B.Sc. Part I Zoology Hons (Paper I 'A')

Pila globosa : Nervous System

The nervous system of Pila Consist of paired and unpaired ganglia with their Commissures and Connectives. The Commissures are the nerves which establish Connections between similar ganglia. while Connectives are the nerves which Connect two dissimilar or different ganglia. However, the paired ganglia of Pila are Cerebral, buccal, pleural, pedal and Visceral, while unpaired ganglia are Supraintestinal and infra -intestinal. These ganglia with their commisures and connectives are as follows —

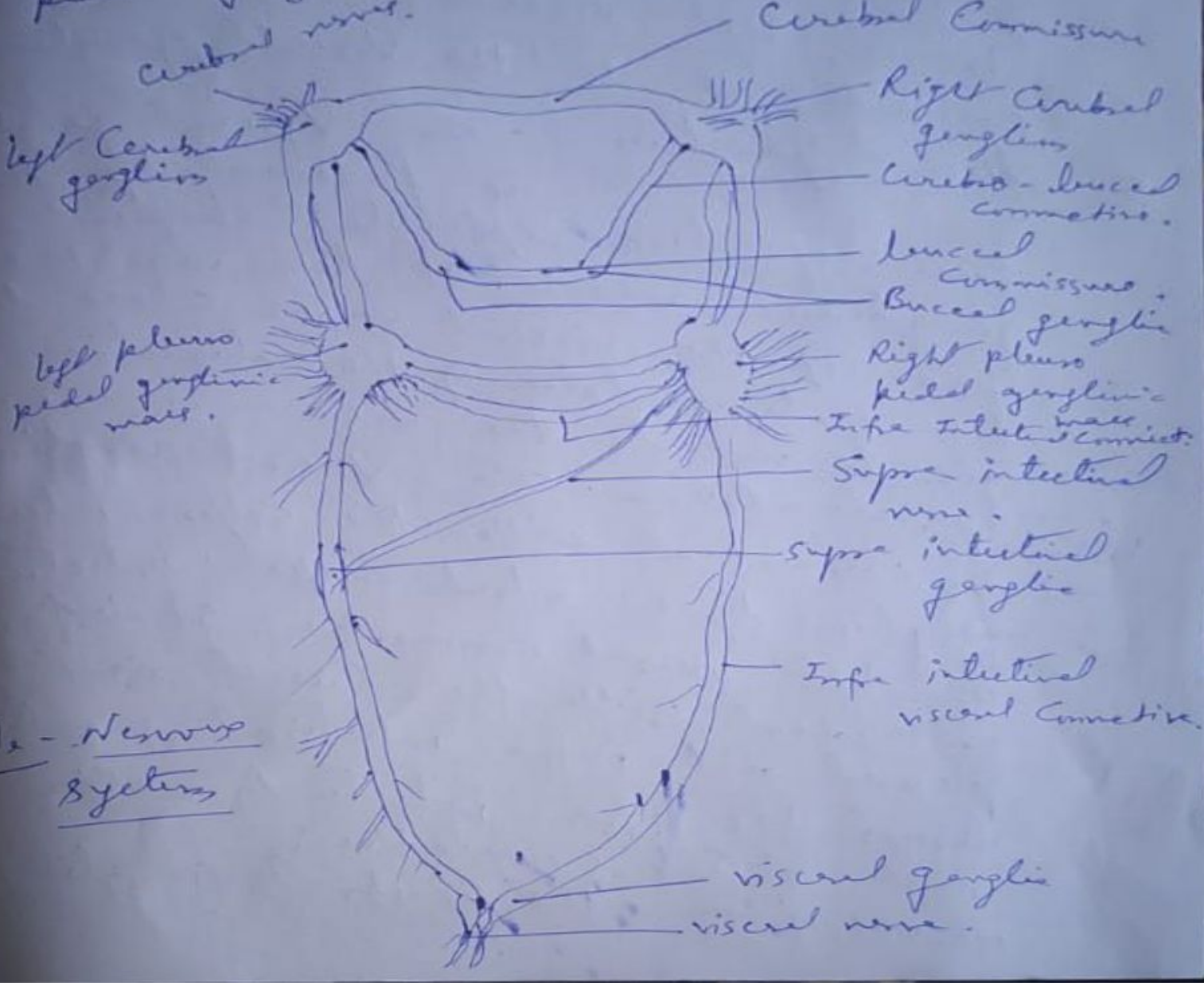
1. Cerebral Ganglia — There are two triangu -lar Cerebral ganglia, one on each side above the buccal mass. They are Connected to each other by a thick cerebral Commissure running transversely above the buccal mass and by a thin labial Commi -ssure lying below the buccal mass. Each Cerebral ganglion is further connected with the buccal ganglion of its side through a very slender Cerebro-buccal Connective. Thick band shaped Cerebro-pleural and Cerebro-pedal connectives serve to connect each

Cerebral ganglion with the corresponding pleural and pedal ganglia. Each Cerebral ganglion gives off several nerves supplying anteriorly the skin of snout, tentacle and buccal mass. and posteriorly, the tentacle, the eye and the statocyst.

2. Buccal Ganglia — At the junction of the buccal mass and oesophagus are two buccal ganglia. They are connected to each other by a transverse buccal commissure. They are also connected to the cerebral ganglia by a cerebro-buccal connective on each side; the Connectives lie above the buccal mass. Nerves from each buccal ganglion supply the buccal mass, radular sac, salivary glands and oesophagus.

3. Pleuro-pedal ganglionic mass :— The pleural and pedal ganglia of each side join together to form a pleuro-pedal ganglionic mass situated below the buccal mass. In a pleuro-pedal ganglionic mass, the pleural ganglion is placed towards the outer side and the pedal ganglion to the inner side. The pleuro-pedal ganglionic mass is connected to the cerebral ganglion of it side by a cerebro-

pleural connective and cerebro-pedal Connective
The two pedal ganglia are connected to each other by two pedal commissures lying closely parallel to each other. The right pleuro-pedal nerve has an infra-intestinal or a sub-intestinal ganglion also fused with it. A slender loop like infra-intestinal nerve behind the pedal Commissure, connects the pleural ganglia of both the sides. A statocyst is connected by a band of connective tissue, to each pedal ganglion.



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4. Supra-intestinal ganglion – The supra-intestinal is a slightly swollen, more or less fusiform ganglion lying a little behind the pleuro-pedal mass of the left side. It is connected with the pleuro-pedal mass by a stout connective, called zygoneury. It gives off on the inner side, a thin supra-intestinal nerve which runs anteriorly above the intestine to the right side to join the right pleural ganglion. The supra-intestinal ganglion also sends off posteriorly, a branch, left-Visceral Connective which connects it to the Visceral ganglion.

5. Visceral Ganglion – The Visceral ganglion is formed by the fusion of two epindle-shaped ganglionic masses. It lies near the base of the visceral mass close to the anterior lobe of the digestive gland and to the right of the pericardium. The Visceral ganglion is connected with the supra-intestinal ganglion by a stout supra-intestinal or left visceral connective. It is further connected with the fused right pleural and infra-intestinal ganglion through the infra-intestinal or the right visceral connective. Nerves from the cerebral ganglia go

to the head, tentacles and eyes. The buccal ganglia send nerves to the buccal mass. Nerves from the pedal ganglia innervate the foot, and those from the pleural ganglia go to the mantle, ctenidium and siphons. From the visceral ganglia nerves go to the intestine, kidney and gonads. These nerves constitute the peripheral nerves.

The two important characteristics of nervous system of Pila are - a most of the ganglia, except the visceral, are concentrated near the buccal mass, visceral loop is twisted into a figure of 8 due to torsion. The twisted condition of the nervous system is a primitive feature, because in most gastropods there is a secondary bilateral symmetry exhibited by the ganglia and connectives.