-to-day life has been convincingly established. This is reflected by the voluminous data available in the literature. In this perspective, the work embodied in the thesis entitled "**A study on the synthesis of heterocyclic compounds**" has been taken up by the author and describes the author's contribution to the synthesis of mono heterocycles: pyrroles, pyrazoles, 1,3,4-oxadiazoles, 1,3,4-thiadiazoles and 1,2,3-triazoles and bis heterocycles: pyrroles, pyrazoles in combination with oxadiazoles and thiadiazoles adopting facile and novel synthetic strategies. The structures of the new compounds have been established by spectral parameters and microanalyses. Some of the compounds have also been assayed for biological activities. The results thus accomplished are described in the thesis in four sections for clear and better presentation.*

GENERAL METHODOLOGY
EXPERIMENTAL AND INSTRUMENTATION

The solvents are distilled and purified as per the procedures described in "***A Text Book of Practical Organic Chemistry***" by A. I. Vogel.

Purity of the compounds is checked by thin layer chromatography using silica gel 'G' (BDH) and hexane-ethyl acetate as eluent wherever necessary. Most of the compounds are purified by recrystallization from a suitable solvent. However, in some instances the compounds are purified by filtration through a column of silica gel (60-120 mesh) using appropriate solvents.

Melting points are recorded using Tempo Mel-Temp apparatus and are uncorrected. Microanalyses are performed using Perkin-Elmer 240C elemental analyzer. IR spectra are recorded on a Thermo Nicolet FT-IR 200 using KBr pellets and wave numbers are given in cm^{-1}. ^{1}H and ^{13}C NMR spectra are recorded in $CDCl_3$ / DMSO-d_6 operating at 300 / 400 MHz and 75.45 / 100 MHz, respectively on a Bruker Spectrospin and JNM λ-300 spectrometers. The chemical shifts (δ, ppm) and coupling constants (Hz) are reported in the standard fashion with reference to either internal standard tetramethylsilane (for ^{1}H) or the central line (77.0 ppm) of $CDCl_3$ or (39.5 ppm) of DMSO (for ^{13}C). The mass spectra are recorded on Jeol JMS-D 300 and Finnigan Mat 1210 B at 70 eV with an emission current of 100 μA. For some of the samples liquid chromatography mass spectra are recorded on Agilent 1100 series LC / MSD. Built-in magnetic stirring (Teflon-coated stirring bar) is used in all operations. The temperature is measured throughout the reaction by flexible probe. Antioxidant activity is carried out by measuring the absorbance of the test solutions using analytical UV-Visible spectrophotometer, Shimadzu UV-2450.

The spectral figures incorporated in the thesis are obtained by xeroxing the original spectra. All the figures, equations and schemes are drawn on ISIS Draw free ware and the compounds are numbered sequentially in the respective chapters in Times New Roman fonts.