Present attempt is to study the scorpion species Neoscorpiops deccanensis from Sinhgad, Dist. Pune, and India. This thesis provides detail study of Anatomy and Histology of nervous, reproductive and venom system of Neoscorpiops deccanensis. In spite of the curiosity about the large group of arachnids, Scorpions have received very little attention. This research work tries to find out anatomical and histological account of the species of scorpion found locally at Sinhgad, 30 km away from Pune city. There are various specific structures in the body of scorpions which help them to survive from prehistoric age (Silurian period) of evolution. There is anatomical and histological resemblance with this group of Scorpion from the other species studied previously.

Use of Carnoy’s fixative and special treatment of methylene blue solution during dissection of central nervous system helped to trace out clear intact anatomical structures. Staining (HE method) technique gave excellent results of histology of all the systems during research.

Anatomy of nervous system shows some different result in present study. The cephalothoracic ganglionic mass shows advanced features but at the same time ventral nerve cord is having very primitive plan. Studies on central nervous system show difference of shape of supraoesophageal ganglion. Female cerebral ganglion is pear shaped while Male cerebral ganglion bean shaped. In case of Male the size of brain is broad than female; while length of female brain is more than male brain. The Neurosecretory cells are distinctly visible in histological slides. The transverse and longitudinal sections of nerve cord shows very dense and concentrated giant fibers, indicating the coordinated mechanism of Neoscorpiops deccanensis during capture of prey. The pedipalpal nerve well developed with the large prominent pedipalpal ganglion. Telson nerve pair after entering in the sting
fuse to form telsonic nerve connective mass before penetrating into the musculature of venom gland. These nerves contain higher amount of giant fibers to increases instant coordinated mechanism of body control.

In case of Female reproductive system egg is apoikogenic, the embryo get nourishment through wall of oviduct during early stages of development from hepatopancreases. Special follicular puffs are formed in later stages of embryonic developmental stages to provided nourishment. The feeding mechanism is well explained by the scanning electron microscopy (SEM) of microvilli of follicular puffs. Embryo is not attached to the wall of ovariuteurs. Embryo remains free, suspended in amniotic fluid present surrounding it. Number and position of embryo during development is fixed. 13 embryos are formed in specific location in ovariuterus. At the time of parturation embryos delivered by head first orientation through a channel formed by two pegs clearly visible in the micro photographs ovariuterus push the embryos out one by one with rhythmic contractions of muscles. Post parturition histology shows squamous epithelial germinal layer and serosa. The embryonic region shows collapsed structures of extra embryonic membranes, indicating leuteum phase. These are differing and well explanatory observation from the present studies.

Anatomy of male reproductive system in Neoscrociops deccanensis shows lamilliform spermatophores with capsular region. Three types of glands namely seminal vesicles, albumen gland and bulbo urethral gland are present. The vas deference highly coiled with the proximal and distal convoluted ends. The testes are in the form of reticulum each testies has lobules with distinct outline of connective tissue. All cells in single lobule show synchronized phase of spermatogenesis process. Single lobule shows self-explanatory phases of meiotic cell division of spermatogenesis. Cell number at the primary spermatocyte decreases in the due
course of spermatogenesis. In secondary spermatocyte phase 16 cells are present in single lobule. Spermatids are 8 in number secondary spermatocyte during meiotic cell division show 24 chromosomes.

In Neoscorpiops deccanensis pair of venom gland is present. It is elliptical in shape with long secretory duct. Both the glands open in aculeus separately. Anterioventral part of telson is highly muscular and supplied with nerve innervations. Dense uniform distribution of giant nerve fibers clearly observed in histology of venom gland. Gland is simple Single layered type-I gland. It is apocrine gland with two types of cells. Columnar epithelium and Goblet cells present in venom gland. Apocrine gland shows four phases of secretory cycle. So for the chemical composition of venom of this particular species has not been analyzed.

All the anatomical and histological observations of the three systems are elaboratively presented with photographs, microphotograph and SEM photographs for better understanding of the anatomy and histology of Neoscorpiops deccanensis.