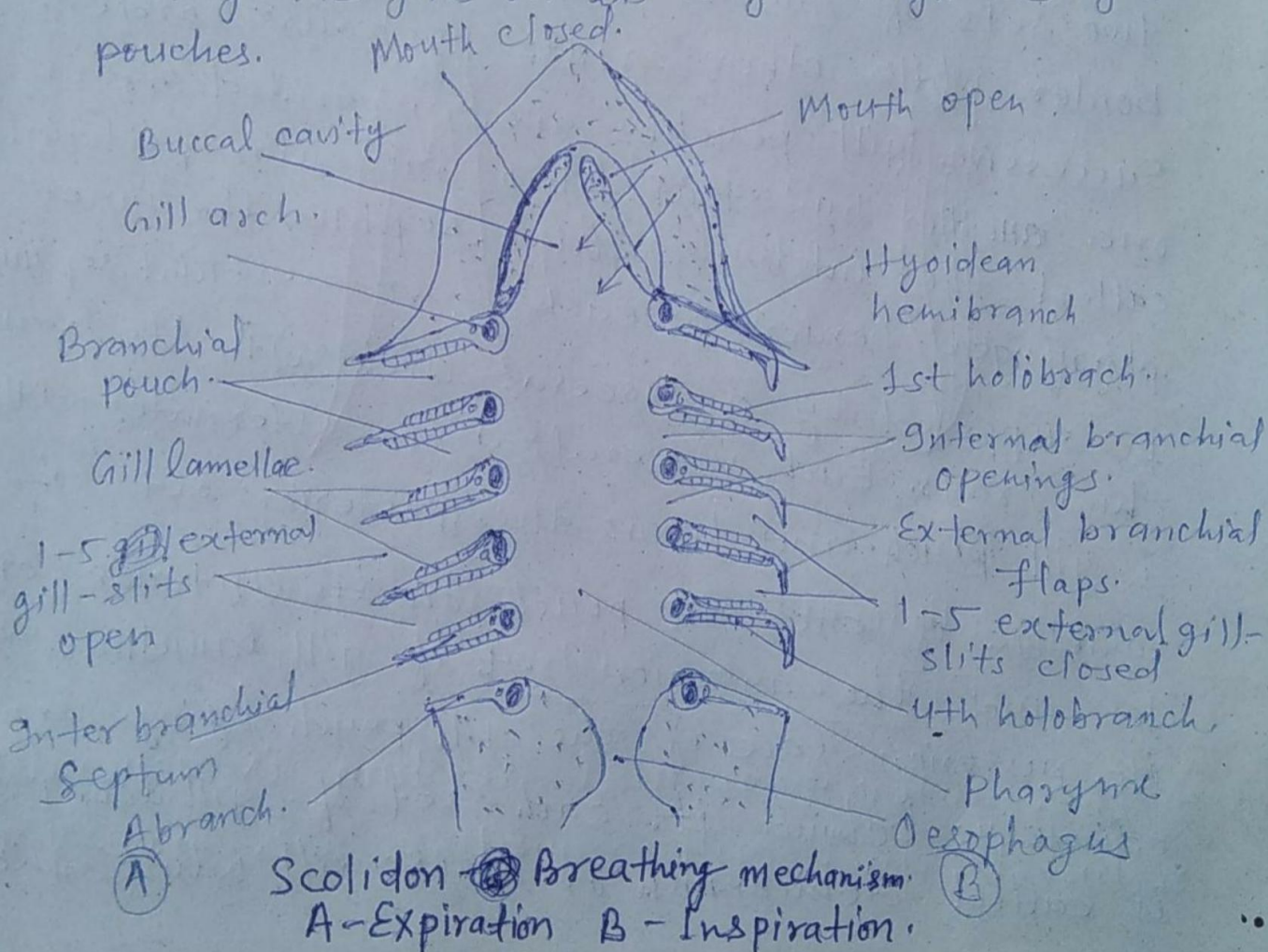


## Respiration in fishes (Pisces)

### Structure and function of respiratory organs in cartilaginous fish (Scoliodon).

Scoliodon is a cartilaginous fish which is adapted to aquatic respiration. It breathes by means of five pairs of gills which are present in five pairs of gill pouches on either side of the pharynx.

Water enters the buccal cavity and pharynx through the mouth and passes out through the gill clefts, bathing the gills on its way through the gill pouches.

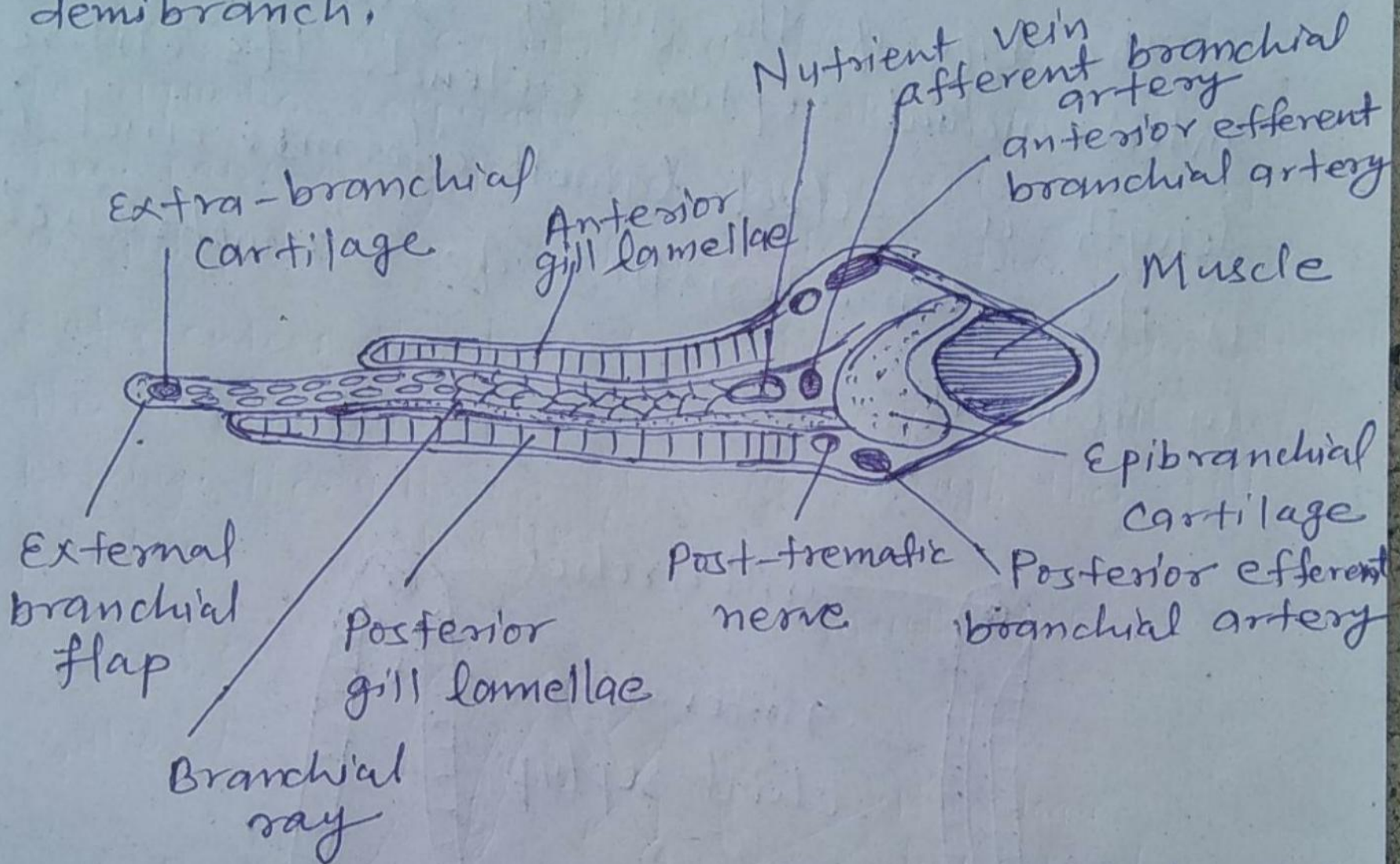


Scoliodon Breathing mechanism.  
A - Expiration B - Inspiration.

Each gill pouch is compressed anteroposteriorly and opens on the one end into the pharynx through a large internal branchial aperture and on the other end to the exterior through a narrow external branchial aperture.

The mucous membrane lining the gill pouches is produced into a series of horizontal folds on its anterior and posterior walls. These horizontal folds are called branchial lamellae or gill lamellae. These are richly supplied with blood capillaries. Thus each gill pouch has two sets of gill lamellae, one on its anterior border while other on its posterior border. Successive gill pouches are separated from one another by stout fibro-muscular partition, called the inter-branchial septum. The inner pharyngeal border on each inter branchial septum is supported by a visceral arch with its branchial rays. Each visceral arch alternates with a gill pouch and bears the posterior set of lamellae of one gill pouch on its anterior border and the anterior set of gill lamellae on its posterior face of the gill pouch lying immediately behind it. Each set of gill lamellae is called demibranch or half gill while the

two sets of gill lamellae attached to a visceral arch and its interior branchial septum constitute a complete gill or holobranch. The posterior demibranch of an ~~it~~ interbranchial septum has longer lamellae than the anterior demibranch.



Diagrammatic sectional view of a holobranch of Scoliodon.