Toppersnotes
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NEET-AIIMS

BIOLOGY

ZOOLOGY-I

SIERRA INNOVATIONS
Private Limited

1.	Animal kingdom	1-14
2.	Phylum protozoa	15-20
3.	Agnatha	21-27
4.	Class Amphibia	28-37
5.	Class Reptilia	37- 43
6.	Class Aves	43-51
7.	Class Mammalia	51-58
8.	Reproduction in organisms	59-76
9.	Human reproduction	77-114
10.	Reproductive health	115-123
11.	Animal tissue	124-134
12.	Connective tissue	135-145
13.	Blood	146-155
14.	Muscular tissue	155-161
15.	Nervous tissue	161-165
16.	Morphology of earthworm	165-179
17.	Morphology of cockroach	179-194
18.	Vision in insect	195
19.	Reproductive systems of cockroach	196-200
20.	Morphology of Frog	200-207
21.	Biomolecules	208-236

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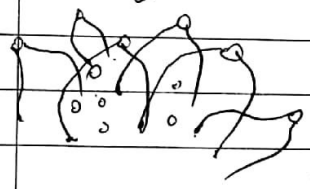
"Animal Kingdom"

Introduction :-

Metazoa (Multicellular Animals)
ie. all animals of animal kingdom are multicellular.
Note :- Unicellular Amoeba, Paramecium belong to kingdom Protista.

Parazoa



→ Cell aggragates but not form tissue.
ie cell aggregate body plan
Eg. porifera Phylum.
+ Cellular grade body organisation.

Eu-metazoa.

→ Cell unite to form tissue → Organ → Organ system

[i] Tissue grade body organisation
- Phylum Cnidaria and Phylum Ctenophora.

[ii] Organ grade body organisation - Phylum platyhelminthes.

[iii] Organ system body org. Phylum Aschelminthes to Chordata.

* Note - Some organ system also formed in phylum platyhelminthes.

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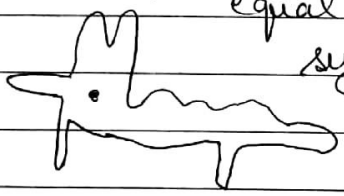
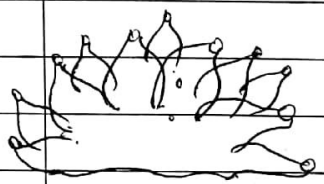
Symmetry.

1. Asymmetry → When body is not divided into equal halves by any plane, then symmetry is asymmetry and animal is asymmetric.



Spongilla ~~Colony of leucosolenia~~.

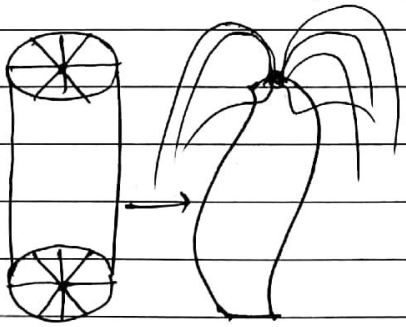
Eg. Phylum porifera (Majority of sponges).



Colony of leucosolenia.

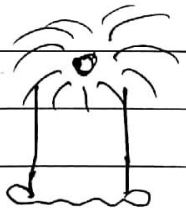
Pila (Apple snail)
Assymmetrical.

2. Radial Symmetry :-
When body is divided into 2 equal halves which passes by any plane which passes through central axis, then symmetry is radial symmetry.



Hydra.

Radial symmetry



Admeria
Metridium
} Sea Anemone

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→ Radial symmetry is beneficial in marine aquatic animals because they gathered food from all directions. (~~sessile~~)(sessile).

→ Eg [i] Some sponge (single leucosolonia)
Euplectella (Venus' flowerbasket).
Hyalonema (Glass rope sponge).

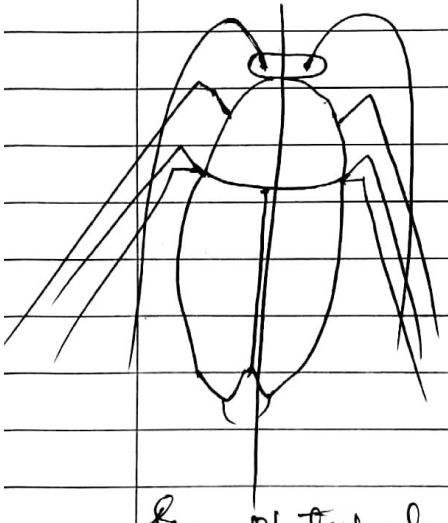
[ii] Phylum Cnidaria (Phylum coelenterata)
[iii] Phylum Ctenophora.
[iv] Adult Echinodermata. ~~[+ larvae of all]~~

→ Radial Symmetry may be -

[i] ~~Bilatera~~ Biradial symmetry: - Eg. Phylum Ctenophora. ~~Ptero~~ (Pleurobranchia)

[ii] Pentaradial symmetry eg. Starfish, Brittle star.

3. Bilateral Symmetry: -



When body is divided into 2 equal halves by a single median longitudinal plane & each half shows mirror image to another.

~~Eg~~. * first time bilateral symmetry appear in Phylum Platyhelminthes.

Eg. Platyhelminthes to Chordata (except Echinodermata)

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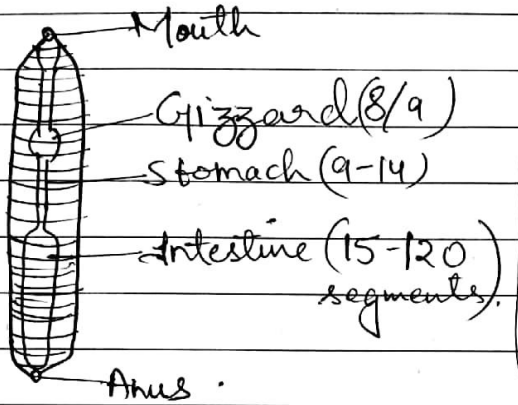
Metamerism :- (Metameric Segmentation)



Unsegmented Animals.
Phylum (i) Platyhelminthes
(ii) Aschelminthes.
(ii) Mollusca (only Neopilina shows internal metamerism)
[iii] Echinodermata.

⇒ When body is divided into external as well as internal segments, & there is repeated metamers present in some internal organs.

Eg. Metameric segmentation is found in -
Phylum (i) Annelida
(ii) Arthropoda.
(iii) Chordata. (Note- Vertebrae & ribs of chordates considered as internal segmentation)

Coelom :-

⇒ Note:-
Tapeworm (Taenia) ⇒ shows pseudosegmentation. (only external impression of seg.)

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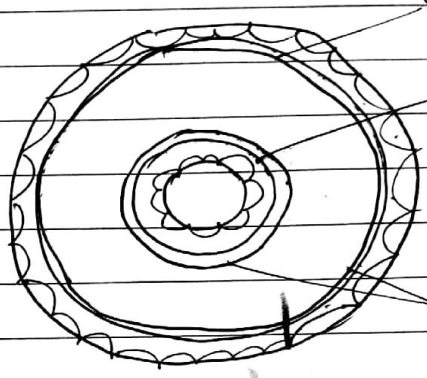
Coelome :-



⇒ Space b/w digestive tract and body wall is coelome.

→ In true coelome mesodermal lining present between ectoderm and endoderm.

→ Coelomic fluid secreted by mesodermal peritoneal lining

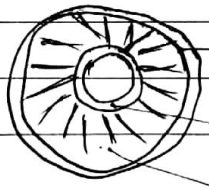
→ Coelome provide space to inner visceral organ.

→ Coelome provide space to inner visceral organ.

1) True Coelome (Eucoelome)

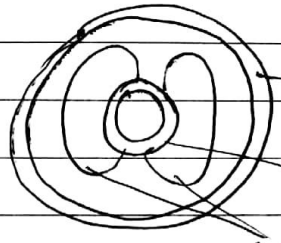
↓ ↓ (Evolved)

Schizocoelome



Early embryo.

Enterocoelome.



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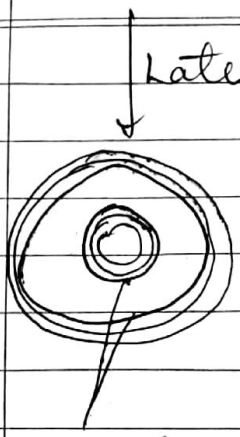
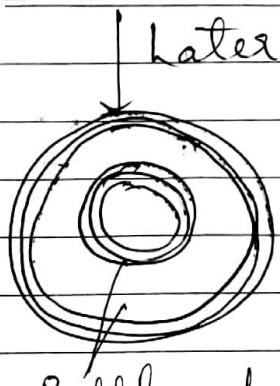


Due to splitting and shifting of mesoderm, coelom is formed.

→ Schizocoelic animals
Phylum Annelida
Arthropoda
Mollusca.

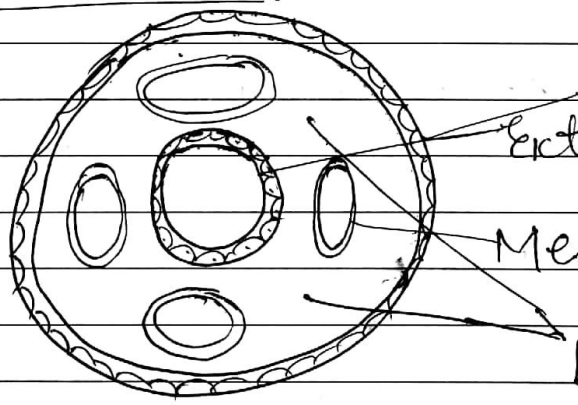


Bubble fuse & form coelome.

* Coelome derived from enterone or gut.

→ Eg. Echinoderms.
Hemichordata
Chordata.

2) Pseudocoelome :-



⇒ When mesodermal pouches come between ectoderm and endoderm then coelome is known as pseudocoelome.
Pseudocoelome derived from blastocoel.

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Eg. Pseudocoel cavity found in Aschelminthes (Nemathelminthes).

→ Pseudocoelome found in Aschelminthes or Nemathelminthes.

3) Acoelome :- (When No Coelome).

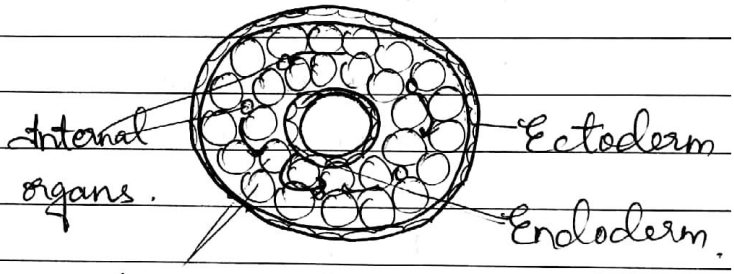
Diploblastic Acoelomate

Eg. Phylum Cnidaria
Phylum Ctenophora

Body have 2 cellular germ layer and coelome absent. (No mesoderm).

Triploblastic acoelomate.

Eg. Phylum Platyhelminthes



This walled mesodermal parenchyma cells fills the coelomic gap., i.e., No coelome or solid coelome, & helps in packing of internal organ.
Also help in parenchyma circulation.

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Protostomes and Deuterostomes :-

Embryonic alimentary canal is Archentron.

Archentron have a pore Blastopore

when

Protostomes

Blastopore
Firstly forms ~~mouth~~ mouth
(anus forms later)
then animals are
protostomes
Eg. Phylum Platyhelminthes
(No anus for^n).
Phylum Aschelminthes
- Annelida.
Arthropoda
Mollusca.

Deuterostomes

When anus firstly
formed, mouth later
forms. called
Deuterostomes.
Eg. Phylum Echinodermata
" Hemichordata
" Chordata.

Q. Which of the following invertebrate is enterocoelic and deuterostomic -

1) Echinodermata & Hemichordata (Invertebrate non-chordate)
2) Uro-chordata } Protochordata (invertebrate non-chordate)
3) Cephalochordata }
4) ✓ All of these are correct.

Cephalisation :- (formation of head)

=> 2 types.

Initial cephalisation

Distinct cephalisation.

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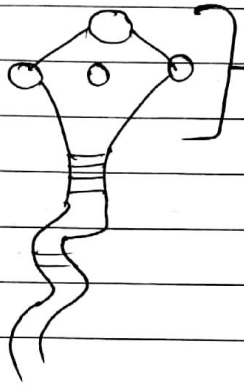
1) Initial Cephalisation :-

=> 
Head or Scalex.

* First time formation of head occur in Class Cestoda (Taenia) of Phylum Platyhelminthes
But, Head without eyes
× Mouth
× Sensory struct.

2) Distinct Cephalisation :-

=> First time distinct head formed in Marine Bilateral Symmetrical Annelida (Eg. Nereis)

→ By head movement, they search food

→ Note :- Nereis head consist of mouth, eyes and sensory structure.

Open type and Closed type Circulatory system:-

1) Open type Circulatory system :-

=> Eg. Phylum Arthropoda, Mollusca, other - Leech (Blood sucking parasite) [Sanguivorus],
[except Cephalopode]
Urochordata or tunicate.
Echinodermata, Hemichordata.

→ In open type circulatory system ; no large blood vessel and capillary bed.
[only few small capillary present]

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2) Heart pumps blood into open sinus
3) Blood filled cavity haemocoel in which most internal organs bath together.

Note :-

1) In phylum arthropoda, No respiratory pigment hnt. So blood plays no role in gaseous transport
2) In phylum Mollusca, Blue colour Cu-based respiratory pigment - Haemocyanin present.
3) In Urochordata, rare green respiratory pigment Vanedium present in vanadocytes cells.
4) In arthropoda & mollusca heart is ~~myogenic~~ neurogenic while in mollusca heart is myogenic.
5) In arthropoda & mollusca, heart is dorsal while in Urochordata, heart is ventral.

2) Closed Type Circulatory System :-

=> Eg.- Phylum Annelida (First time)
- Cephalopodes mollusca
- chordata (except Urochordata).

→ Heart pumps blood into closed chamber channels or large blood vessels.

Nerve cord :-

=> found in both - chordates and non-chordates.

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→ Dorsal hollow (tubular) in chordates.
Ventral, double and solid in non-chordates.

→ Ectodermal in origin.

Notochord :-

⇒ → found only in chordates (~~dorsal & rod-like~~, ~~flexible~~
→ Mesodermal in origin.

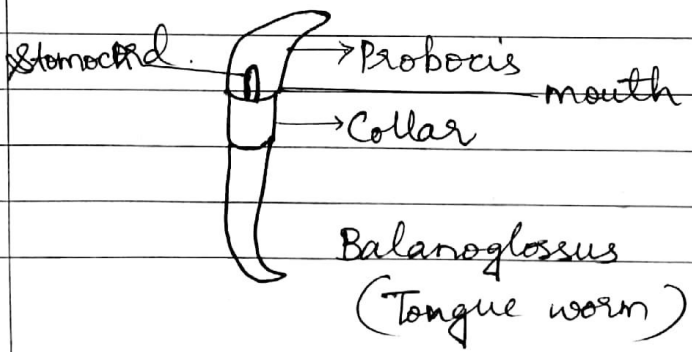
→ Dorsal, rod-like, flexible (non-hollow, non-tubular) in chordates.

→ In some chordates, embryonic notochord replaced by cartilaginous or bony vertebral column, so called vertebrates.

* Note -
All vertebrates are chordates but all ~~vertebrates are not~~ chordates are not vertebrates.

Stomocord :-

⇒ (i) found in Hemichordates.
(ii) Ectodermal buccal diverticulum only.



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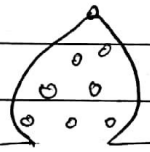
* Note :-
Previously, stomocord create confusion with notocord, so hemichordate previously placed under sub phylum of chordata.
But - Later it is clear, stomocord is buccal diverticulum only.
So, currently it's placed under seperate phylum of invertebrate - Hemichordata.

Body Plan.

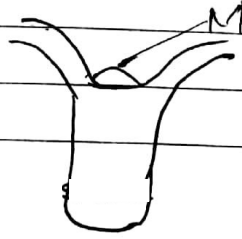
Cell Aggregate | Blind Sac. | Tube within tube

1) Cell - Aggregate :-
=) Eg. Phylum - Porifera (sponges).



Cell loosely aggregate form body (tissue not formed).
i.e. Cellular level of body organisation.

2) Blind sac :-
=) Eg. Phylum Cnidaria, Ctenophora (few), Platyhelminthes
→ Body have only single opening - mouth.
Anus absent.



Note - In Hydra, mouth act as anus also.

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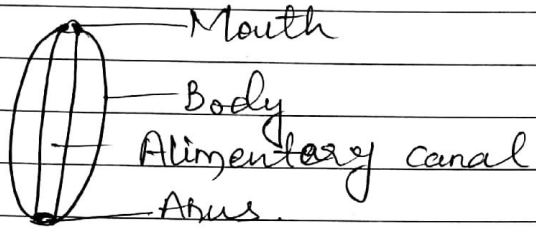
Father of Modern Biology → Lemarck.

3) Tube within Tube :-

=>



→ Body like tube and alimentary canal which runs mouth to anus. in the form of another tube inside body.
→ Eg. Aschelminthes to chordata (except some echinoderm)

Aristotle Classification :-

(Father of Biology) | Animal (2 group).

Anima	Enima
→ Without RBCs i.e., blood is not red	With RBCs. i.e. Blood is red.
→ Eg. Arthropoda, Mollusca, Tunicate	Eg. Vertebrates, Earthworm.

Steps of Classification :-

1) Kingdom
2) Phylum
3) Class
4) Order
5) Family
6) Genus
7) Species.

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Binomial Nomenclature :- (By Carolus Linnaeus) (Carl von Linnae)

wrote "Systema Naturae"

* Rules :-

[i] first ~~Name~~ generic epithet and second specific epithet.

[ii] first letter of genus - start with Capital letter.

[iii] first letter of species - start with small letter.

eg. Mango - Mangifera indica.

[iii] letters written in italics. If hand-written then separately underlined.

Note :-

=> In trinomial nomenclature, sub-species also included.

eg. Homo sapiens sapiens.

5 kingdom System of Classification → Whittaker.

=> 1) Monera
2) Protista
3) fungi
4) Plantae
5) Animalia.

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"Phylum Protozoa"

=). Name protozoa given by Goldfus.

General characteristics :-

1) Protozoans are
   [i] Aquatic eg. Amoeba proteus, Paramecium.
   [ii] Symbiotic eg. Trichonympha (in gut wall of mite for cellulose digestion)
   [iii] Parasitic eg. Plasmodium, Monocystis, E. histolytica.

2) Locomotion by
   [i] Cilia eg. Paramecium
   [ii] flagella eg. Euglena
   [iii] Pseudopodia eg. Amoeba.

Note :- Classification of ~~of~~ Phylum protozoa based on locomotion.

3) Digestion - Intracellular (inside the food vacuole)

4) Excretion and Respiration by general body surface

Note :- Osmoregulation by contractile vacuole of protozoans
Contractile vacuole is analogous to kidney of Vertebrates

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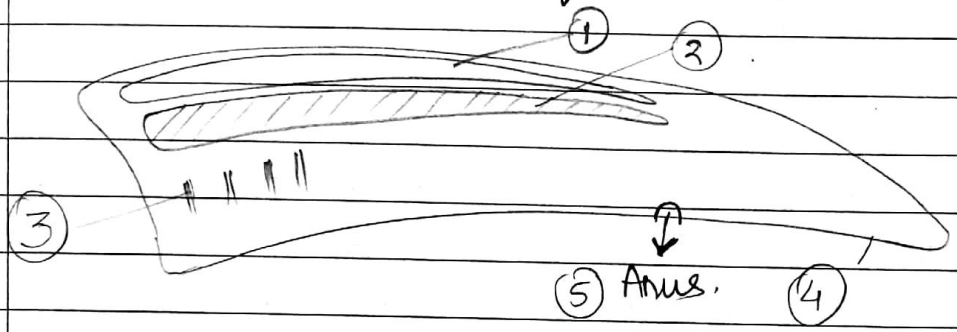
Phylum Chordata :-

⇒ Name chordata given by Balfour.

* Basic Characters of Chordates :-

⇒



(1) Presence of dorsal tubular (hollow) ectodermal nerve cord. (tubular)

(2) Presence of dorsal rod-like flexible solid mesodermal notocord.

(3) Presence of pharyngeal gill slits.

(4) Presence of post-anal tail.

Note :- In Cephalochordate (Amphioxus, Branchiostoma, Lancelot), all 4 basic characters of chordate found throughout life.

* Other characters of Chordate :-

⇒ → Ventral heart (Heart absent in amphioxus).
→ Metameric segmentation.