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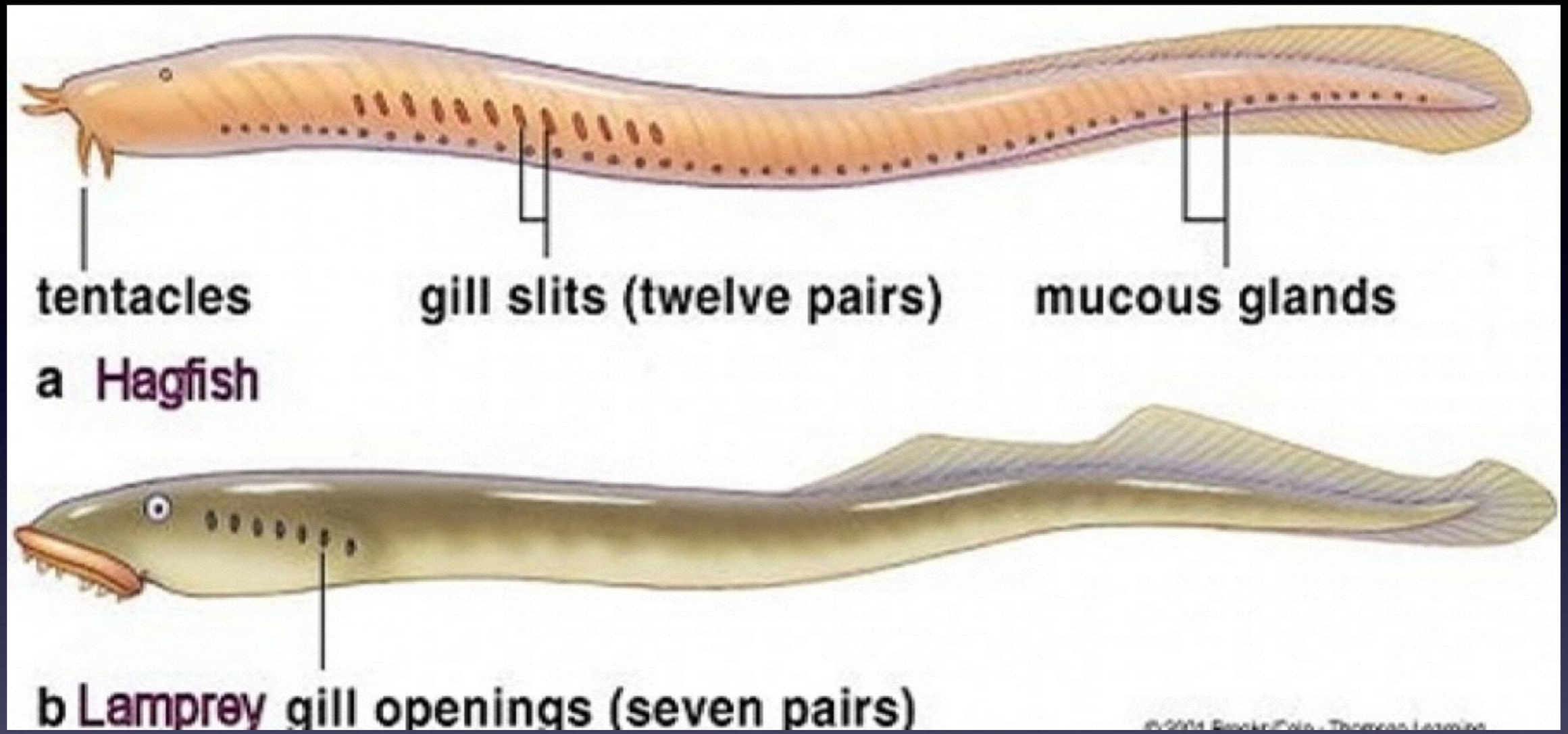
Part-I,Paper-II (Group-A)

GENERAL CHARACTERS AND CLASSIFICATION OF CYCLOSTOMES



GENERAL CHARACTERS AND CLASSIFICATION OF CYCLOSTOMES

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GENERAL CHARACTERS OF CYCLOSTOMES

Cyclostomes' are jawless vertebrates. They are primitive vertebrates. The cyclostomes are marine or fresh-water vertebrates.

It includes the lampreys and hag fishes.

1 The body is long, eel like. It shows trunk and compressed tail.

2 Paired fins are absent. Median fin is supported by cartilaginous fin-rays.

3 The skin Is soft and smooth. It is slimy. It as scale less.

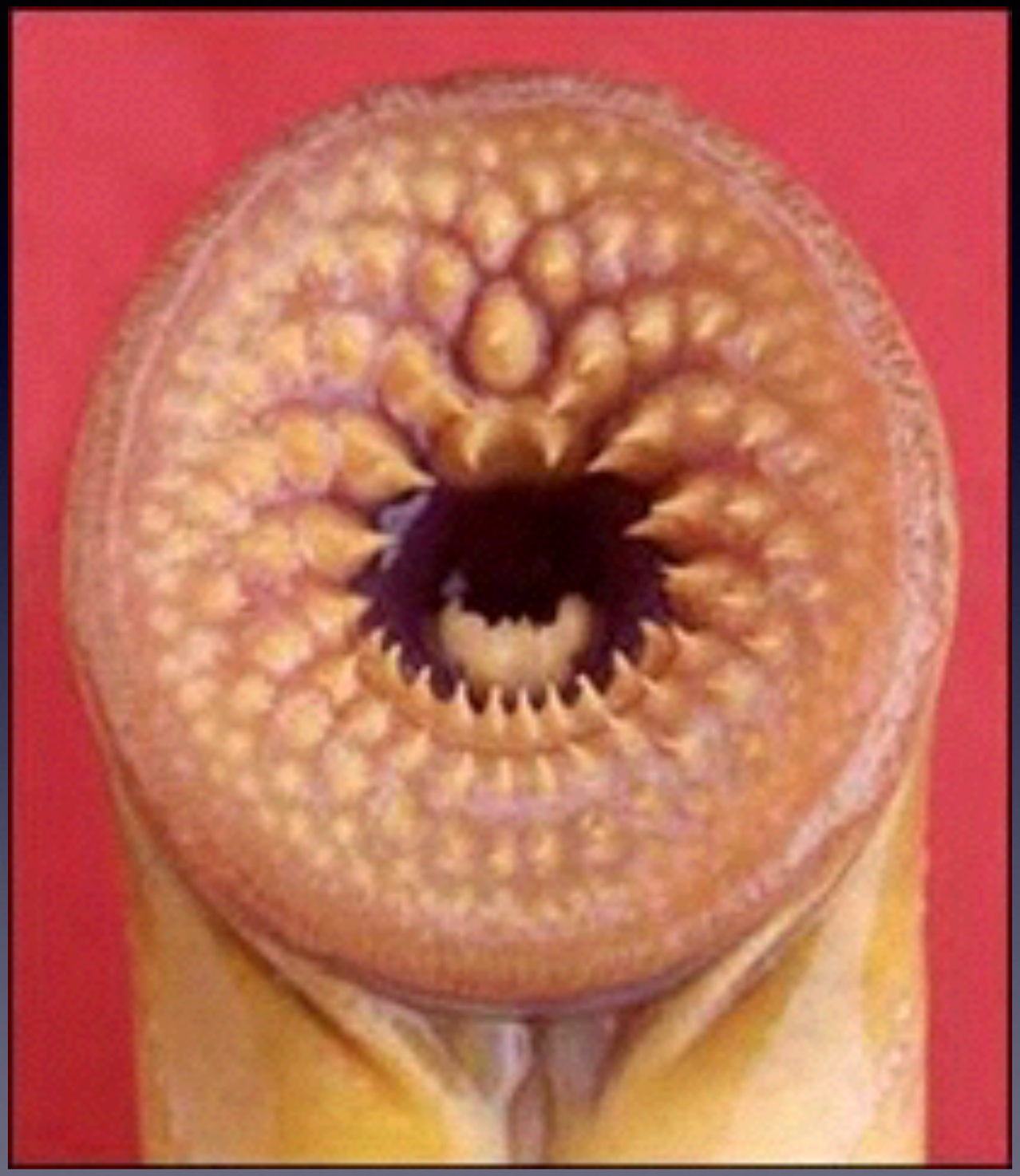
4 Z shaped myomeres are present in the trunk and tail Protractor and retractor muscles move the tongue.

5 In this group a true coelom is seen.

6 These vertebrates will not have jaws, hence called Agnatha.

7 The mouth is circular. It works like a sucker. It is surrounded by tentacles.

08. Tongue bears teeth.
09. Stomach is absent and oesophagus leads into the intestine.
10. Endoskeleton is present.
11. Skull is simple and primitive.
12. Notochord persists throughout life.
13. Vertebrae are represented by neural arches, around the notochord.
14. Five to sixteen pairs of gills are present in sac like pouches
15. The heart is two chambered. Sinus venous is present, but conus arterlcsus is absent.
16. Blood contains leucocytes and Irregular nucleated erythrocytes.
17. Brain is seen.
18. Ten pairs or less number of cranial nerves are present.
19. Nasal sac is single and median.
20. Lateral line sense organ is present.
21. Excretory system includes a pair of mesonephric kidneys.
22. Sexes are separate.
23. Gonad is single and without a gonoduct.
24. Development may be direct or with a long larval stage.



CLASSIFICATION OF CYCLOSTOMES

About 50 species of cyclostomes are recognised. They belong to two major divisions (Petromyzontiformes and Myxiniformes). They are termed variously as subclasses, orders or families. Because they possess a round jawless mouth, they are combined in the class Cyclostomata.

The similarity of these two groups is probably the result of convergent evolution. However, they show important and basic morphological differences which can be attributed to their long phylogenetic separation and different habits and habitats.

Order 1: Petromyzontiformes (Gr., petros = stone; myzon = suck):

Members of this order are called lampreys or lamper eels or lamperns or sand pride, etc.
1. Mouth ventral, suctorial with rasping tongue beset with many horny teeth.
2. Nostril dorsal. Nasohypophyseal sac terminates posteriorly in a blind sac, i.e., it does not communicate with the pharynx.
3. 7 pairs of gill-pouches and gill-slits which open into a separate respiratory pharynx below the oesophagus.
4. Dorsal fin well developed.
5. Branchial basket complete.
6. Dorsal and ventral roots of spinal nerves remain separate.
7. Ear with 2 semicircular canals.
8. Eggs numerous, small. Development indirect with a long larval stage and metamorphosis.
9. Both marine and freshwater forms.

Examples:
Lampreys. Over 30 species. Petromyzon, Lampetra, Ichthyomyzon

Order 2: Myxiniformes
(Gr., myxa = slime; oidea = type of):

Order 2: Myxiniformes (Gr., myxa = slime; oidea = type of):
Representatives of order are called hagfishes. They are exclusively marine.
1. Mouth terminal and surrounded by 8 small tentades. Teeth few. No buccal funnel.

2. Nostril terminal. Nasohypophyseal sac opens posteriorly in the pharynx.
3. Gill-pouches and gill-slits 6 to 14 pairs.
4. Dorsal fin feeble or absent.
5. Branchial basket poorly developed.
6. Dorsal and ventral roots of spinal newes united.
7. Ear with only 1 semicircular canal.
8. Eggs few, large. Development dark.
9. Hagfishes are all marine species.
Examples:
Hagfishes. About 15 species Myxine, Eptatretus (= Bdellostoma), Paramyxine.