Date: __/__/20__

Course Name:
Animal Form and Function-1
Course code:
Zoo301
Student ID.
BC210206204
Instructor: Dr. Saleha Noureen
Premid Practical session
Zoo301 " Group " A"
Campus:
PCHN01, Chunian
Insititue of Mangement
Sciences, Ilah Abad Road,
Near chungi No.2, Chunian
Name: Amina bibi

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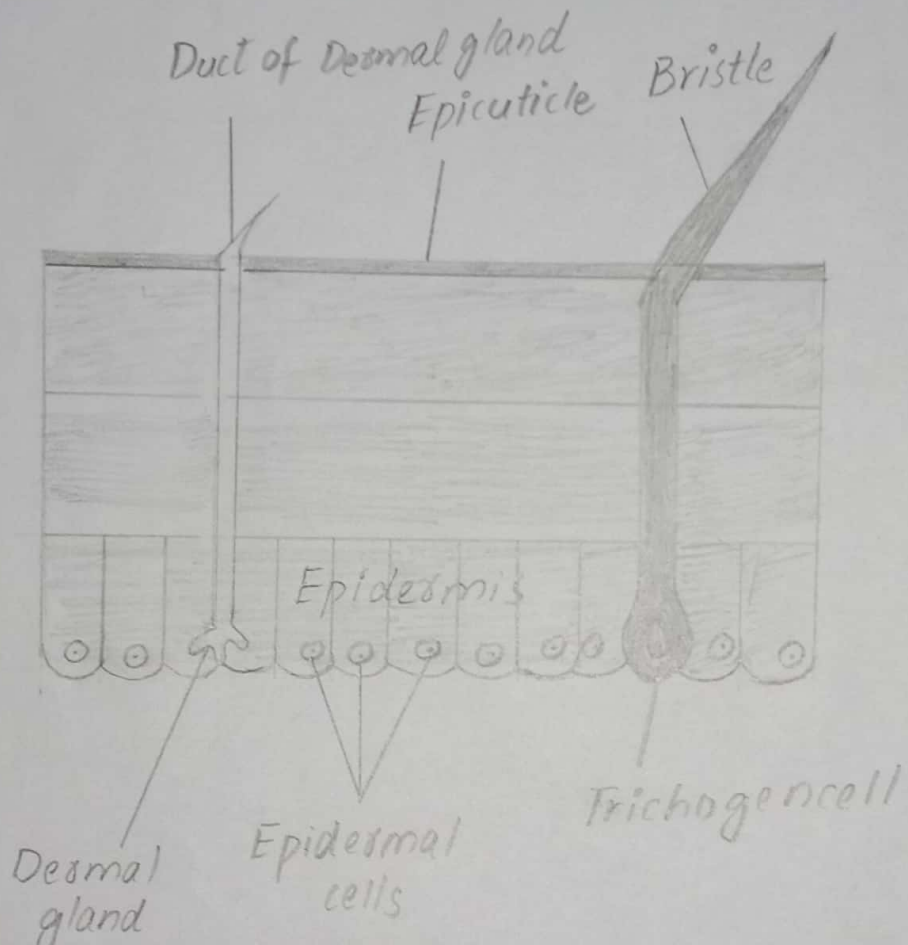

Insect Cuticle

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Practical No.1
Study of Insect Cuticle

Insect cuticle is the external covering of the body which is ectodermal in origin.

Structure

- Body wall consist of epidermis and an outer non-cellular part (cuticle).
- Cuticle have three sublayer:

1- Endocuticle
2- Exocuticle
3- Epicutile

1- Endocuticle

Compared to others it is the inner and thickest layer.

2- Exocuticle

Outer layer, much thicker with composition of chitin and sclerotin.

3- Epicuticle

Outer most layer which is very thick.

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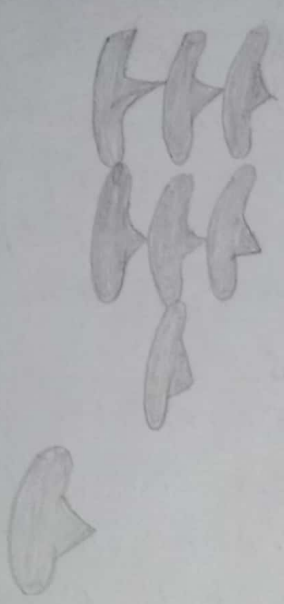
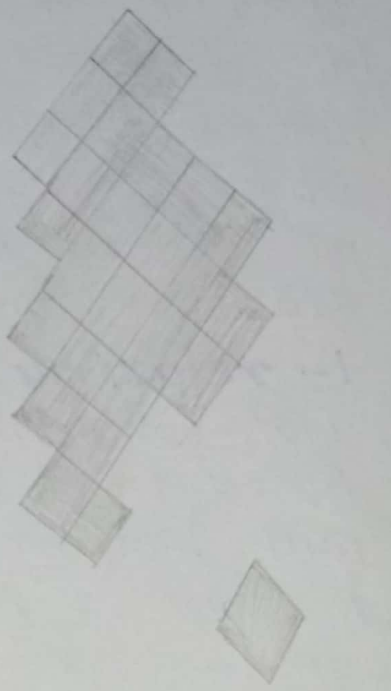
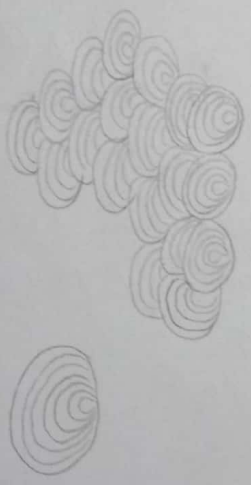
Fish Scales



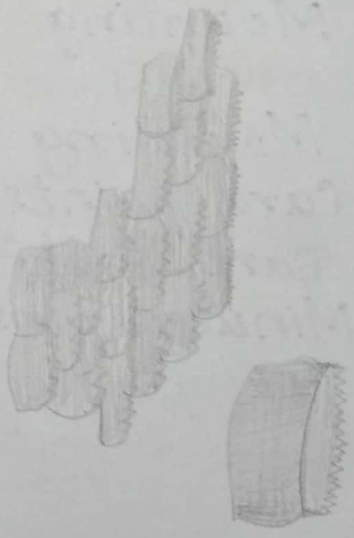
Placoid scale



Ganoid scale



Cycloid scale



Ctenoid scale

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Study of Fish Scales

Fish has following types of Scales:

- **Placoid Scale:-** These scale have a basal place. A spine is raised from this plate.
- **Ganoid Scale:-** It is diamond shape scale.
- **Cycloid scale:-** Concentric growth lines are present.
- **Ctenoid Scale:-** In these scales teeth like ctenia spines are present.

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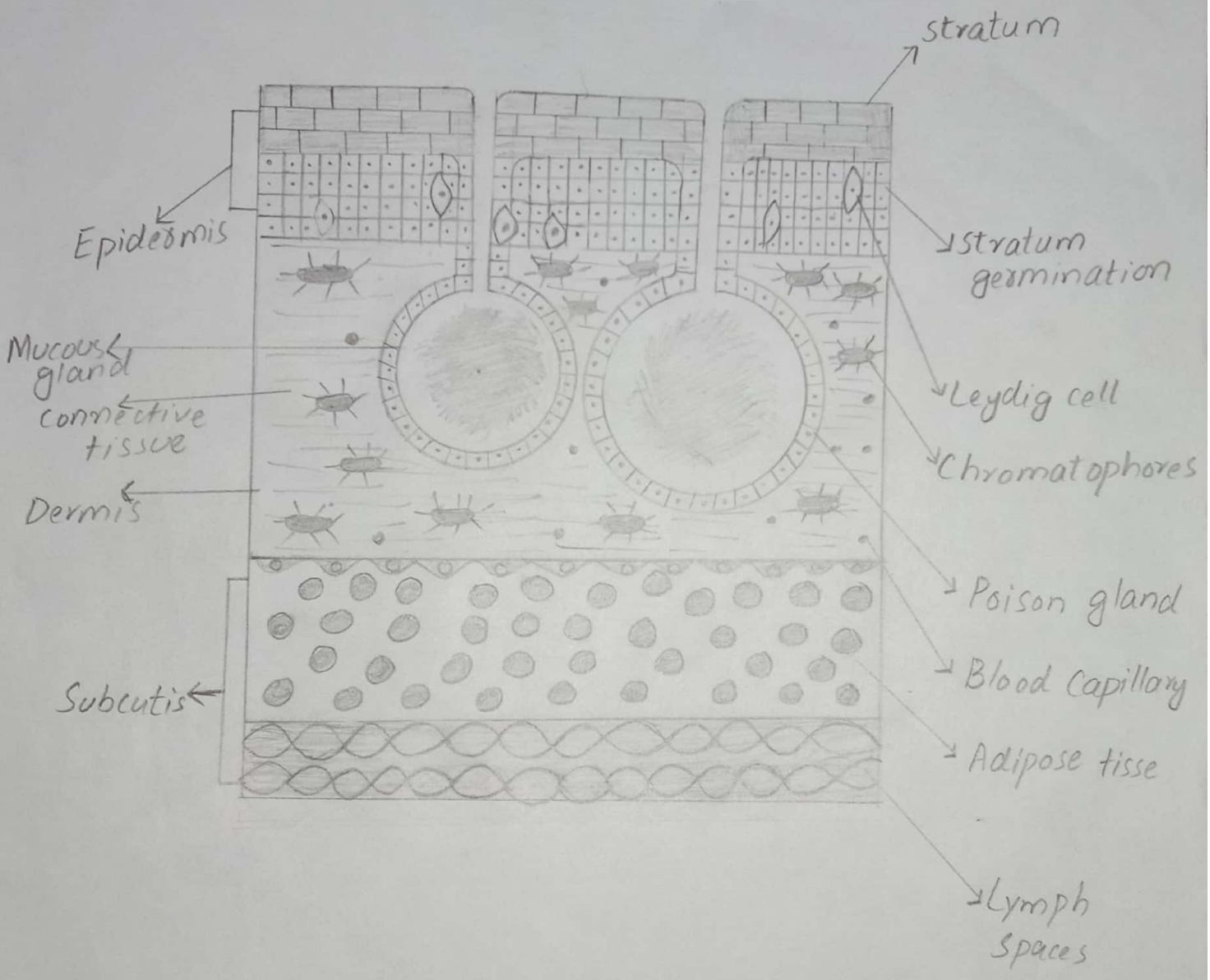

vertical section of Skin of frog

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Date: __/__/20

Practical No. 2
Study of Amphibian skin and Study of Reptilian Scales

Study of Amphibian skin

- Amphibian skin is smooth, moist and permeable.
- Skin layer covered by mucous gland.
- Their skin can easily dryout.
- Their special skin allows them to breathe through their skin in addition to using their lungs.
- Their skin contains keratin, a tough, fibrous protein.
- Pigmentation in the skin provides protection by camouflage.
- Another type of protection is to provide by body to remove posion gland.

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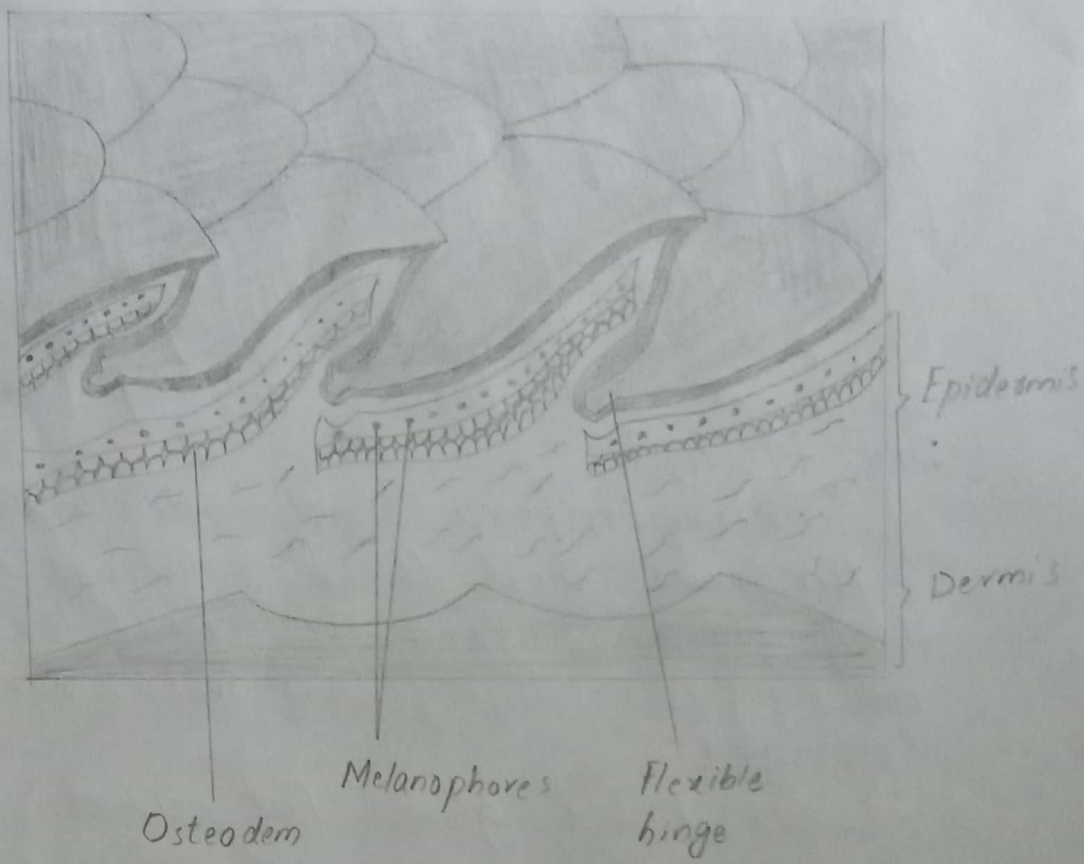

Reptilian scale

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Study of Reptilian Scales

- Reptile skin is composed of two main layers:-
  1- Epidermis
  2- Dermis
- Epidermis characterized by covering of keratin.
- In some reptiles, scales remain throughout the life, growing gradully to replace wear.

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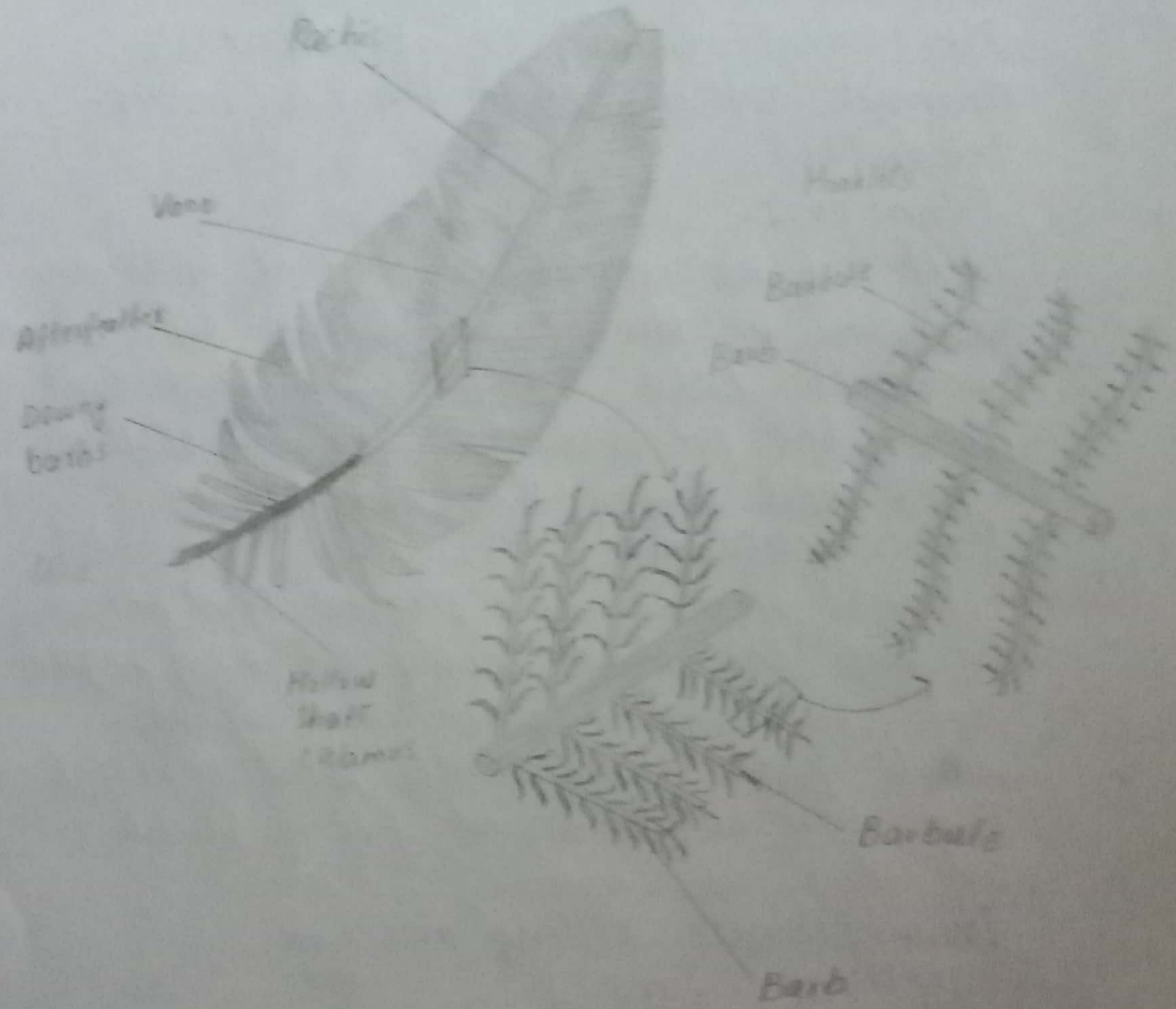

Bird feather

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Date: / /20

Practical No.3
Study of Bird Feathers

- The branch of science which study the feathers is called plumolgy.
- Feather fall into one of seven broad catagories based on their structure and location on birds body.
- Feather are composed of all the basic protein the beta-kerátin.
- In the most complex feathers, the cálamus extends into a central rachis which branches into barbs and then into barbules with small hooks that interlock the nearby barbulus.
- Feathers can help keep a bird warm, control the body temperature.

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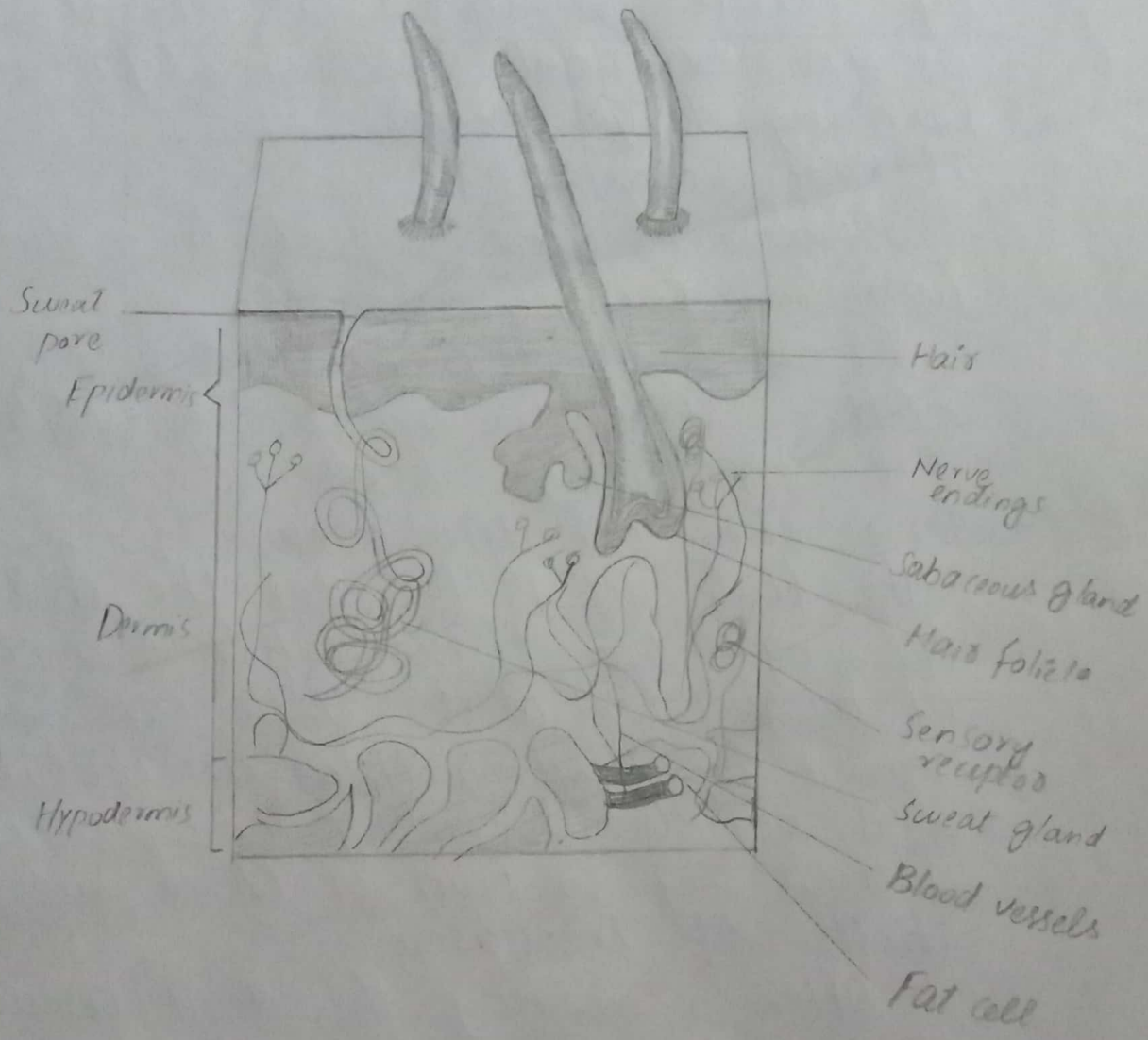

Structure of Mammalin skin

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Practical No.4
Study of Mammalian Skin

Layers of skin:-

. The epidermis is the outer most of the three layers that make up the skin, the inner layers that being the dermis and hypodermis.

. The epidermal layer provide a barrier to infection from envirmental pathogens and regulate the amout of water.

. The epidermis is composed of multiple layers of flatterned cells that over lie a base layer composed of columner cells.

. The dermis is the layer between the epidermis and subcutaneus tissue.

. In addition, hair follicles, sweat gland, sebaceous gland, apocrine gland are present in that layer.

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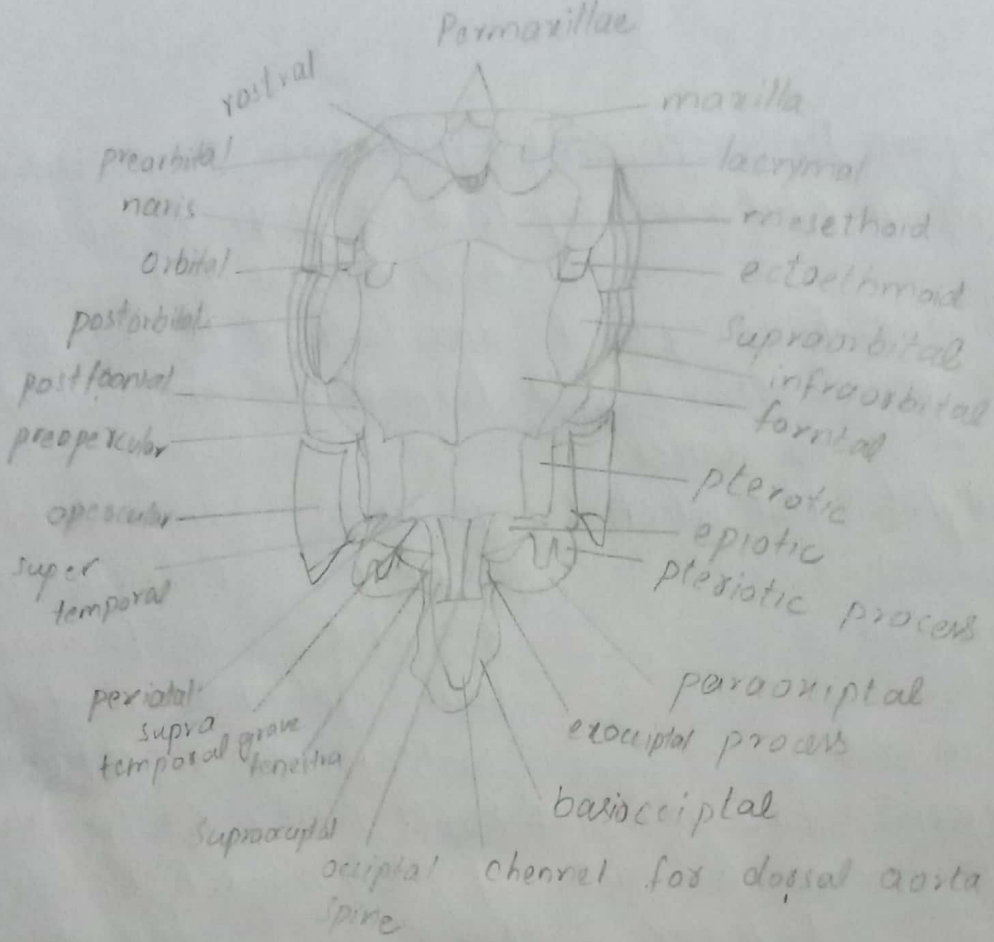
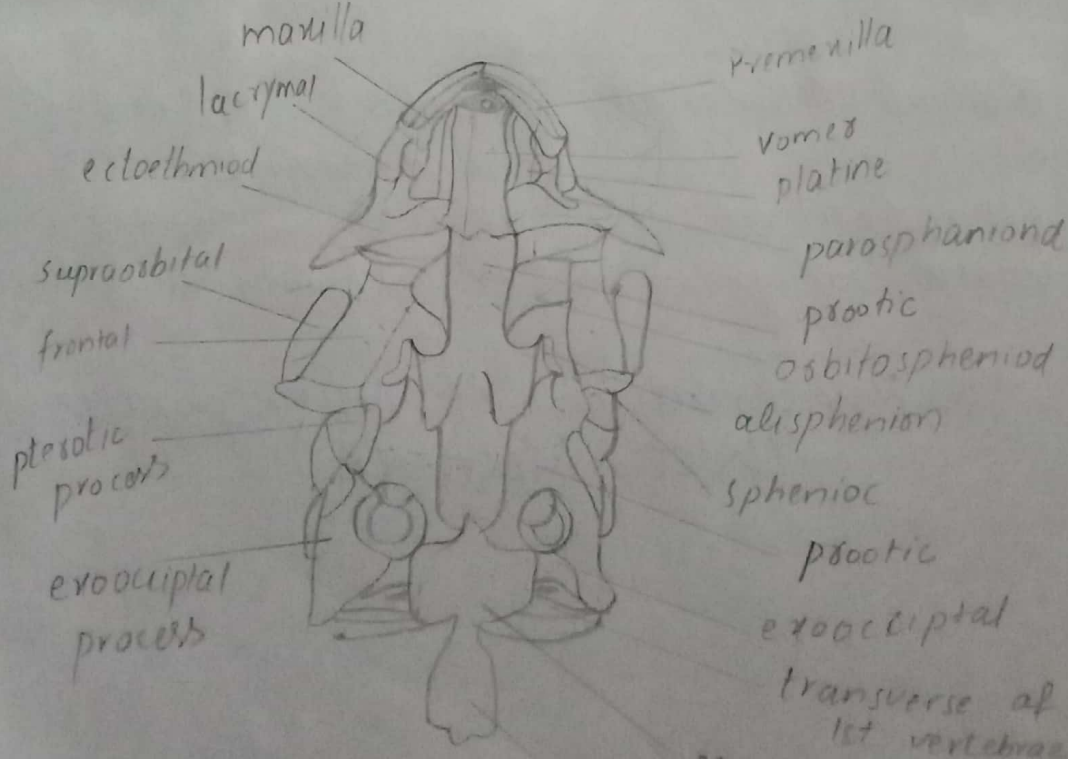
Practical No.5

Study of Skeleton of Labeorohita



Labeo skull dorsal view



ventral view

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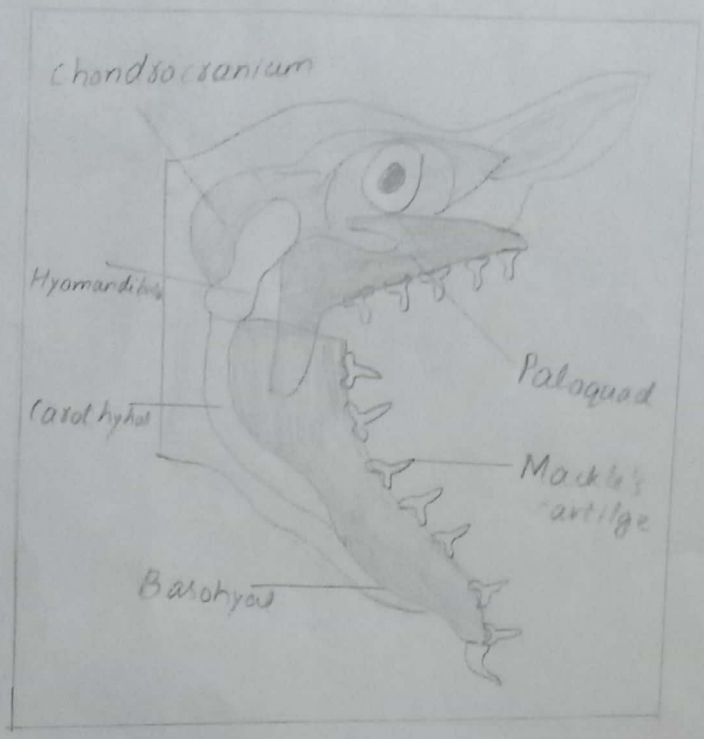
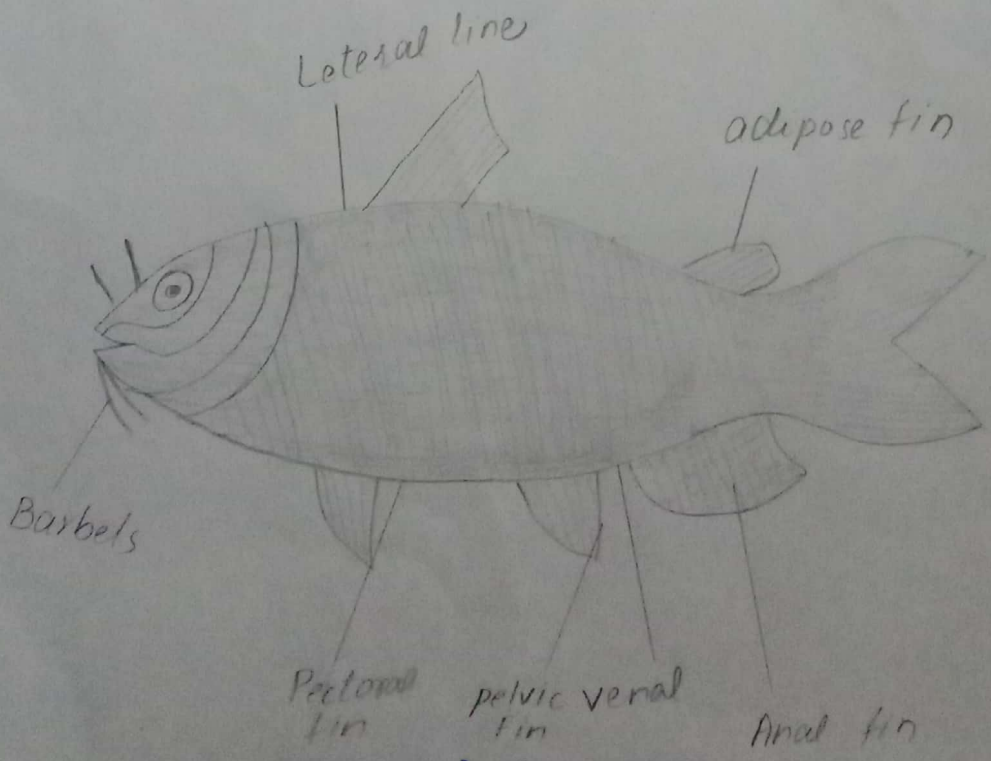


Mandibular Arch



Dorsal fin with vertebrae

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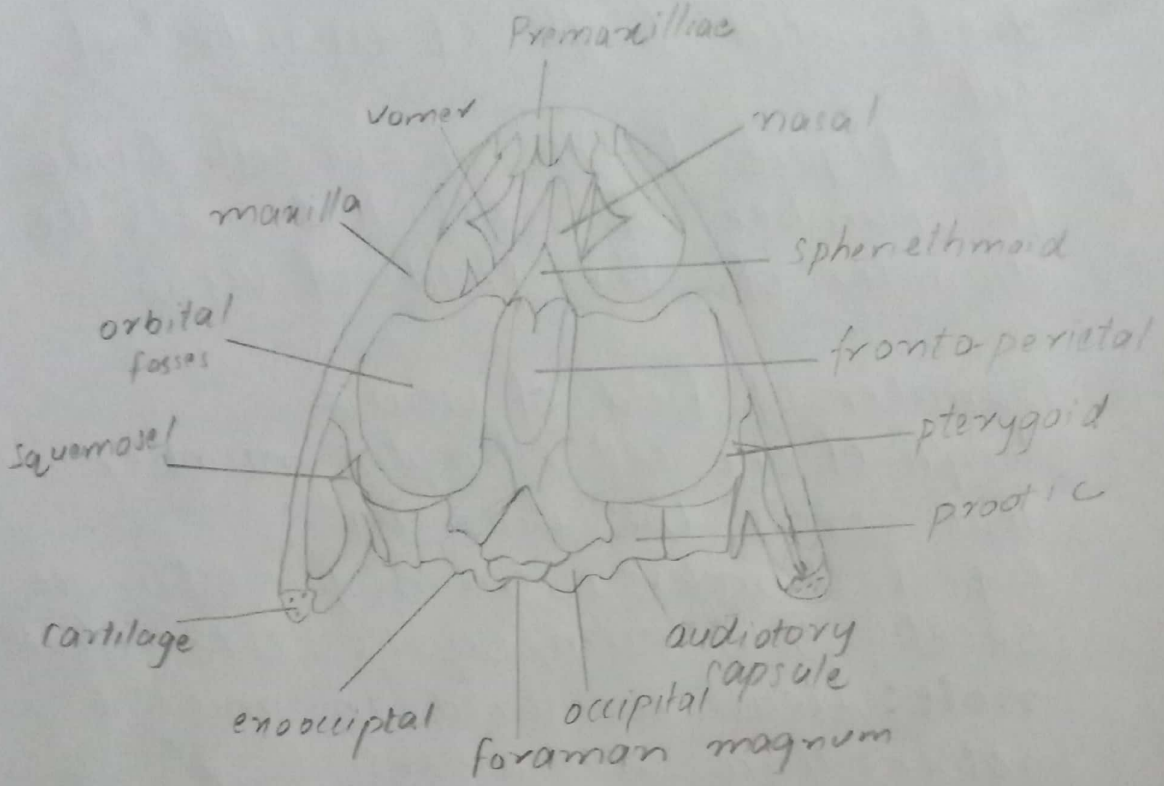
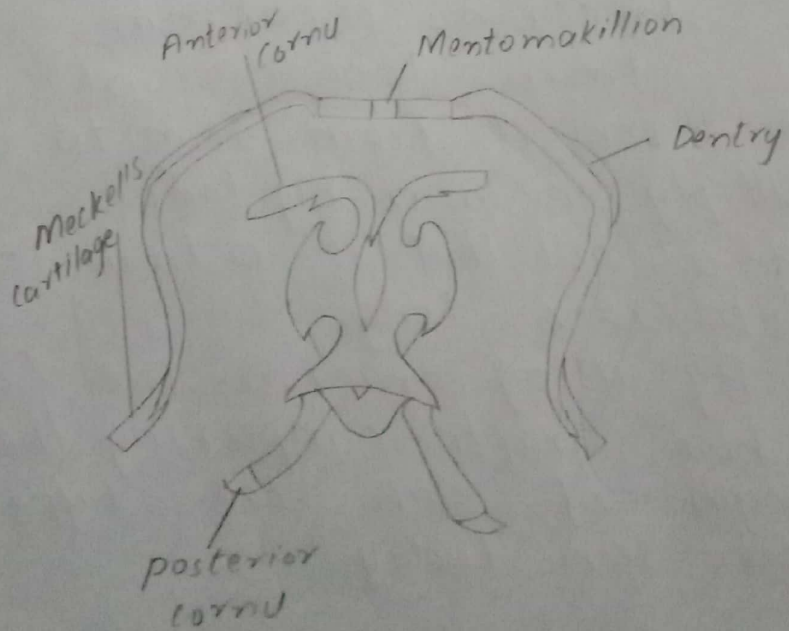
Practical No. 6

Study of Skeleton of Frog

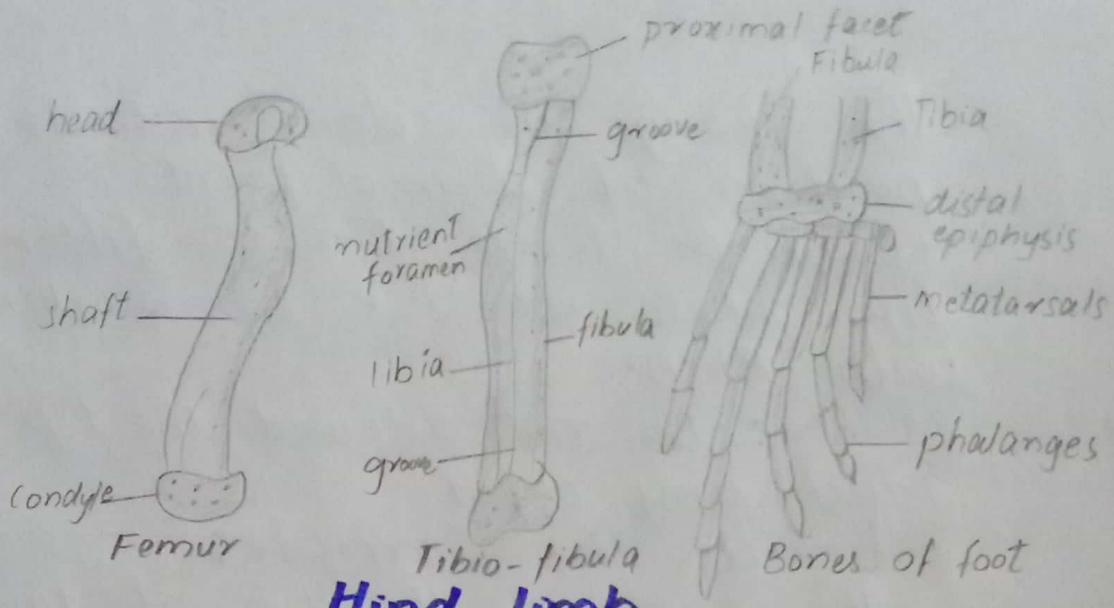


Frog skull dorsal veiw

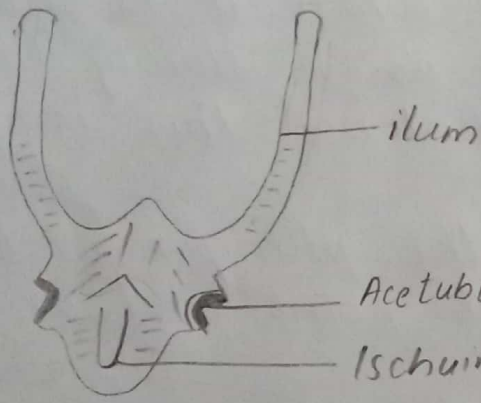


lower jaw of frog

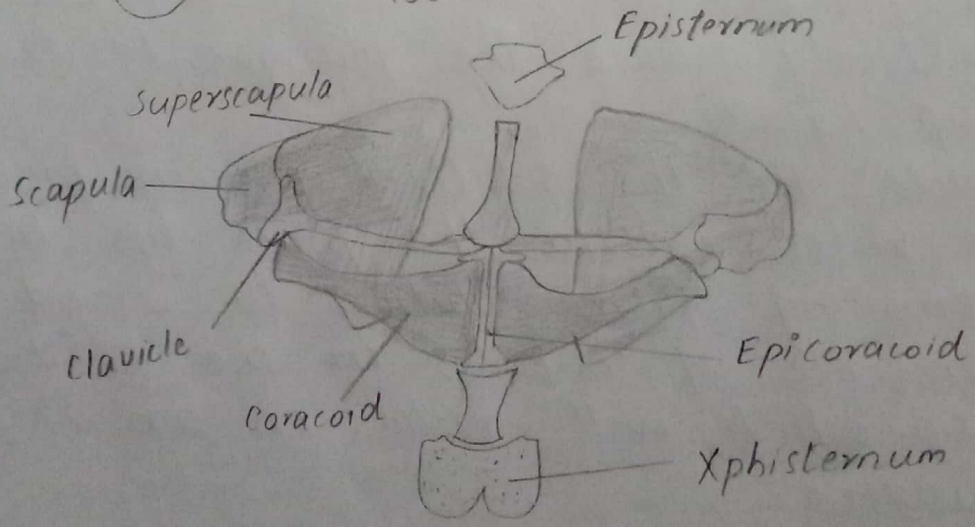
Scanned with CamScanner



Hind limb



Frog pelvic girdle



Pectoral girdle

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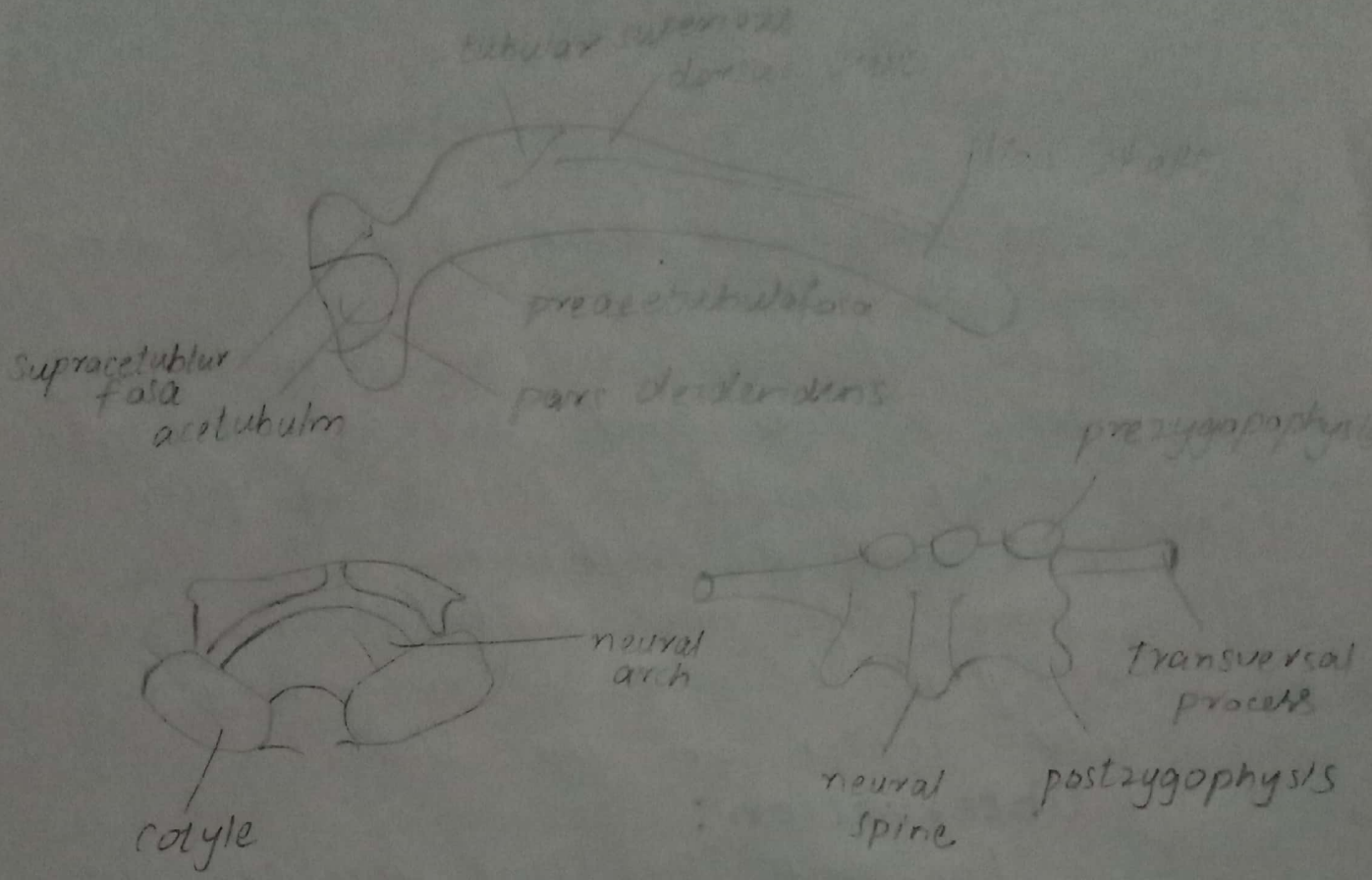
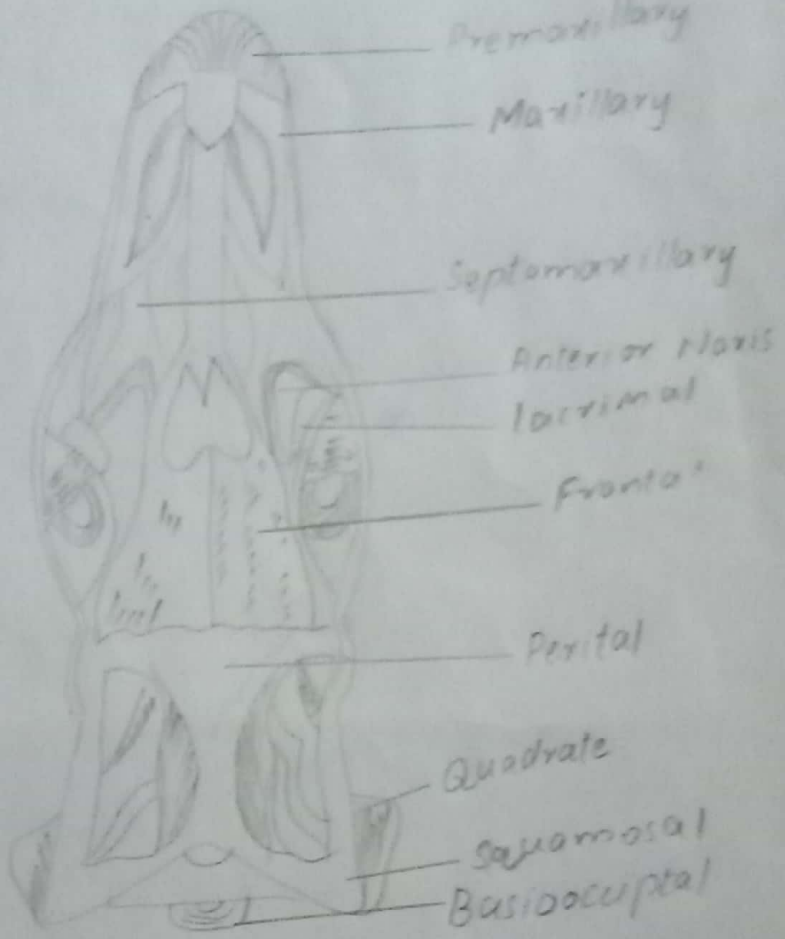


vertebral column of frog

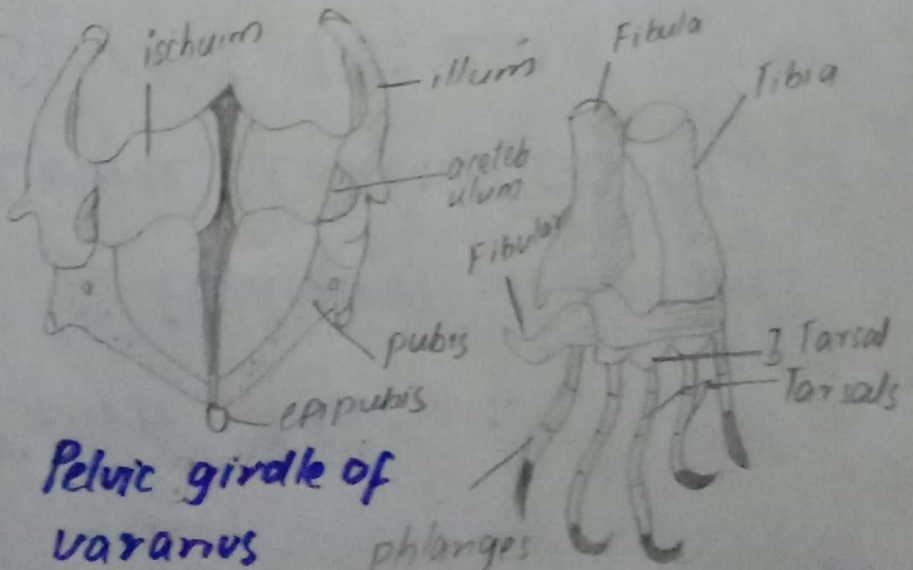
Scanned with CamScanner

Practical No. 7

Study of Skeleton of Varanus



Dorsal veiw of varanus skull



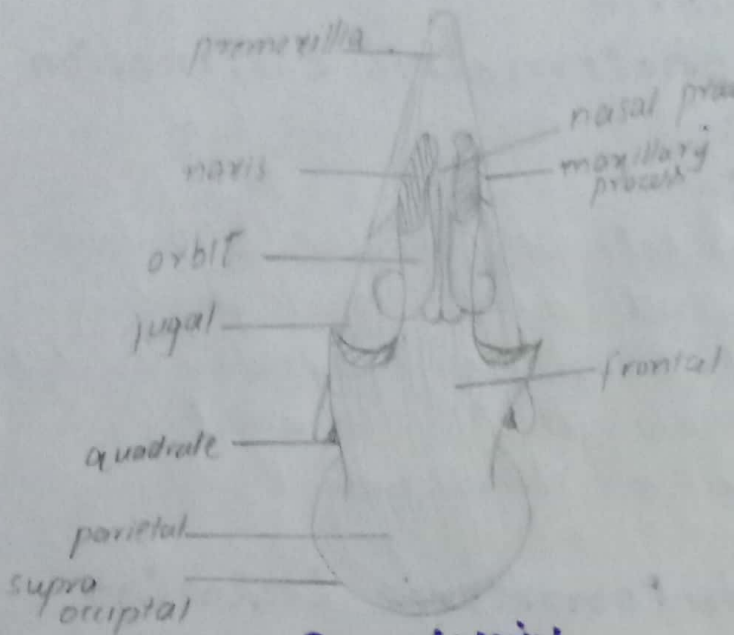
Pelvic girdle of varanus

Hind limb of varanus

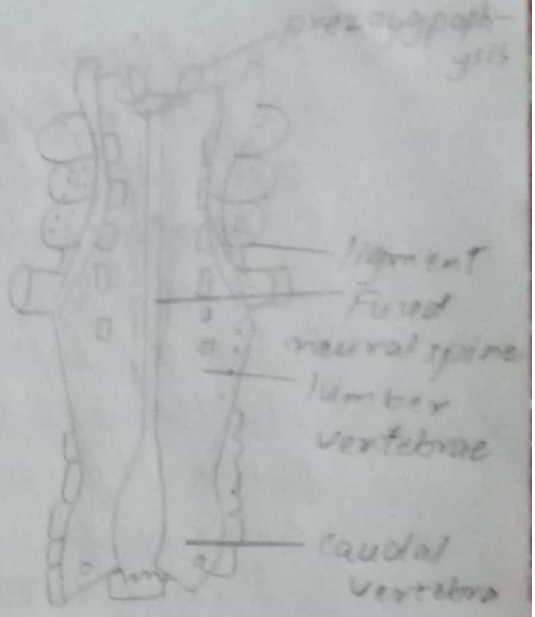
Scanned with CamScanner

Practical No.8

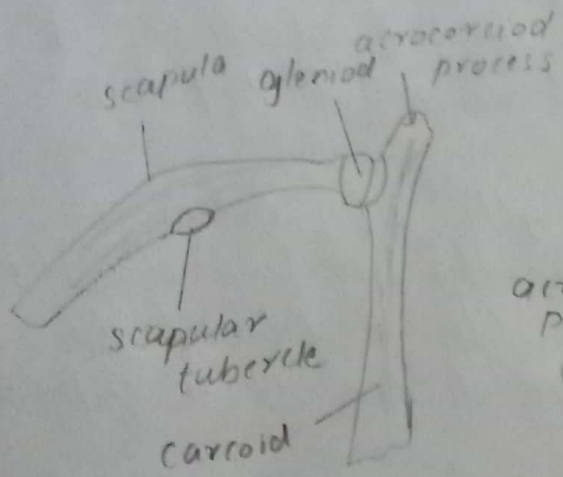
Study of skeleton of fowl

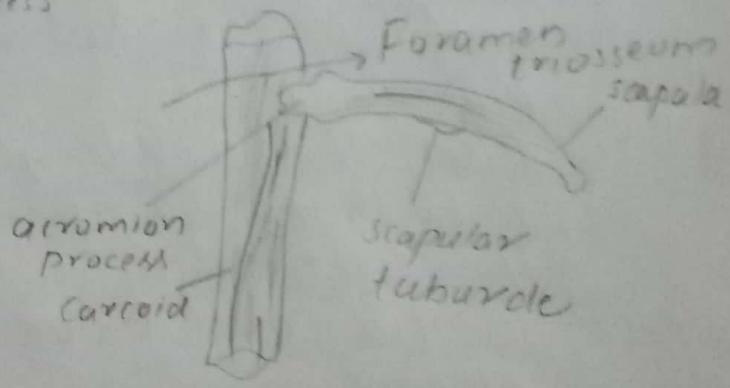


Dorsal veiw skull of fowl



Dorsal view synsacrum





pectrol girdle

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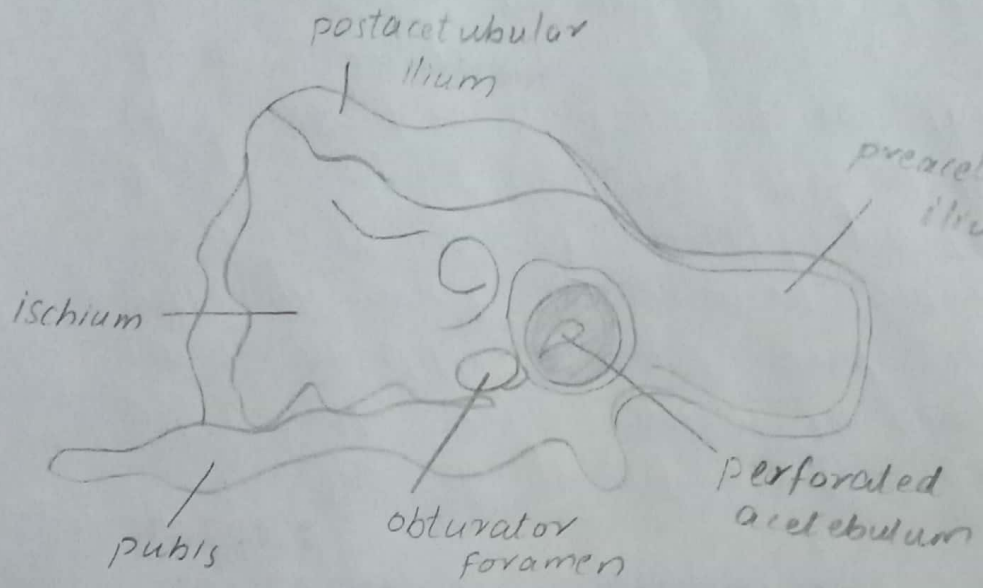
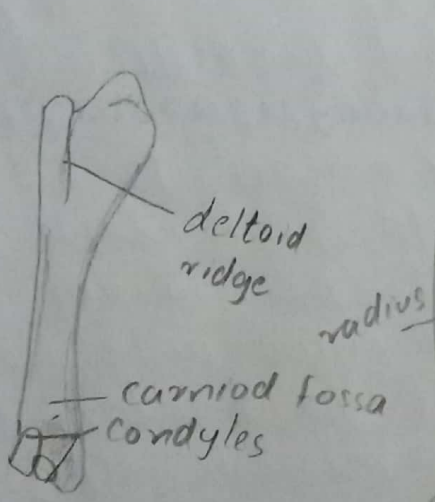
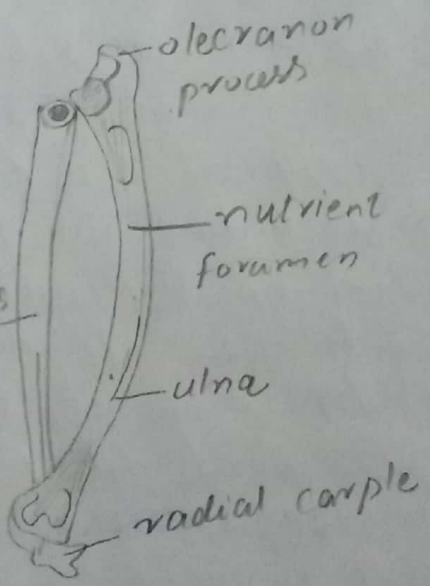


Pelvic Girdle



Humers



Radius & Ulna

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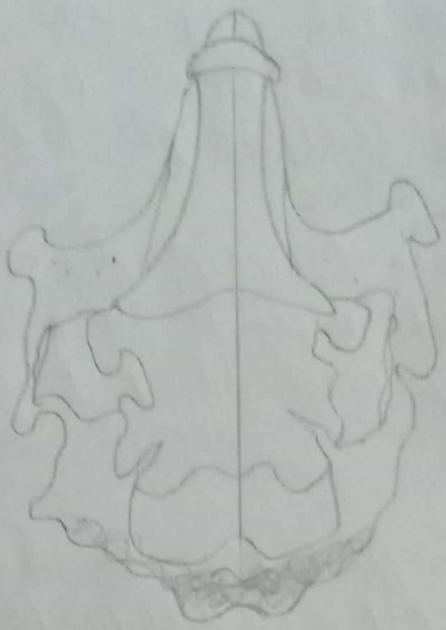
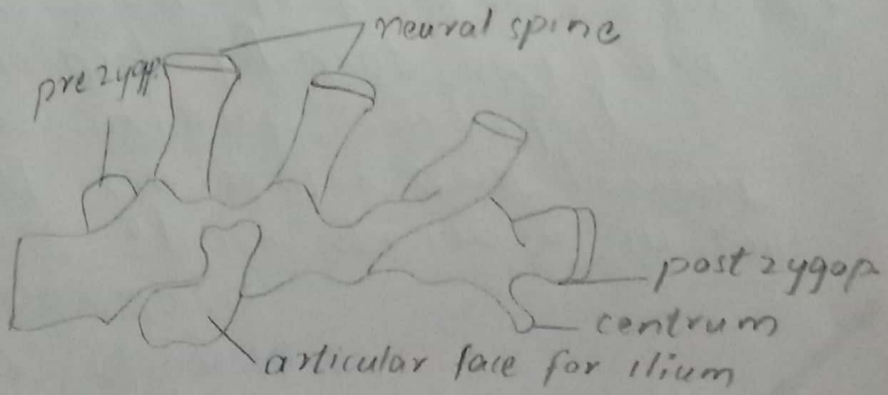
Practical No. 9

Study of skeleton of Rabbit



Rabbit skull dorsal veiw



Sacrum of rabbit
lateral veiw

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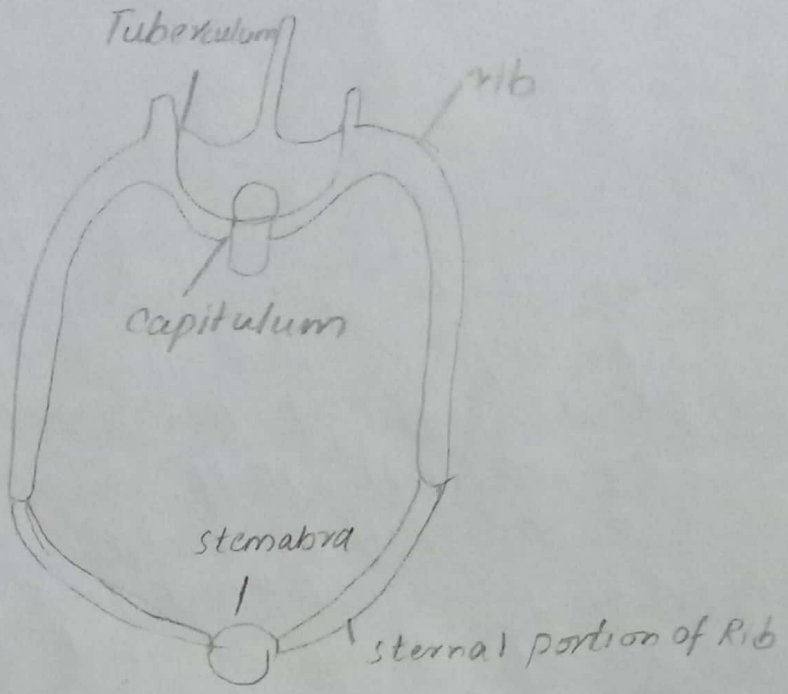
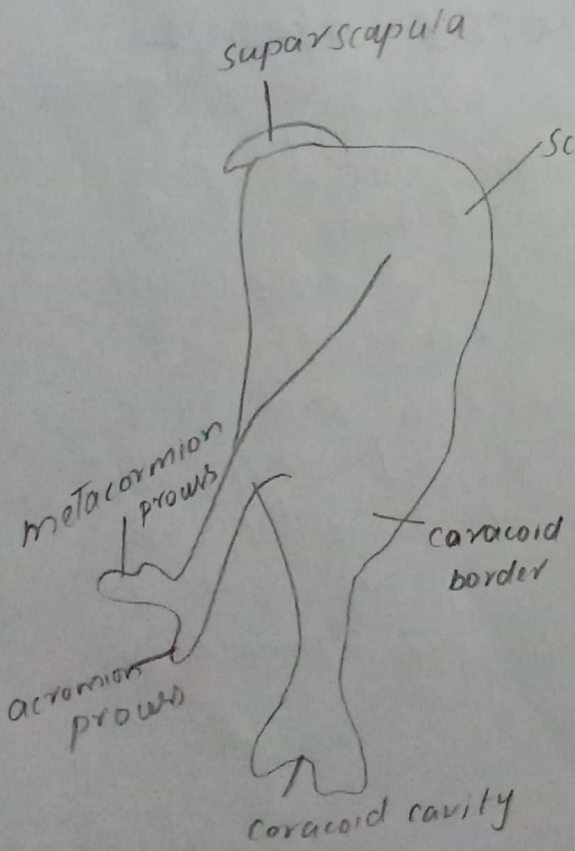
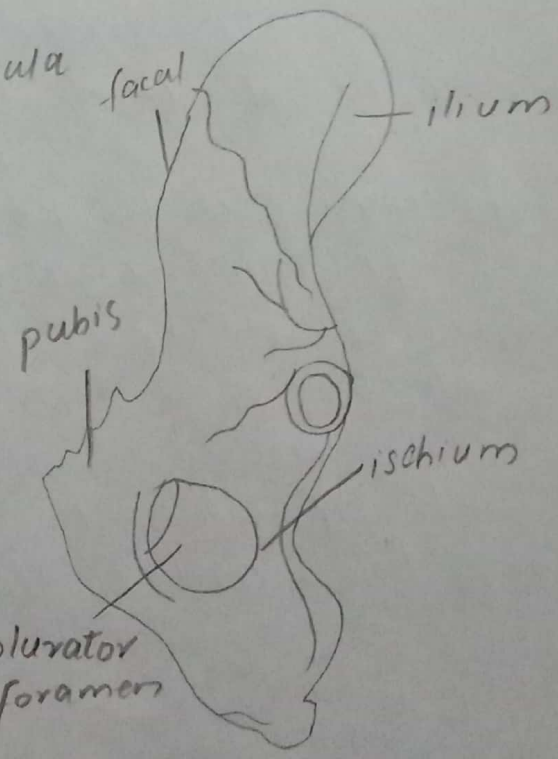


Thoracic vertebrae with Ribs



Pectoral girdle



Pelvic girdle
Ventral view

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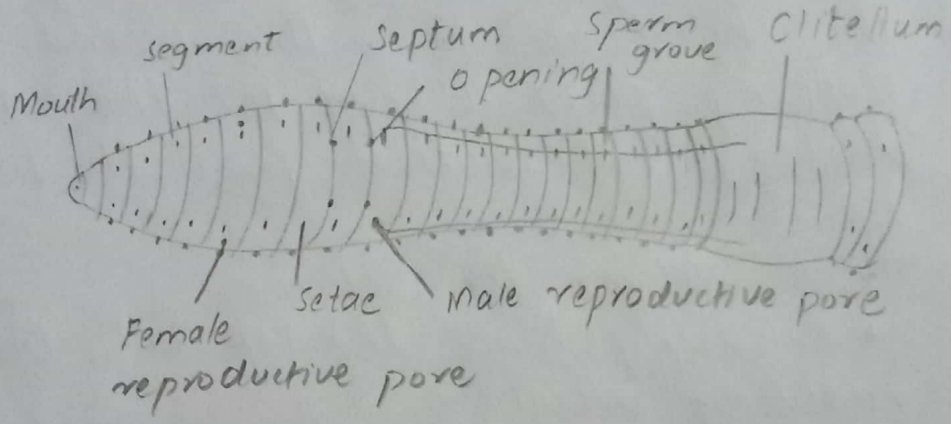

Dissection in Earthworm

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Date: / /20

Practical No. 10

Dissection of Earthworm

Dissection Method

1. The dissection dish is taken and preserved or killed earthworm is placed in it. The dorsal side is placed on upper side and pins are inserted on it. The earthworm is stretched accross length.
2. The skin is cut dorsally with help of blade from anterior to posterior side. The skin of earthworm is fixed with pins.

Digestive system

It is composed of phyranx, oesophagus, gizzard stomach, intestine and intestinal gland.

Excretory system

It is composed of nephridia and a pair of nephridia in each segment.

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Nervous System

It is composed of a pair of cerebral ganglia, pharyngeal connective, sub-pharyngeal ganglion, segmental ganglia and ventral nerve cord.

Reproductive System

- The male reproductive system of Earthworm is composed of testis, testis sac, seminal vesical, vasa efferentia, prostate gland and spermatic duct.
- Female reproductive system is composed of ovary and oviduct.

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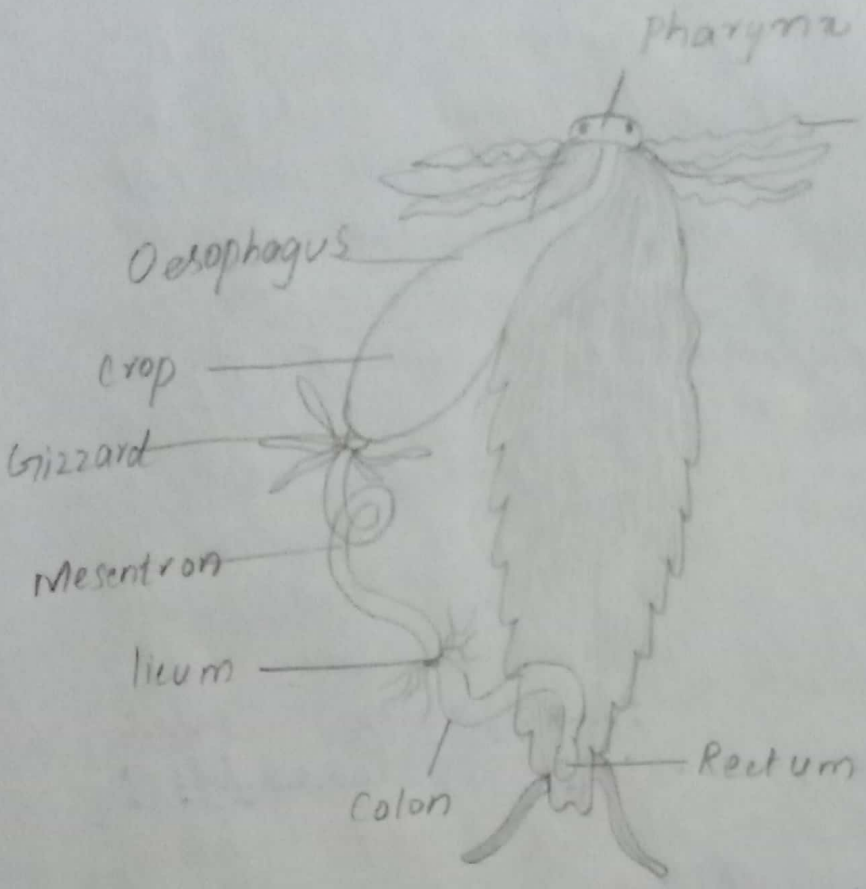
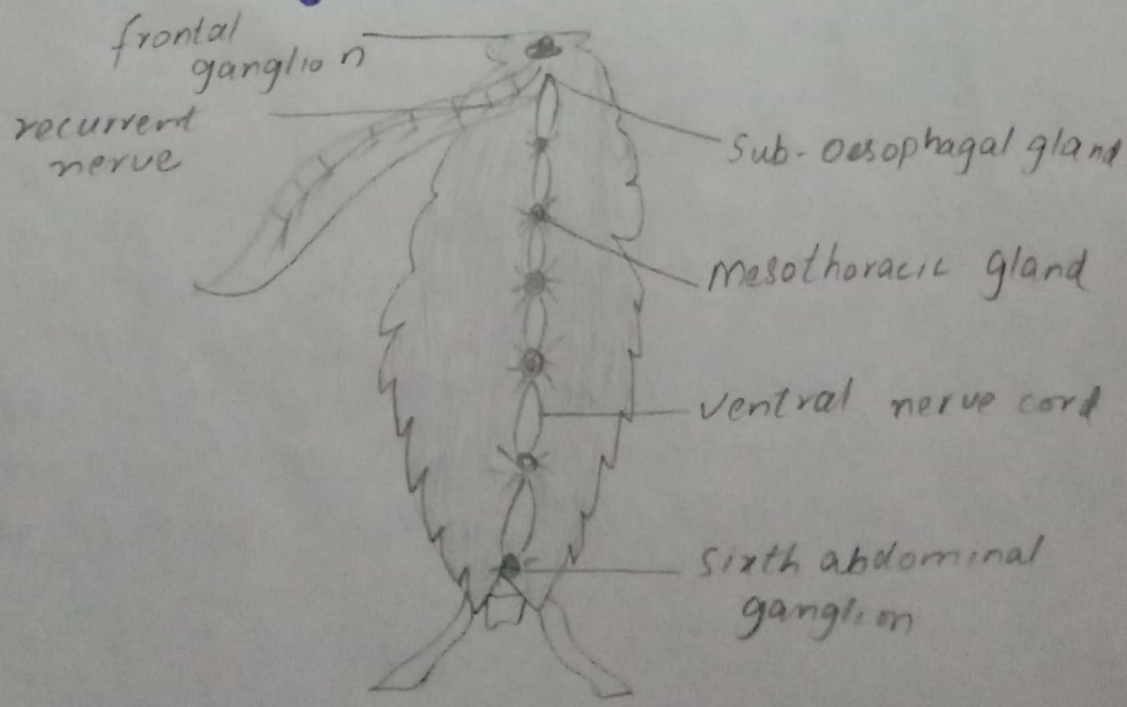


digestive system of Cockroach



nervous system of Cockroach

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Practical No. 11

Dissection of Cockroach and Freshwater Mussel

Dissection of Cockroach

. It is dissected from dorsal side. The wings are cut and animal is fixed with pins.

. The terga is removed one by one. The abdominal cavity contains mass of white water matter and it is removed with cotton.

Digestive system

The digestive system contain alimentery canel. The alimentery canel contains three parts:

1- Foregut
2- Midgut
3- Hind gut

Male reproductive tract:-

The male reproductive system contain testis, phallic, utriulus majors, vas deferens, utriuli-

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Date: / /20

bervioves, ejaculatory duct, male genital pouch and gonapophyses pore.

Female reproductive system

It is composed of terminal filament, germarium ovary, oviduct, collaterial gland, genital chamber, genital pouch and gonapophyses.

Dissection in Freshwater Mussel

Method of dissection

1. A Freshwater mussel is taken and its small teeth like structure present at the ventral edge of the closed shell is scraped with razor is inserted into anterior and posterior side of closet shell.
2. The mantle is removed and different digestive organ are studied.

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Digestive system

It is composed of alimentry canel and digestive gland.

Nervous System

It is composed of central nervous system (three ganglia), their connectives and small nerves.

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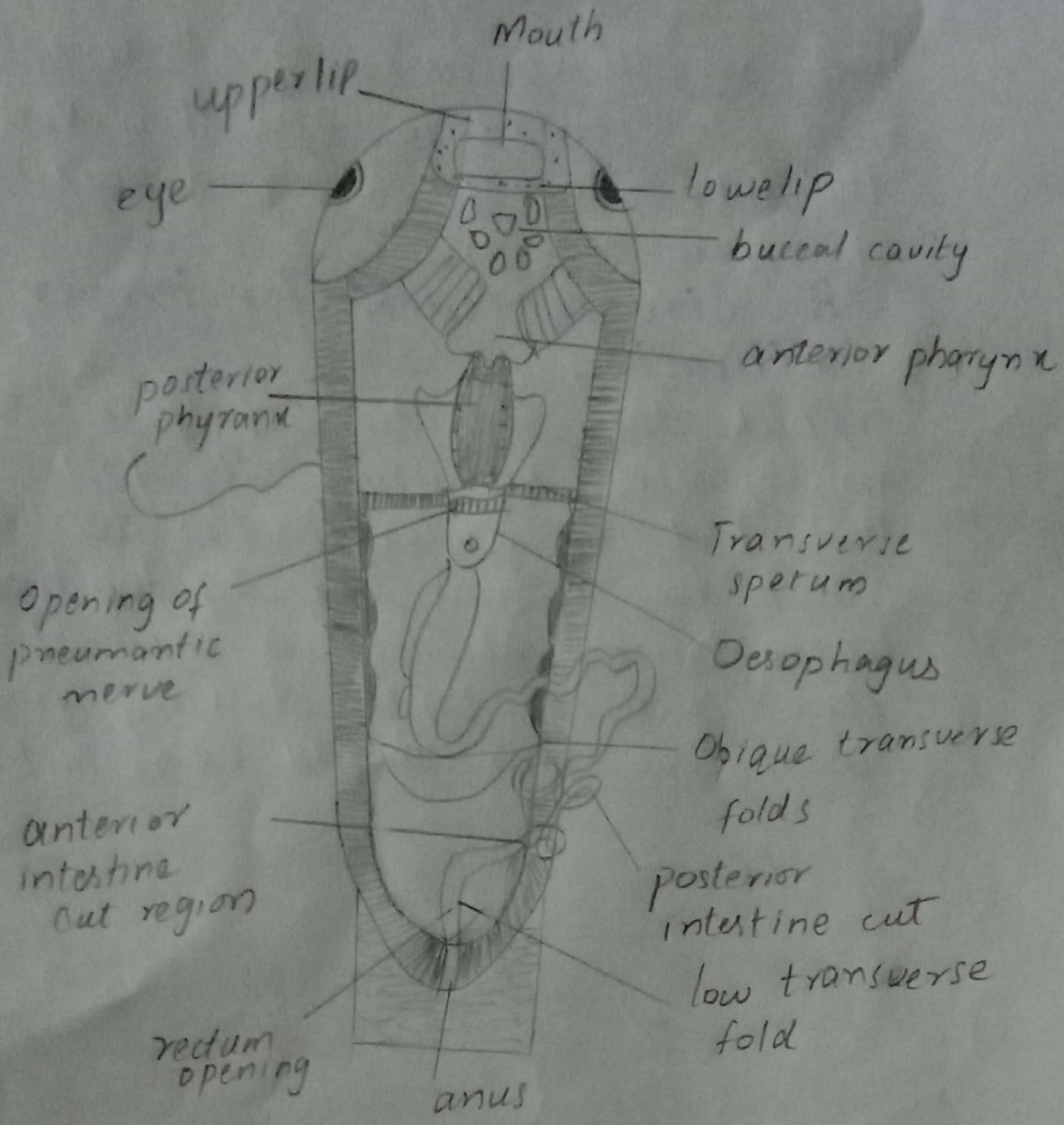

Dissection of Laheo

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Practical No. 12
Dissection of Labeorohita

Method of dissection

The fish is washed with water and a mid-ventral cut is given at abdomen. The skin is cut up to anus. Then a transverse cut is given to from Pelvic fin up to the base of pectoral fin. Then it is fixed on the board with the help of pins or nails.

Cranial nerve of Labeo

- Olfactory: sensory, smell
- Optic: sensory, vision
- Oculomotor: motor, eyelids adjustment to light
- Trochlea: motor, condition of eye muscles
- Trigerminal: eyes, tear gland, sclap, forehead, upper eyelid.

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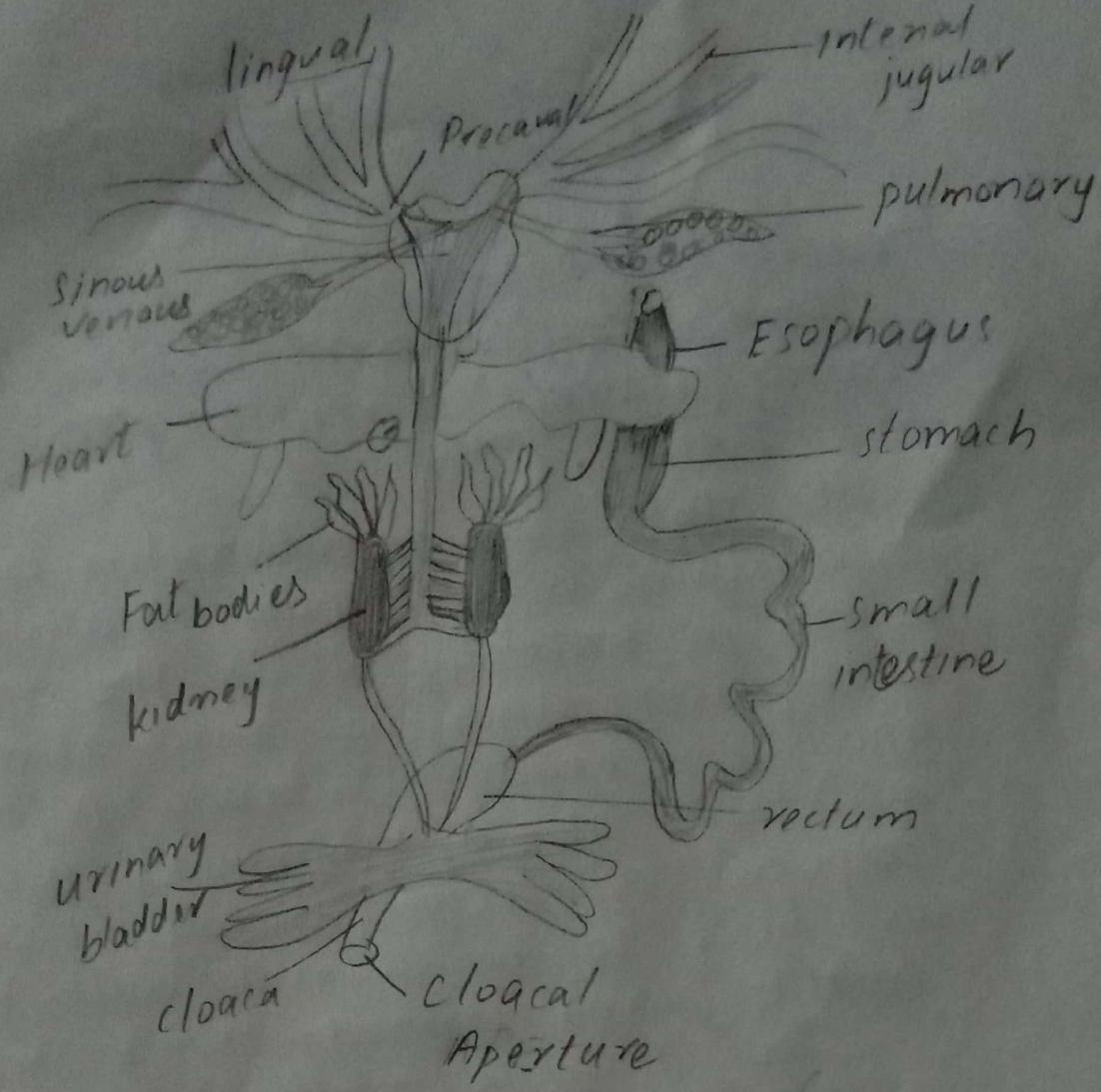

Different organ of frog

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Practical No. 13
Dissection of Frog
Methods of dissection

1. A chloroformed or pithed frog is placed on board. Its ventral side is kept upward.
2. The limbs of frog is fixed with nails. Then the skin of frog is lifted with the help of forceps. A cut is made in the skin in abdominal region. The skin is cut from abdomen to lower jaw.
3. The anterior abdominal vein that passes through the midline should not be cut. The two leteral sides is tied with thread. Now it is cut at anterior and bleeding do not take place from abdominal vein.
4. The sternum is cut at anterior side. The digestive system is present in cavity

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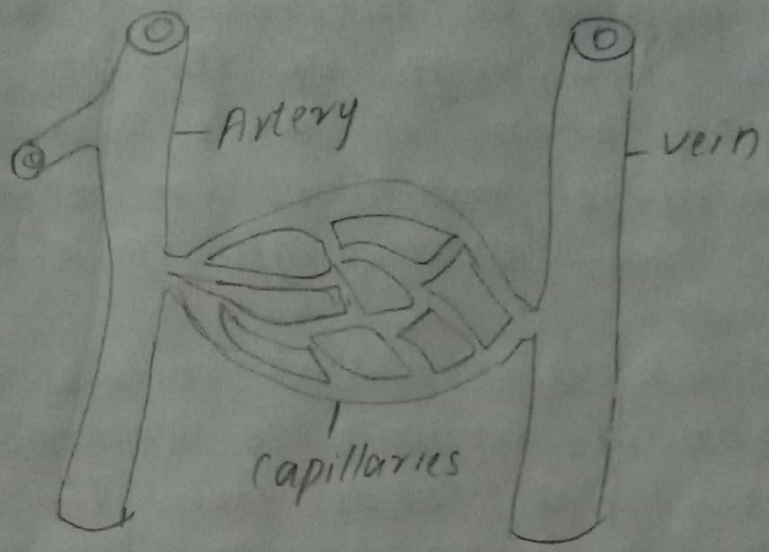

Artery and Vein

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Date: / /20

Practical No. 14, 15, 16

Study of heart, principle arteries and principle veins in a representative vertebrae. (dissection of fish / mammal).

Hemolymph

It is a circulating fluid in animals with an open circulatory system. Most arthropods, ascidians and many molluscs have hemolymph.

Functions of Vertebrae blood

It transports oxygen, carbon dioxide and nutrient. It defend against harmful microorganisms, cells and viruses.

Agranulocytes

These are without granules in the cytoplasm. Eosinophils, basophils and neutrophilis are its three types.

Platelets

These are fragmented disk

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shaped cells which initiate blood clotting. These move to the injury side and from clump in the demage area and start the process of blood coagulation.

Artery and Vein

The blood vessels which carry blood away from the heart to the organs and tissues is called artery. The blood vessels which brings blood to the heart from the organs and tissue is called vein.

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