

Model Answers (AU-6927)

B.Sc (Hon's) (First Semester) Examination, 2014

BIOTECHNOLOGY (Zoology-II)

Paper-LBZS- 104 (higher nonchordata and Economic Zoology)

Section A

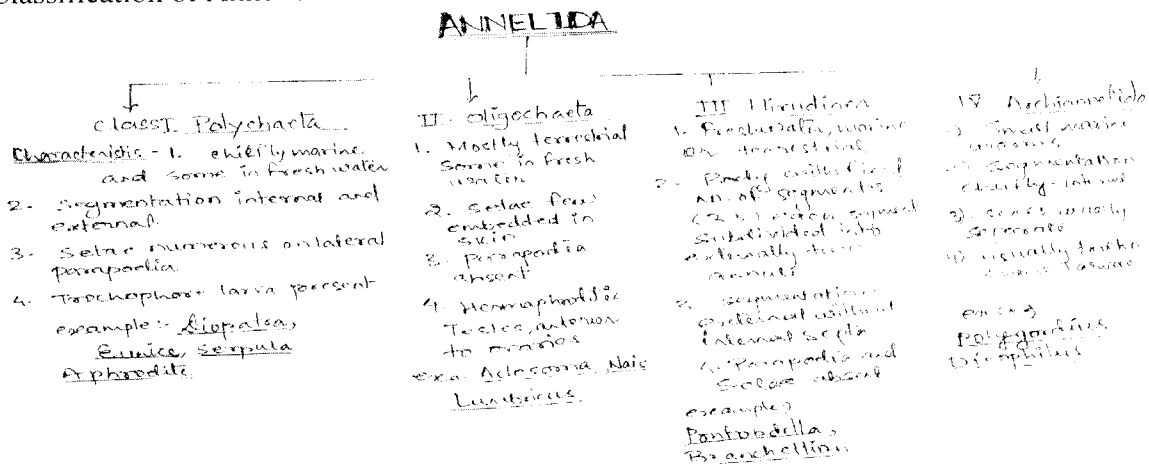
Q. 1- Answer

- (i)- (c) (ii)- (d) (iii)- (a) (iv)- (d) (v)- (c)
 (vi)- (b) (vii)- (a) (viii)- (d) (ix)- (a) (x)- (a)

Q.2-Answer : Characters of Annelida

1. Mostly aquatic, some terrestrial, burrowing or tubicolous
2. Bilaterally symmetrical, triploblastic, truly coelomate and metamerically segmented into similar metamers
3. Epidermis of a single layer of columnar epithelial cells, covered externally by a thin cuticle.
4. Locomotory organs are segmentally repeated chitinous bristles called setae.
5. True coelom. schizocoelous,
6. Digestive system straight and complete.
7. Blood vascular system closed. Respiration by moist skin or gills of parapodia and head
8. Excretory system consisting of metamericly disposed coiled tubes called nephridia
9. Nervous system with a pair of cerebral ganglia (brain) and a double ventral nerve cord bearing ganglia and lateral nerves in each segment.
10. Hermaphrodite, larva is trochophore. Regeneration common

Classification of Annelida



ANS 3. Larva of crustacea : Please emphasis on the following

1. Naupilus 2. Metanauplius 3. Protozoa 4. Zoea 5. Cypris 6. Mysis 7. Megalopa

ANS 4. Cephalic and thoracic appendages: Focus on following points

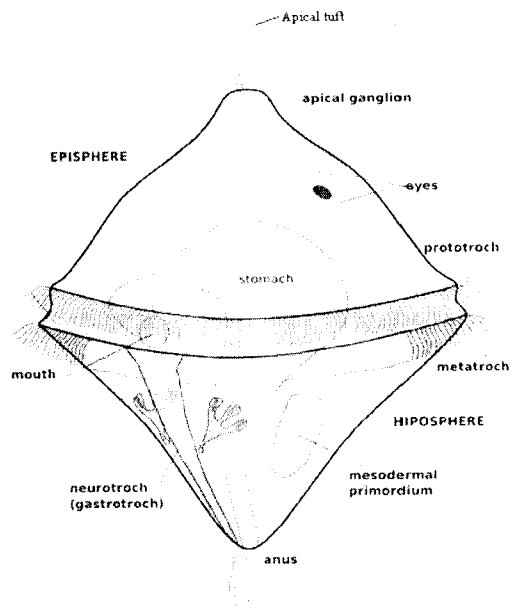
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28/11/14

Cephalic appendages 1. Antennules 2. Antennae 3. Mandibles 4. Maxillulae 5.
 Thoracic appendages: 1. First maxillipedes 2. Second maxillipeds 3. Third
 maxillipedes 4. Walking legs

5. (a) Trochophore is a small, translucent, free-swimming larva found in marine annelids and most groups of molluscs.

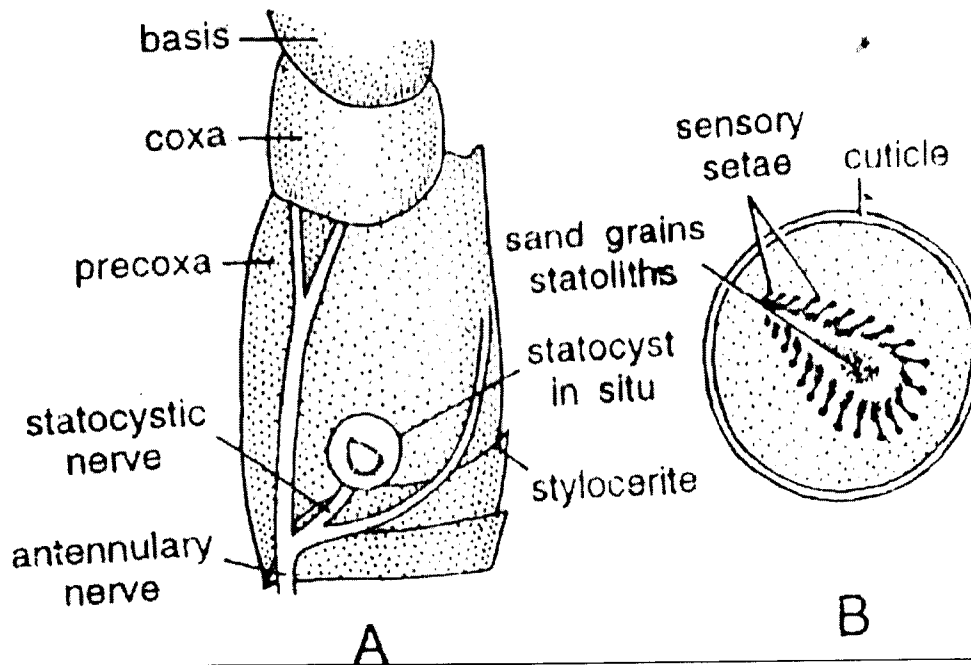
- It is unsegmented, spherical or pear-shaped with distinct oral and aboral surfaces and is girdled by a ring of cilia, the prototroch that enables them to swim.
- There is a sensory apical organ or plate bearing a tuft of cilia. Apical ganglion is present beneath the apical organ.
- An ocellus (simple eye) is also present near the ganglion.
- Digestive tract is complete. Mouth is present on the ventral surface just beneath the prototroch.
- A post oral ciliated band called metatroch lies behind the mouth whereas telotroch lies just in front of anus. Below the prototroch are the mouth, stomach and anus. Mesoderm is a pair of undifferentiated masses of cells located in the lower cone. Solenocyte maintain proper internal salt-water balance. In some molluscs (such as gastropods and bivalves), the trochophore develops into a second stage, the veliger, before metamorphosing to adult form.

Trochophore larva



(b) Statocyst

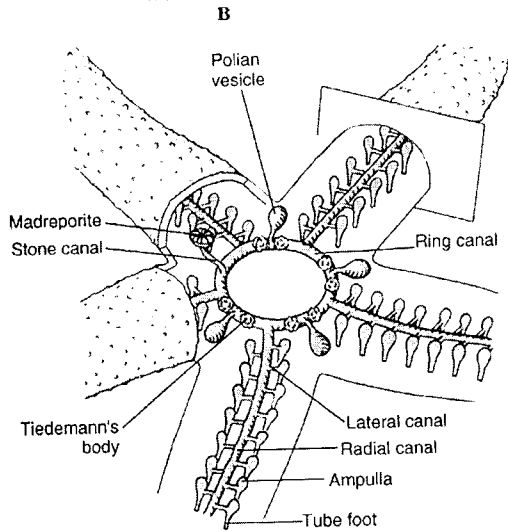
The statocyst consists of a sac-like structure containing a mineralised mass (statolith) and numerous innervated sensory hairs. The statolith's inertia causes it to push against the setae when the animal accelerates. Deflection of setae by the statolith in response to gravity activates neurons providing feedback to the animal on change in orientation and allowing balance to be maintained. In other words, the statolith shifts as the animal moves. Any movement large enough to throw the organism off balance causes the statolith to brush against tiny bristles which in turn send a message to the brain to correct its balance



(c) **Radula:** Buccal cavity of Pila contain a brownish, chitinous, curved, ribbon like structure. The single row of radular teeth is 2,1,1,1,2. Each row contains seven teeth, one central and one lateral and two marginal

6. Water Vascular System contain folloing structure .

Madreporite 2. Stoe canal 3. Ring canal 4. Tiedemann's bodies 5. Polian vesicles 6. Polian vesicles 7. Radial Canal 8. Lateral canals 9. Tube feet



- It consists of a system of canals, tube feet and dermal ossicles.
- This system functions in locomotion and food-gathering as well as respiration and excretion. The system opens to the outside at the madreporite on the aboral side.

Ans 7: House hold pest (Focus only the life cycle).

1. House fly
2. Cockroach
- . Termite, Mosquitoes

Ans 8.

Pearl Culture: Pearl is also called 'Moti'. It is white, highly shining globular in shape and made by the clam, a mollusc called *oyster* within its shell. Pearls are prized as gems from ancient times. Kochichi Mikimoto of Toba (Japan) is known to be the father of Pearl Industry. He discovered a method to induce foreign particle between the mantle and the shell of the pearl oyster and thus stimulated pearl formation.

Api Culture: Focus on methods like indigenous method and Modern method
Pearl formation or pearl fisheries: