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for B.Sc part 2nd paper
I V (A).

Question:- Development of Amphioxus
upto the formation of coelom,
per Notes like?

Answer:- Amphioxus embryogenesis
was first described by
Kowalevsky (Kowalevsky, 1867),
who divided it into an
early phase of development
resembling that of invertebrate
doutemostomas (i.e. a hollow
blastula invaginates to form a
gastrea in a similar manner
to the sea urchin) and a
later phase that is vertebr-
ate-like.

Evolutionary crossroads in developme-
ntal biology: amphioxus :-

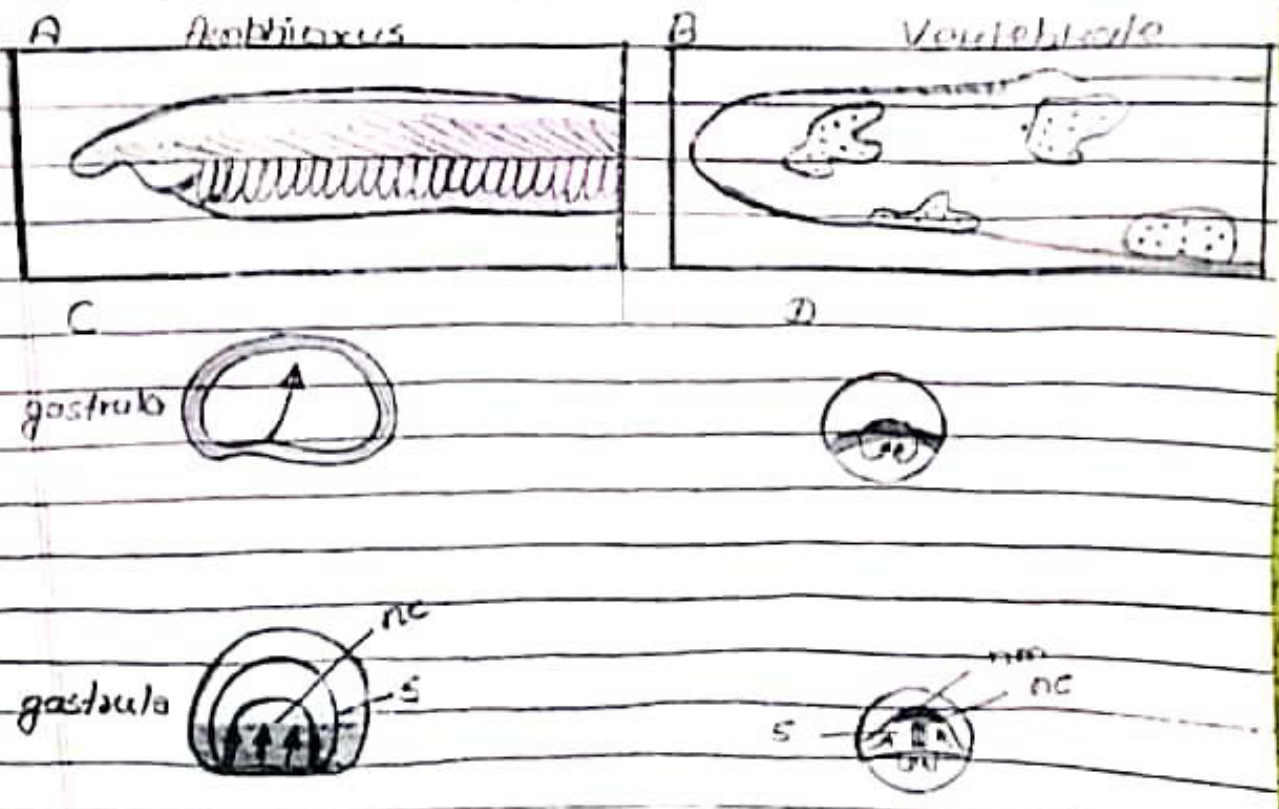
The phylogenetic position
of amphioxus together with
its relatively simple and

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evolutionarily conserved morphology and genome structure, has led to its use as a model for studies of vertebrate evolution. In particular, the recent development of technical approaches, as well as access to the complete amphibian genome sequence, has provided the community with tools with which to study the invertebrate-chordate to vertebrate transition. Here, we present this animal model, discussing its life cycle, the model species studied and the experimental techniques that it is amenable to.



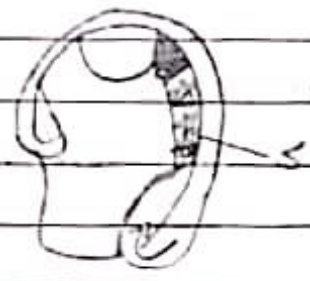
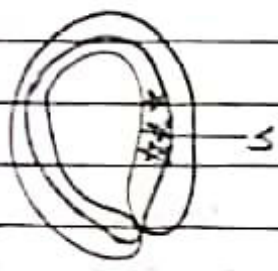
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late gastrula



side view



comparison of amphioxus and vertebrate early development.

Habitat and Life cycle cycle:-

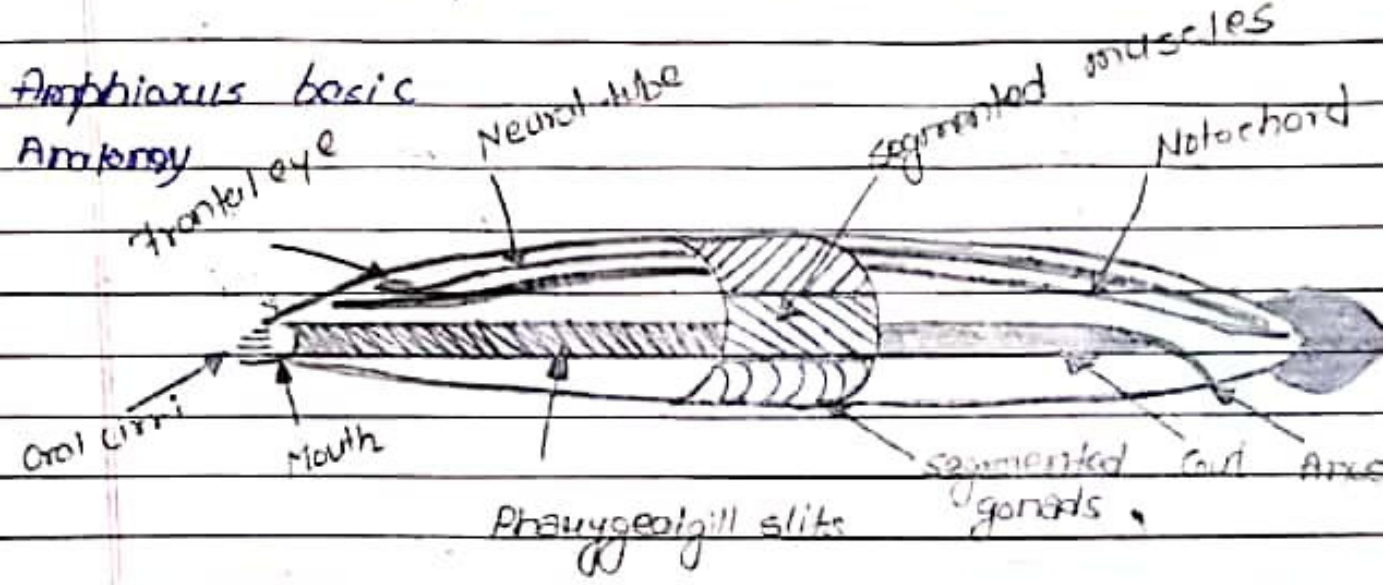
All amphioxus species are filter-feeding marine animals that burrow in sand, gravel or shell deposits in tropical or temperate waters around the world. Studies of amphioxus habitat have been performed for several species and have revealed some common features, e.g., the importance of sediment type for their

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distribution. A general preference for coarse sand and gravel is observed for many species (Dobsonis et al., 2011; Gosselck, 1975; Webb, 1958; Webb and Hill, 1958b), but some exceptions to this rule exist.



Amphioxus embryogenesis was first described by Kowalevsky (Kowalevsky 1867), who divided it into an early phase of development resembling that of invertebrate deuterostomes i.e. a hollow blastula invaginates to form a gastrula in a similar manner to the sea urchin and a later phase that is vertebrate-like with the formation of a notochord, a dorsal hollow nerve chord, segmented axial muscles, etc.

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Amphioxus model species :-

Although most of the early descriptions of amphioxus anatomy and embryonic development were performed using *Branchiostoma lanceolatum*, current studies use amphioxus embryos from four different species. Three of these four species belong to the genus *Branchiostoma* (*B. babcheki*, *B. floridae* and *B. lanceolatum*) and to the genus *Asymmetron* (*A. lucayanum*).

Branchiostoma floridae :-

In the late 1980s, Nicholas D. Holland and Linda Z. Holland, working with animals from Tampa Bay in Florida, managed for the first time to induce the spawning of ripe (see Glossary, Box 1) animals using a non-electric shock (Holland and Holland, 1989). However, electric shock can induce spawning only on natural spawning days during the spawning season, which therefore impairs laboratory work.