GENERAL CHARACTERISTIC FEATURES OF ARTHRPODA

Q.What is tagma?/ Q.State two characteristic features on arhtopodan body segmentation./ Q.What do you mean by tagmosis?

There is a tendency in some arthropods to reduce or eliminate the outward sign of segmentation.This is pronounced in some arachnid a taxa and reaches its zenith in the mites, which may show no external indications of segmentation.The anterior and posterior ends of the arthropod body, the acron and telson, respectively are not serially homologous to the segments that lie between them.

Tagmosis-Is the tendency to organize segments into regions having similar structure, function and appendages.Each group of similar segments is a **tagma**. All hexapods (insects) have a body divided into head, thorax and abdomen, whereas chelicerates have a cephalothorax and abdomen, and crustaceans have various arrangements of head, thorax and abdomen.

Q.Mention significance of tagma for sensory reception.

The development of an anterior tagma (*head, cephalon or cephalothorax*) responsible for sensory reception, neural integration and feeding, is a strong tendency in arthropod evolution.The head of the ancestral arthropods consisted of the acron and several limb-bearing segments.

Q.Define uniramous and biramous appendages./ Q.Distinguish between uniramous and biramous appendags.

Segmental appendages-(*A major aspect of arthropod evolution is the functional specialization of their appendages*).

The appendages of many arthropods (such as hexapods, myriapods, and arachnids) have a single branch, or ramus, and are said to be uniramous. Those of many others (such as crustaceans and trilobites) have two major branches and are said to be biramous. The ancestral arthropod probably had biramous, or perhaps mulüramous, appendages. A biramous appendage typically begins with a proximal protopod, which often is divided into two articles, a coxa and a basis (Fig. 19-3B). Forking from the basis are the two rami consisting of a lateral exopod and a medial endopod.

Q.How body wall in arthropods differs from annelids?

Body wall in arthropods composed of alpha-chitin and protein. Collagen, abundant in cuticle of annelids, is absent in arthropods. The cutaneous sheets of unspecialized circular and longitudinal muscles characteristic of annelids have been replaced by specialized muscles that connect adjacent regions of the exoskeleton or extend into appendages.

Q.Define sclerotization.

Hardening of exoskeleton can be accomplished by **sclerotization** (sclera= hard) or mineralization. Sclerotization is accomplished by a chemical reaction known as tanning, which hardens, strengthens and darkens the cuticle by forming covalent cross-links between protein molecules. Cuticle can also be hardened by the incorporation of calcium salts, a process known as *mineralization*.

Q.Mention the pattern of modification in cuticle for movement in arthropoda.

Movement is made possible by dividing the hardened cuticle into separate plates known as **sclerites**. Adjoining sclerites and articles are connected by sections of soft, flexible cuticle known as **articular membranes**. This membrane connects the **sclerites** to form a complete ring around the segment. The four sclerites of each ring are a dorsal **tergite** ,two lateral **pleurites**, and a ventral **sternite**.

[***apodeme***-*invagination of the exoskeleton forms an inner projection..known as apodeme.*]

Q.How epicuticle differs from procuticle?

Key: Epicuticle (thin, complex, water resistant/ water proof layer of protein, lipoprotein, lipid and sometimes wax, but no chitin); Procuticle (composed of protein and chitin bound together to form a complex glycoprotein).

Q.What is the importance of molting in arthropod?

Molting- (*investigated in more details in decapods crustaceans than any other arthropods*)

In crustaceans molt cycle has 4 major stages (*Intermolt, proecdysis, ecdysis and postecdysis*).Molting is a dangerous time for several reasons and a large percentage of arthropods are unsuccessful in extracting themselves from the