SHRI SWAMI VIVEKANAND SHIKSHAN SANSATHA, KOLHAPUR

Vivekanand College, Kolhapur (Autonomous)

Home Assignment -2019-20 (B.Sc.-III) Semester-VI

Index

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

Shri. Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)
Department of Zoology
Academic year 2019-20

Date – 07/02/2020

NOTICE

All students of B.Sc. III hereby informed that, submit Home Assignment for Continuous Internal Evaluation (CIE) of B.Sc. III Semester VI up to 22/02/2020 at Zoology Department (Lab.49). The question for home Assignment is given bellow. Submission is mandatory to all.

Paper XIII- Comparative Anatomy of Vertebrate 10M

Q. 1). Describe soft derivatives of vertebrates.
Q. 2). Describe hard derivatives of vertebrates.
Q. 3). Describe Pectoral girdle of frog and compare it varanus

Paper XIV- Developmental Biology 10M

Q. 1). Explain developmental of brain in chick embryo upto 72 hours.
Q. 2). What is gametogenesis? Explain spermatogenesis in mammal.

Paper XV-Physiology 10M

Q. 1). Describe ultrastructure of nephron and explain mechanism of urine formation
Q. 2). Describe ultrastructure of nerve cell and explain transmission of nerve impulse across the nerve fibre.

Paper XVI-Applied Zoology 10M

Q. 1). Describe economic importance of fin fishes.
Q. 2). Describe different housing methods in poultry birds.

Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

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Vivekanand College, Kolhapur (Autonomous)
Home Assignment -2019-20 (B.Sc.-III) Semester-VI
Attendance

Sr No.	Roll No.	Name of the Student	Attendance			
			XIII	XIV	XV	XVI
1.	8241	YEGADE GANESH SHANKAR	P	P	P	P
2.	8242	MARIYA FAIYAZ BAGWAN	A	A	A	A
3.	8243	SHRADDHA MANGESH JADHAV	P	P	P	P
4.	8244	VINAY SUBHASH JADHAV	P	P	P	P
5.	8245	PRATIKSHA SARDAR GURAV	P	P	P	P
6.	8246	RUTUJA SANJAY BHANDARI	P	P	P	P
7.	8247	KAMBLE SACHIN SANJAY	P	P	P	P
8.	8248	RUTUJA SANJAY MANE	P	P	P	P
9.	8249	NIKITA ABHAY CHOPADE	P	P	P	P
10.	8250	MOHINEE UMASHANKAR KOLI	P	P	P	P
11.	8251	SHINGARE AMOL SURYAPPA	P	P	P	P
12.	8252	PATIL SUYOG RAVSAHEB	P	P	P	P
13.	8253	JEWRANI GEETA RAJKUMAR	P	P	P	P
14.	8254	KUMBHAR SAURABH PRATAP	P	P	P	P
15.	8255	GHODAKE PRUTHVIRAJ MARUTI	P	P	P	P
16.	8256	KAMBLE PRASAD MACHHINDRA	P	P	P	P
17.	8257	KAMBLE PRADNYA PRAKASH	P	P	P	P
18.	8258	KAMBLE RAJANI VASANT	P	P	P	P
19.	8259	HANDE VAISHANAVI AMAR	P	P	P	P
20.	8260	POONAM KIRAN RUGGE	P	P	P	P
21.	8261	RICHA RANJIT GHOTANE	P	P	P	P
22.	8262	SAMRUDDHI ANIL SHAHAPURKAR	P	P	P	P
23.	8263	PATIL SANKET NEMGONDA	P	P	P	P
24.	8264	INGALE ANJRUDH UDAY	P	P	P	P
25.	8265	SOURABH KISHOR BORGAVE	P	P	P	P
26.	8266	SADANAND GANGARAM NALAWADE	P	P	P	P
27.	8267	KADAM SOURABH MAHADEV	A	A	A	A
28.	8268	NIRANJANDAS ANANDA SANGVADEKAR	P	P	P	P

Dr. Gaikwad
Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

SHRI SWAMI VIVEKANAND SHIKSHAN SANSATHA, KOLHAPUR
Vivekanand College, Kolhapur (Autonomous)
Home Assignment -2019-20 (B.Sc.-III) Semester-VI
Marksheet

Sr No.	Roll No.	Name of the Student	Marks			
			XIII(10M)	XIV(10M)	XV(10M)	XVI(10M)
1.	8241	YEGADE GANESH SHANKAR	10	10	10	10
2.	8242	MARIYA FAIYAZ BAGWAN	Ab	Ab	Ab	Ab
3.	8243	SHRADDHA MANGESH JADHAV	10	10	10	10
4.	8244	VINAY SUBHASH JADHAV	10	10	10	10
5.	8245	PRATIKSHA SARDAR GURAV	10	10	10	10
6.	8246	RUTUJA SANJAY BHANDARI	10	10	10	10
7.	8247	KAMBLE SACHIN SANJAY	10	10	10	10
8.	8248	RUTUJA SANJAY MANE	10	10	10	10
9.	8249	NIKITA ABHAY CHOPADE	10	10	10	10
10.	8250	MOHINEE UMASHANKAR KOLI	10	10	10	10
11.	8251	SHINGARE AMOL SURYAPPA	10	10	10	10
12.	8252	PATIL SUYOG RAVSAHEB	10	10	10	10
13.	8253	JEWRANI GEETA RAJKUMAR	10	10	10	10
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22.	8262	SAMRUDDHI ANIL SHAHAPURKAR	10	10	10	10
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Head,
Department of Zoology
Vivekanand College,
Kolhapur (Autonomous)

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (Autonomous), KOLHAPUR

(10)

Class B.Sc. III Div Roll No. 8241

Name Suppliment No.:- Ganesh Shankar Yegade Subject Zoology (Paper XIII)

Test / Tutorial No. Home Assignment (Comporative Anatomy of Vertebrate)

1) Describe soft derivatives of Vertebrates.

→ 1) Soft derivatives or epidermal derivatives are epidermal glands.
2) Epidermal glands are formed for malphigian layer of the epidermis. The arise form the epidermis & often penetrate the dermis.
3) According to the structure the epidermal glands are classified into three types.
(i) Unicellular or multicellular
(ii) Simple or compound
(iii) Tubular or alveolar.
4) Unicellular glands are single cells which are modified cells & are found scattered among other epithelial cells.
5) Unicellar glands are found in Amphioxous, Cyclostomes, fishes & larvae of Amphibians.
6) Example of unicellar glands is mucous cell or goblet cells, which secrete mucin.
7) Multicellular glands may be classified into two types as.
i) Tubular gland. or ii) Alveolar or Saccular gland
8) Tubular glands are multicellular tubes of uniform diameter.
9) Tubular gland may be further divided as i) Simple tubular gland &
ii) Compound tubular gland.

i) Tubular glands may become coiled at base deep in dermis called simple tubular gland e.g Sweat gland in mammal.

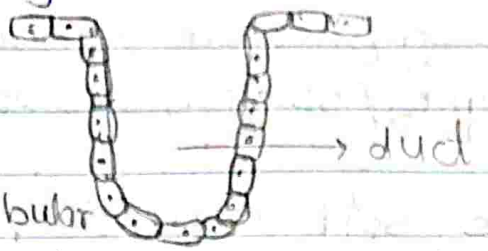


Fig: simple tubular gland

ii) Tubular gland may get divided into many tubules which are called compound tubular gland e.g mammary glands of female.

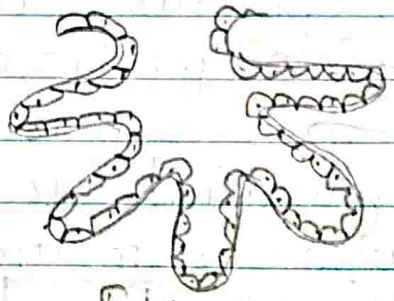


Fig- compound tubular gland.

10) Alveolar glands are multicellular glands which grows in dermis like tubular gland but becomes rounded expansion at terminal portion.

11) The alveolar gland is also classified into two types.

i) simple alveolar gland:-

This is starting of development of compound alveolar gland though few exception e.g Urethral glands.

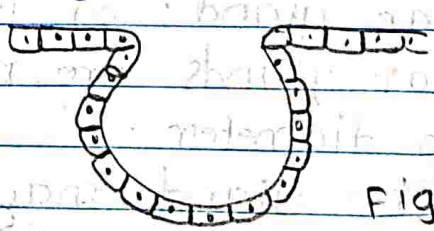


Fig:- simple alveolar gland

ii) compound alveolar gland:-

The branching of alveolar glands into

many lobules is called branched or compound alveolar gland.
e.g Mammary gland of eutherians, salivary gland. etc.

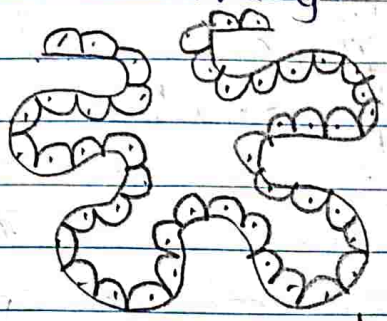


Fig: Compound alveolar gland.

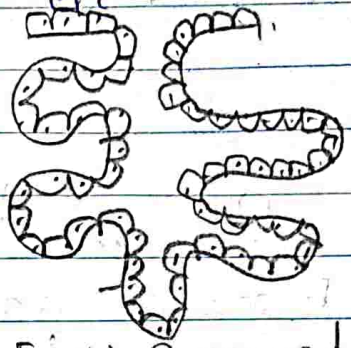


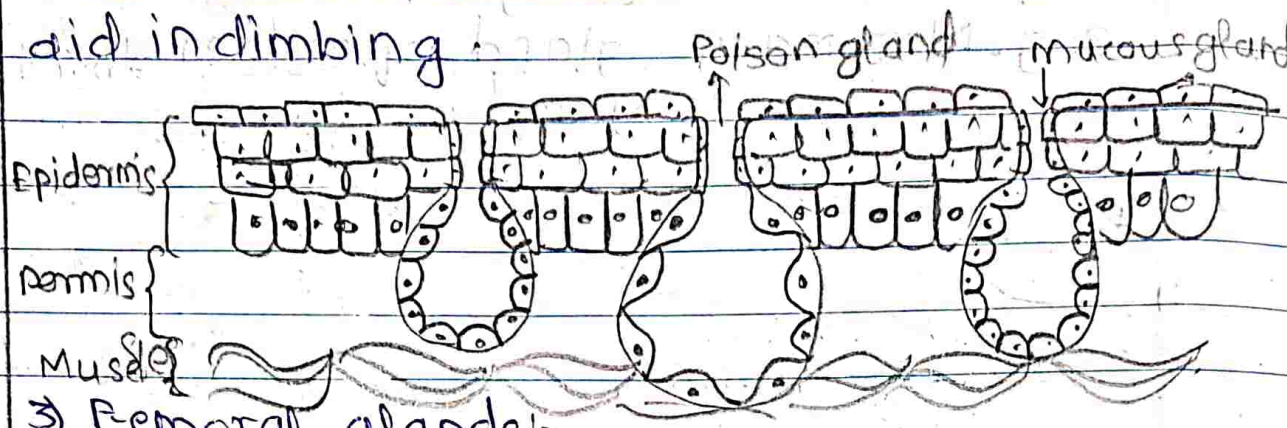
Fig: Compound tubulo-alveolar gland

According function different epidermal glands are as follows.

1) Mucous glands:
The mucous gland can be either unicellular or multicellular.
i) Unicellular mucous glands -
This glands are of single cell which often keeps the skin moist & slippary.
e.g Mucous gland cell & granular cells of amphioxous, cyclostomes & fishes.
ii) Multicellular mucous gland:
This are alveolar glands found in some fishes & Amphibians. They are found all over the surface of body.

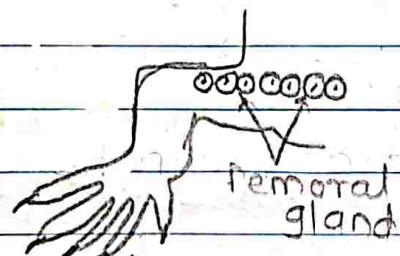
2) Poison gland:-
i) Amphibians also have alveolar poison gland which is less numerous than mucous glands.
ii) In toad masses of poison glands form parotoid gland behind the head.

iii) Some tubular glands are found on the feet & suctorial discs of tree frog which aid in climbing.



3) Femoral glands:-

This are found in lizards particularly in males. These are present in thighs & in rows. It is some role in reproduction.



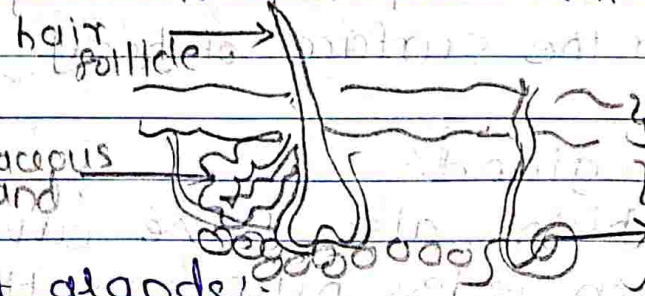
4) Sweat gland:-

i) This are found in large number in skin of mammals

ii) This may be tubular or alveolar multicellular gland.

5) Sebaceous gland: ~~are~~

Sebaceous glands are alveolar glands opening in hair follicles containing hairs.



6) Scent glands:-

i) This are modified sebaceous or sweat gland

ii) Their secretion is an allurement to the opposite sex.

e.g.: Scent glands in deer, pigs, goats.

7) Prepulial glands:-
i) These are found in many mammals
ii) In bearer large sac containing secretion known as castoreum lie beneath the skin on either side of penis & opens by duct into prepuce.

8) Mammary gland:-
i) These are characteristics of mammals. They secrete milk.
ii) They may be compound tubular as in monotremes & compound alveolar is rest of mammals.

Q2. Describe Hard derivatives of Vertebrates.
→ Integument is outer protective covering of a vertebrate. The cutaneous membrane (skin) & its derivatives (exoskeleton) are together referred as integument.
The hard derivatives of integuments are enlisted below
i) Hair
ii) Feather
iii) Nails
iv) Hoofs
The detailed explaination is given below

1) Hairs:-
i) Hair is found only in mammals. It projects at an acute angle from the skin.
ii) Hair covers entire integument in most (furred mammal).
iii) Hair is epidermal in origin.
iv) The hairs traps air which doesnot transmit body heat & thus act as insulator.

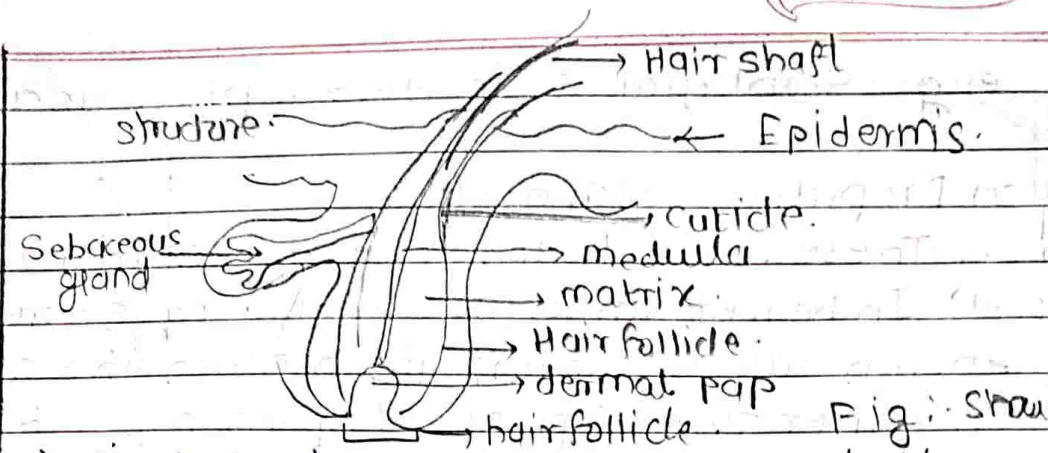


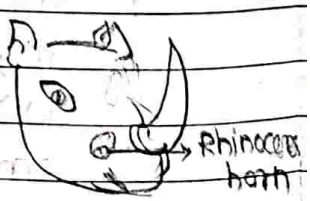
Fig: Structure of hair.

v) The hair has an upper projecting shaft & lower root lying in the hair follicle which is sunken pit the dermis.
vi) The shaft is made up of only dead keratinised cell.

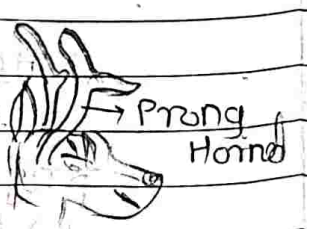
II) Horns :-
i) Horns are found in ungulate (even-toed hoofed) mammals only.
ii) True horns (hollow type are found in pronghorn, cattle, antelope, sheep & goat.
iii) Horns are outgrowth from the frontal bone which is an encased in a keratinized epidermal covering.
iv) True horns continuously grow throughout life & are not shed.

Different types of horns are as follows.

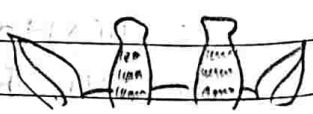
a) Rhinoceros horns -
i) They dont have skeleton elements. It posses keratin fibre. If broken it grows again. e.g Rhinoceros.



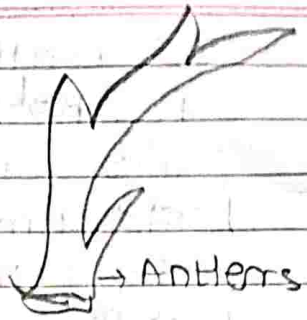
b) Prong horns -
These are true horn consist of permanent projection of the frontal bone covered by hard horny epidermal sheath.
e.g Russian antelope.



c) Giraffe horns :-
They develop from cartilagenous protrusion which present at birth.



d) Antlers -
i) This are found in the males of deer family.
ii) But they are present in both sexes in reindeer & caribou



III) Digital structures
In amniota (Birds, mammals, Reptiles) the distal ends of digits have claws, nails or hoofs formed from the horny layer of epidermis

i) Claw :- Claws made or first time appeared in reptiles. The claw is made up of a hard horny - dorsal scale like plate called unguis

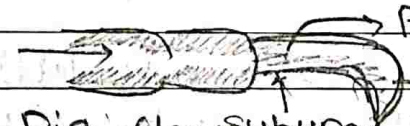
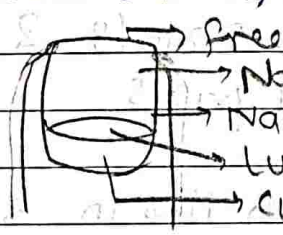
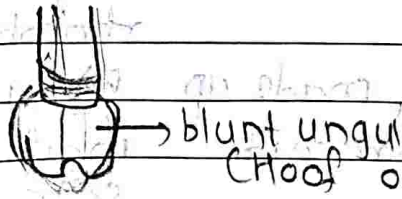


Fig:- Claw subungual area

ii) Nails :- They are found in Primates. The dorsal unguis is large & flat & sub-ungus is soft & much reduced. The nail consist of free edge, nail plate, nail groove, lunula & cuticle.



IV) Hoofs :-
They are found in ungulates. unguis is horny thick & present around the end of the digit & encloses thickened subungus which touches the ground.



(iv) Feathers

Feathers are found only in birds & are formed from the epidermis in which stratum corneum is highly specialized. They are made up of pigments cells also which are known as carotenoids & melanin cells. There are three types of feathers i) Down feather ii) contour feather & iii) Filoplume feathers.

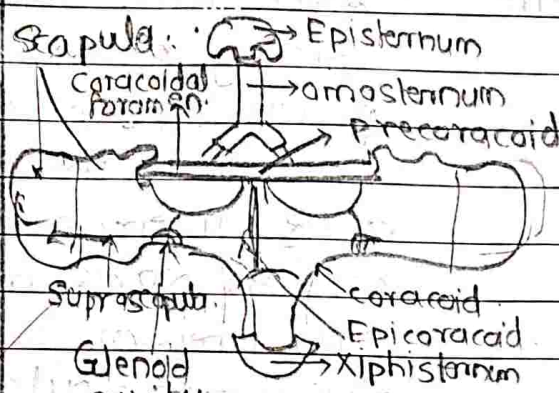
Q3. Describe pectoral girdle of frog & compare it Varanus.

→

The comparsion between pectoral girdle of frog & varanus in given below:

Frog	Varanus
1) It is much developed cartilagenous & bony both well developed. The pectoral girdle of frog	1) Well developed, bony & cartilagenous both.
2) It is found in the thoracic region, provides attachment to fore-limbs & their muscles. protects the inner soft parts of the thorax	2) Located at the anterior end of the trunk, protects the inner, softer parts & support fore-limbs.
3) Inverted arch-like in a shape.	3) Inverted arch-like.
4) Composed of two identical halves which are united midventrally with sternum.	4) Composed of two halves which are united midventrally with T-shaped interclavicle & rhomboidal sternal plate.
5) Each half is made up of scapula & coracoid	5) Each half is made up of scapula & coracoid.

6) Scapula is flat, stout bony plate.	6) Scapula is bony, oblong stout & flat plate like which is narrow in the middle, at its anterior end & ossified process mesoscapula present.
7) Suprascapula is thin broadly flattened plate like of calcified cartilage at dorsal end of scapula & covers the first four vertebrae of vertebral column.	7) Suprascapula is more or less rectangular thin plate of calcified cartilage attached to the dorsal end of scapula, its distal border is free & does not cover the vertebrae.
8) Coracoid is broad bone, a rod-like cartilagenous precoracoid is seprated anteriorly from it forming a coracoid foramen. Both the coracoid meet mid-ventrally by a X-shaped cartilagenous epicoracoid.	8) Coracoid is large, flat & fenestrated bone; two large fenestrated bone; two large fenestrae divide the coracoid into outer precoracoid, middle mesocoracoid & inner coracoid proper. Epicoracoid irregular.
9) Glenoid cavity is present at scapula. at its attachment to coracoid.	9) Glenoid cavity is present at posterolateral junction point of scapula & coracoid.
10) Clavicle is slender rod-like transverse bone of either side attached to precoracoid cartilage.	10) It is small, curved bone on the either side seperated by in in the middle inter clavicle.
11) Inter-clavicle is not found	11) Inter clavicle is T-shaped rod between clavicles & two halves of pectoral girdle.



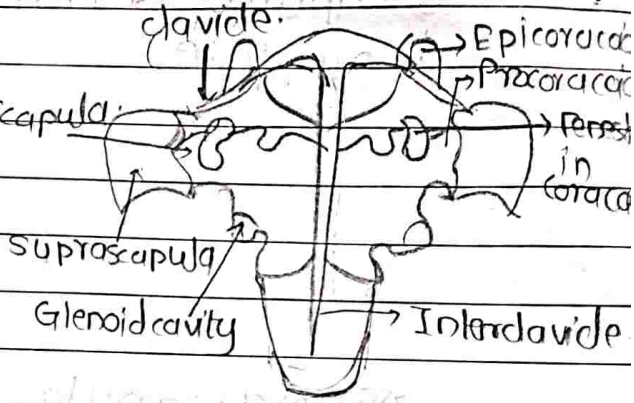


Fig:- Frog
Pectoral girdle.

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" ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार "
- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Signature of Supervisor

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (Autonomous), KOLHAPUR

(10)

Class B.Sc III Div Roll No. 8241

Name: Ganesh Shankar Yegade

Supplement No. Subject Zoology (Paper XIV)

Test / Tutorial No. Home Assignments (Developmental Biology)

Q1. Explain development of brain in chick embryo upto 72 hours.

→ Brain in chick develops from the ectoderm.

Fig:- T.S of chick embryo.

1) The primitive streak, starts forming Neural groove., the basal part of neural groove is called neural plate & the folded region called as neural fold.

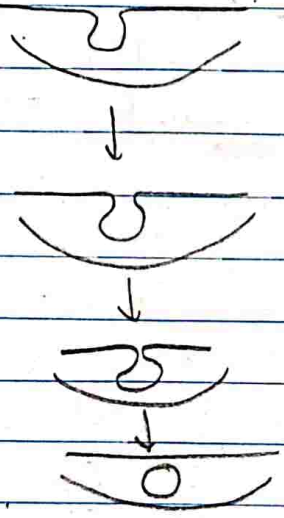


Fig:- Development of neural tube.

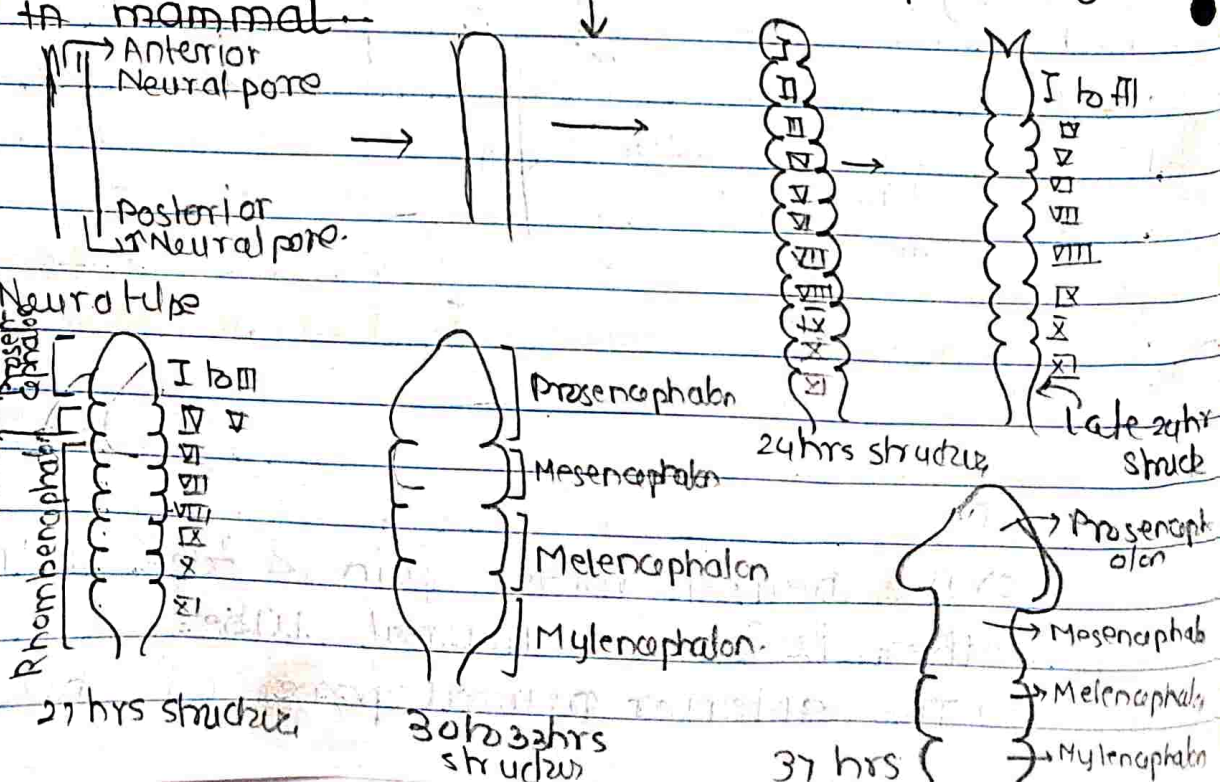
2) The neural folds join & fuse with each other to form a neural tube.

3) The anterior neural pore of neural tube

closes to form a blunt end.
3) It get constricted at 10 regions to form 11 Neuromeres at 24 hours.
4) In late 24 hours the first three neuromeres fuse together to form
5) At 27 hours IV & V^th neuromere fuse together.
6) The Anterior first three neuromeres fused together are called prosencephalon.
7) The IV & V^th fused neuromere is called as Mesencephalon.
8) And from VI to XI it is called Rhombencephalon.
9) Rhombocephalon further divides into Metencephalon & Mylencephalon. int between 30 to 33 hours.
10) At 37 hours it differentiates well into fours parts.

Development of Brain

Q.2 ~~What is gametogenesis? Explain spermatogenesis in mammal.~~



11) During 72 hours the brain thus formed bends.
12) The proseoncephalon divides at 72 hours to form anterior telencephalon enclosing cavity telocoel.
13) The telencephalon at anterior position form a thicker region known as laminar dermabialis which further develops into olfactory lobe.
14) At the constriction between telencephalon & further part there is small outgrowth at lower side called Rathkes pouch.
15) At upper there is small outgrowth called as ephiphysis which further develops into pineal or parietal body.
16) Mesencephalon develops into optic lobe.
17) Metencephalon further develops into cerebellum
18) Mylencephalon further develops into Medulla Oblongata.

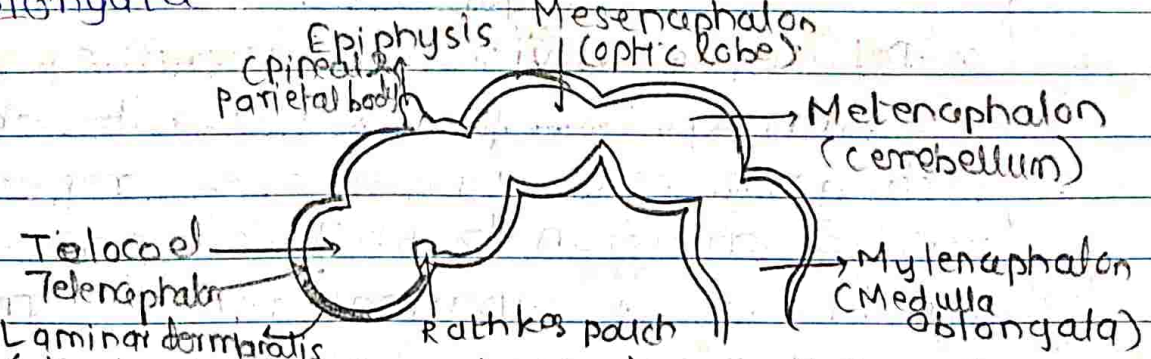


Fig: 72 hour chick embryo

Q2. What is gametogenesis? Explain spermatogenesis in mammal.

→ The process of development of gametes from diploid / haploid cell is called as gametogenesis.

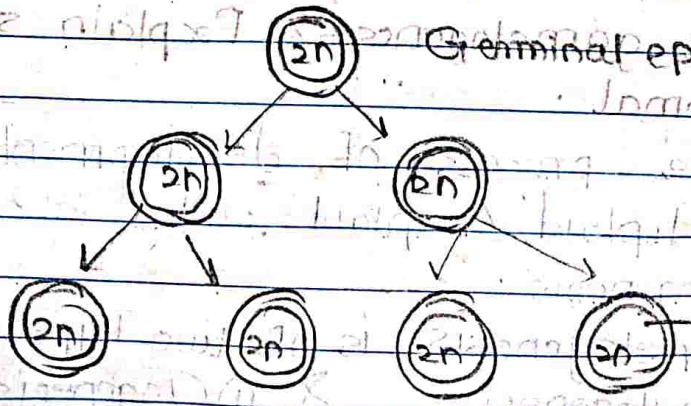
Gametogenesis is of two types. i.e
i) Spermatogenesis & ii) Oogenesis.

Spermatogenesis : results in production of sperms. It occurs in the testes

i) Spermatogenesis is production of sperms form germinal epithelium.
2) Spermatogenesis occurs through two phase
I) Formation of Spermatid
II) Spermeogenesis.

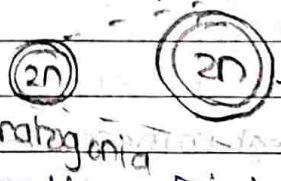
I) Formation of Spermatid
i) This is production of spermatid from germinal epithelium.
ii) During this process haploid sperm is formed from diploid germ layer.
iii) It consist of three process
a) Multiple division Phase
b) Growth phase.
c) Maturation division Phase.

a) Multiple Division phase :-
During this process the, the chromatin rich germ cells under goes repeated mitotic division to produce cells which are known as spermatogonia. The spermatogonia are diploid.



ii) Growth phase:

During this process the spermatogonia thus produced undergo increase in size & shape by accumalation of chromatin fibres & water and nutritional material to produce spermatocyte.



iii) Maturation Division Phase.

The maturation division phase consist of two phase

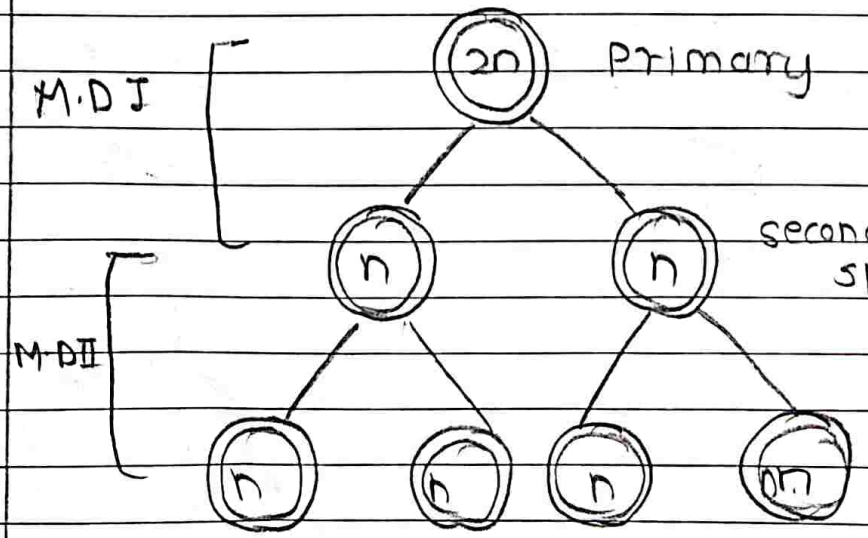
a) Maturation division phase I.
b) Maturation division phase II.

1) Maturation division phase I

During this process the foul grown spermatogonium undergoes meiosis to produce haploid secondary spermatocyte.

2) Maturation division phase II

During this process the secondary spermatocyte undergo meiotic division to produce four haploid spermatids.



II) Spermeogenesis:-
The metamorphic changes occuring in the spermatid is called as spermeogenesis.

During spermeogenesis the spermatid thus formed undergo various changes to morphologically change into mature sperm.
i) The nucleus reduces in size & only nucleolus remains is discarded chromosome remains.
ii) The golgi appartus are shifted towards the anterior region or site and they start disintegrating, some remnants remains.
iii) One of the golgi cisterane enlarges to form acrosomal cap.
iv) The two centrioles get arranged at posterior part of sperm body.
v) Mitochondria starts accumulating at the posterior region known as mitochondrial cloud. The distr
vi) The two centrioles are called proximal & distal.
vii) The proximal centriole produce axial filament and thus the tail of sperm is form

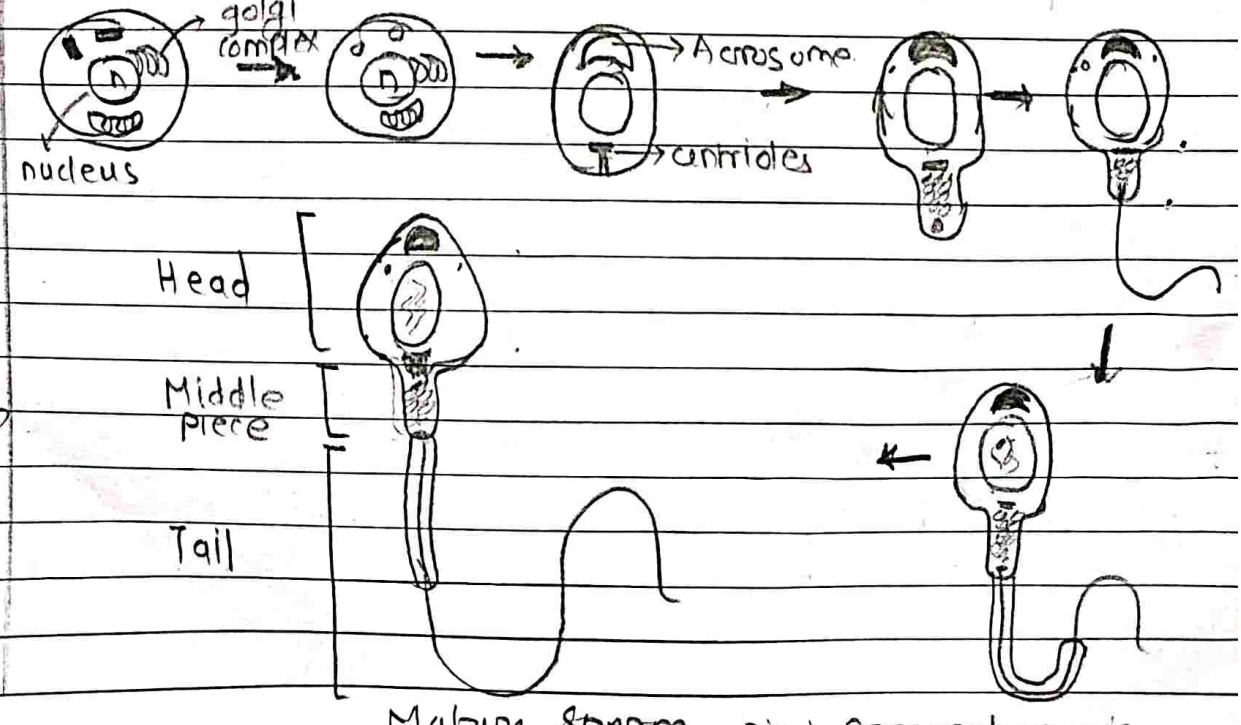


fig:- Spermatogenesis

Signature of Supervisor

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (Autonomous), KOLHAPUR

Class B.Sc III Div (10) Roll No. 8241

Name: Ganesh Shankar Yegade Subject Zoology (Paper XV)

Supplyment No. Test / Tutorial No. Home Assignment (Physiology)

Q1: Describe the Ultrastructure of Nephron & Explain the mechanism of urine formation.

1→ 1) Nephron is the basic structural & functional unit of the kidney.

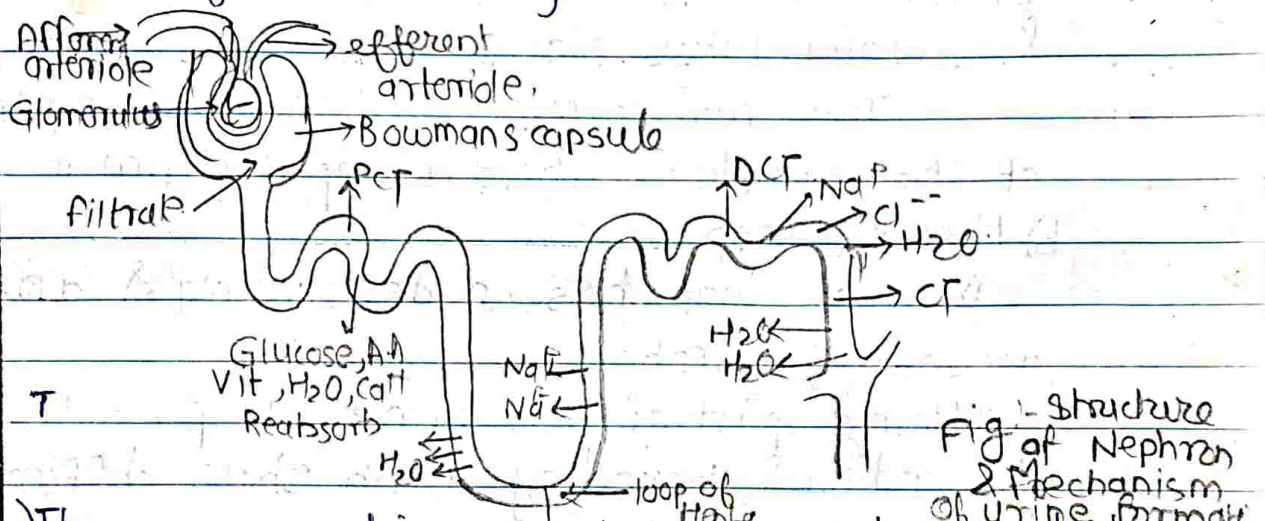


Fig :- Structure of Nephron & Mechanism of urine formation

2) The mammalian nephron is a long tube like structure, its length varying from 35-55mm long.

3) The structure of nephron comprises two major portions.
   i) Renal tubule
   ii) Renal corpuscle.

4) The Renal tubule is a long & convoluted structure that emerges from the glomerulus & can be divided into three parts bases on function.

5) It consist of a proximal convoluted tubule (PCT) due to its proximity to glomerulus, the second pard is called the loop of Henle.

A third part of renal tubule is called Distal convoluted tubule.

a) Proximal Convoluted Tubule (PCT):

The blood brought by the renal artery is filtered by the glomerulus & then passed to the PCT. Maximum reabsorption takes place in PCT of the nephron. PCT is the region of renal tubule where reabsorption of essential substances like glucose, proteins, amino acid, a major portion of electrolytes & water takes place.

The reabsorption is facilitated by the lining of the simple cuboidal epithelium in them.

b) Henle's Loop:-

i) Henle's loop has a descending & an ascending limb.

ii) Being part of the same loop, both descending & ascending limb show different permeability.

iii) The descending limb is permeable to water but impermeable to electrolyte.

iv) The ascending limb is permeable to electrolyte but impermeable to water.

c) Distal Convoluted Tubule (DCT):-

i) The DCT, which is the last part of the nephron, connects & empties it contents into collecting duct that line the medullary pyramids.

ii) Similar to PCT, DCT also secretes ions such as hydrogen, potassium & NH_3 into the filtrate while reabsorbing the HCO_3^- from the filtrate.

iii) Conditional reabsorption of Na^+ ions & H_2O takes place.
iv) DCT maintains pH & Na-K level in blood.
d) Collecting Duct:-
i) Collecting duct is a long, straight tube where H^+ & K^+ ions are secreted to maintain the electrolyte balance of the blood.
ii) This is also the region where maximum of reabsorption of water takes place.

6) Renal corpuscle consist of glomerulus surrounded by a Bowman's capsule. The glomerulus arises from afferent arteriole & empties into an efferent arteriole.
7) Bowman's capsule encloses glomerulus.

= Mechanism of Urine Formation:-
1) The process occurs in the nephron of the kidney.
2) Nitrogenous waste from blood are eliminated as urine.
3) It involves three step:
I) Ultrafiltration
II) Selective Reabsorption.
III) Tubular secretion.

I) Ultrafiltration:-
1) It is a first step in urine formation & it begins when large amount of fluid (blood) is filtered from glomerulus capillaries into Bowman's capsule
2) The filtration of blood under high osmotic pressure is called ultrafiltration.

3) Blood enters the glomerulus by afferent arteriole with greater diameter & drain away by efferent arteriole with small diameter.
4) Due to difference in diameter blood is filtered under pressure. Due to this pressure large molecule remain in blood while smaller molecules are passed through podocyte cell of bowman's capsule.
5) This form glomerulus filtrate.
6) It is about 125 ml/ urine.

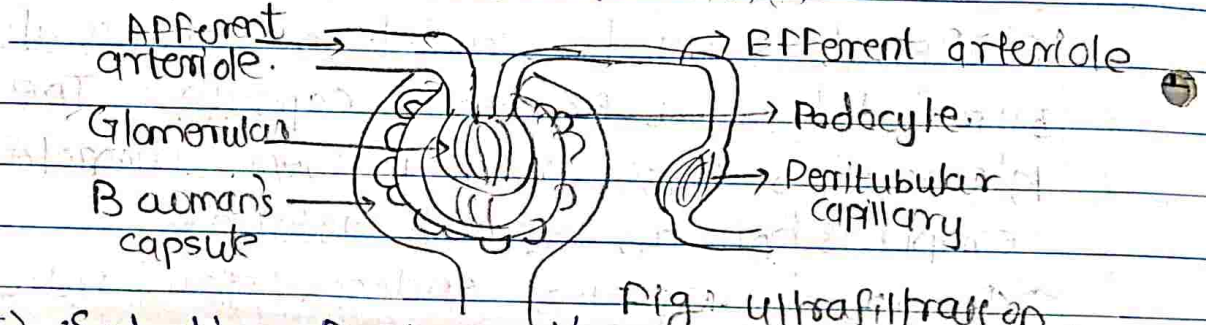


Fig: Ultrafiltration.

II) Selective Reabsorption.

The process by which useful substance are absorbed from glomerulus filtrate is called selective Reabsorption.

Reabsorption in

i) PCT - It reabsorbs glucose, Vitamin & Amino acid & minerals like Ca^{++}; 75% of K^+ & 70% of Na & Cl^-
ii) Loop of Henles
   a) Ascending - ~~H_2O~~ is reabsorbs Na^+ & K^+ ions
   b) Descending - H_2O is reabsorbed
iii) Reabsorption in DCT & CT
   - It reabsorbs Na^+ ions actively & Cl^- ions passively. It also absorbs H_2O & maintain pH & Homostasis.

III) Tubular secretion :-

The sepration & secretion of unwanted

substances from perityubular capillary to tubular fluid is called peritubular capillary. The harmful substances passed into efferent arteriole is absorbed & secreted back to DCT & CT.

Approximately 800 to 2000ml urine is excreted per day in normal person.

Q.2 Describe Ultrastructure of neuron or nerve cell & explain transmission of nerve impulse across the nerve fibre.

→ Nerve cell is the basic structural & Functional unit of Nervous system.

The description of neuron is given below:-
There are several different types of neurons found in the nervous system. The all contain they all contain the same key structural components the cell body, dendrites, the axon & the axon terminal.

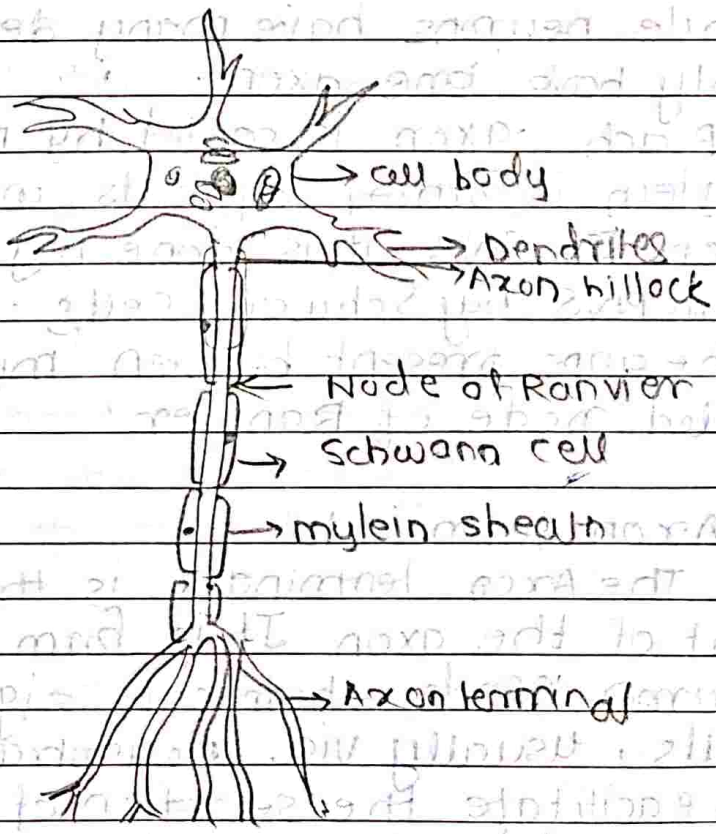


Fig:- structure of nerve cell

1) Cell body:-
The Cell body holds the nucleus. It is the site of protein synthesis which occurs on small granules of Rough endoplasmic reticulum called nissal substance.
In the nervous system, many neuronal cell bodies can group together to form a distinct structure. In CNS this known as a nucleus in the PNS as a ganglion.

2) Dendrites:-
The dendrites are elongated portions of the cell body. They extend outwards, receiving input from the environment & from other neurons.

3) Axon:-
The Axon is long, thin structure down ~~which~~ where action potentials are conducted While neurons have many dendrites they only have one axon.
Each axon is coated by mylein, The mylein is formed by cells wrapping around axon. In CNS it is done by Oligodendrocytes & in PNS by Schwann's cells.
The gaps present between mylein sheath is called node of Ranvier.

4) Axon terminals:-
The Axon terminals is the most dilated part of the axon. It is form here that the neuron sends chemical signal to other cells, usually via neurotransmitter. Release. To facilitate the secretion of neurotransmitters, the axon terminals contain a large number of mitochondria.

Date Page

⊙ Conduction of nerve impulse across the nerve fibres.

The axon of nerve fibres are in the form of a cyclinder where in the interior of the axon is filled with axoplasm & exterior is covered with axolemma.

Outside the axon, the negatively charged chloride ions are neutralized in the presence of positively charged sodium ions. Negatively charged protein molecules are neutralized in the presence of potassium ions with the axoplasm

The membrane of a neuron -ve inside & +ve outside.

Resting potential would be the difference in charge. The difference in charge might vary from 70 to 90 mV as a result the membrane would be polarized. Na-K metallic pump operates to keep resting potential in equilibrium.

The pump is placed on the axon membrane. Now the K ions are pumped from extracellular fluid (ECF) to axoplasm & Na^+ ions are placed from axoplasm to ECF.

The Na-K pump stops operating when a stimulus is applied to a membrane of nerve fibre. The stimulus could be either electrical, chemical or mechanical. The K^+ ions rush outside the membrane & sodium ions rush inside the membranes as a result -ve charges are present outside & positive charges are present inside.

The nerve fibres are either depolarized or they are said to be in action potential. The action potential travelling along the membrane would be the nerve impulse. It is around +30mV. The Na-K pump starts

starts to operate once the Action potential is completed. As a result, the axon membrane will obtain a resting potential by repolarization. Now the process takes place in a reverse order. It is a reversal of the process that has taken place during an an action potential. Here, potassium ions will be rushed inside & Na ions outside.

Impulse is not transmitted during refractory period. These impulse then jumps from node to node & it increases with increase in speed of nerve impulse.

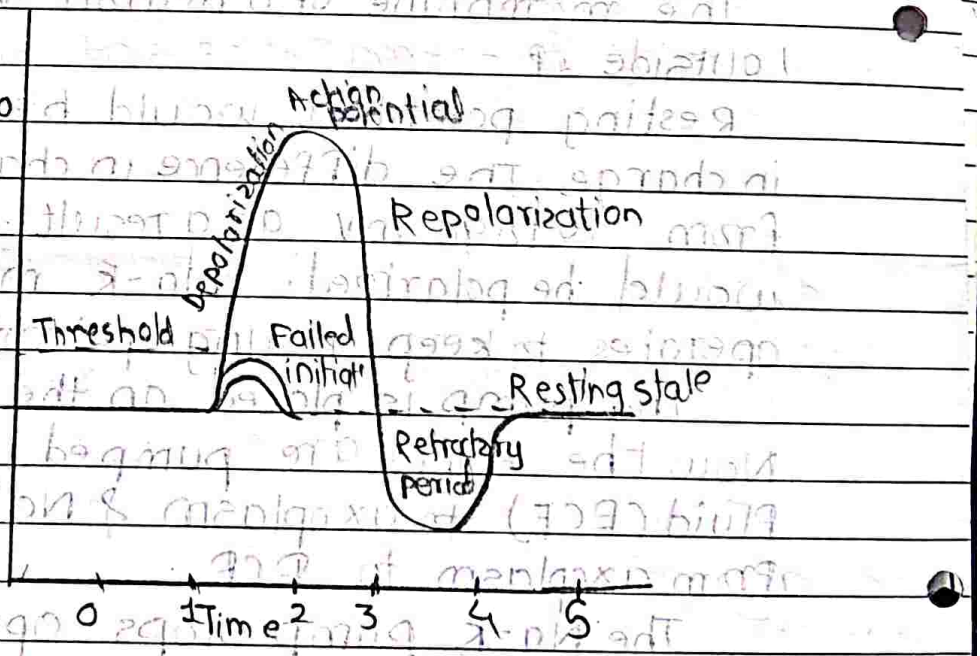


Fig: Fig showing different phases in Action potential

Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (Autonomous), KOLHAPUR

Class B.Sc III Div (10) Roll No. 8241

Name: Ganesh Shankar Yegade Subject Zoology (Paper-XVI)

Supplyment No. Test / Tutorial No. Home Assignment (Applied Zoology).

Q1. Describe the economic importance of Fin Fishes.

→ Fin Fishes are the Fishes (vertebrates) having fins.

The Fishes have huge economic importance as listed below.

I) Food value:-

i) Fish serves as an important food for human.

ii) Edible tissue of Fish are appreciably greater than that in chicken, pig & sheep/goat

II) Nutritive value:-

i) Fish is highly nutritious.

ii) It provides tasty, low calorie meat but is a good source of high quality protein.

iii) Fish is an almost zero carbohydrate food, good for diabetes & other such patients

iv) The protein content of Fish varies from 15-30% on wet weight basis & 60-80% on dry weight basis.

v) Fish are low in Fat & cholesterol.

vi) It is a good source of vitamin A, B, & D.

vii) It is also good source of calcium,

iodine, flourine, magnesium & zinc.
viii) It is rich in polyunsaturated fatty acid containing Omega-3.

III) Medicinal value:

Fish is low in fat, high in protein & an excellent source of omega-3 fatty acids. Regular consumption of fish can reduce the risk of various diseases & disorders. some research finding indicate the following:

1) Asthma :- Children who eat fishes are less likely to develop asthma.
2) Brain & eyes :- Fish rich in Omega-3 fatty acids can contribute to the health of brain tissue & the retina of eyes
3) cancer - The omega-3 fatty acids in fish reduce the risk of many types of cancers by 30 to 50 %.
4) Cardiovascular disease :- Eating fish every week reduces the risk of heart disease & stroke by reducing blood clots & inflammation
5) Dementia :- Elderly people who eat fish or seafood at least once a week may have a lower risk of developing dementia.

IV) Fish products:-

a) Fish meal:

The dried & ground preparation of unused or trash fish is called fish meal and is a highly nutritive product that makes an excellent feed for poultry, pig, cattle & fish.

b) Fish oil :- Fish oil of two kinds, body oil

& liver oil. The oil extracted from the whole body of the fish is called fish body oil. The fishes are minced, steamed & then pressed for oil recovery, then subject to filter to refine. It is very rich in iodine.

Q.2 Describe different housing method in poultry birds.

→ Rearing of Hens for Meat or egg is called as Poultry.

The poultry house is of the following types:

1) Deep litter house
2) Cage house
3) Layer house
4) Broiler house.
5) Brooder house
6) Grower house.

The deep litter house contains litter materials on the floor. The litter materials may be saw dust or wood shavings or groundnut hulls or paddy husk. The birds are reared on the litter.

The cage house contains cages where fowl are reared.

The layer house is meant for rearing layers. The layer house may be deep litter house or a cage house.

The broiler house is meant for rearing broilers.

The brooder house is meant for rearing chicks upto the age of 8 weeks.

The grower house is meant for rearing the grower chicks from the age of 8 weeks to 18 weeks.

⊙ Principle for the Construction Poultry House

The construction of Poultry house needs the following principles:

1) Selection of Site:-

i) The poultry farm should have regular transport services

ii) There should be roads

iii) Water facility must be available.

iv) Electricity must be there.

v) Water logged places should not be selected. A well drained soil is desired

vi) A sloping hill side is preferable.

vii) Poultry house should not be close to homes.

viii) Shady trees give protection.

ix) The poultry house should face South or North

2) Independent House:-

i) The poultry house should be independent with fours walls. There should not be any shed adjacent to another one.

3) Direction:-

The poultry house should face South or North, that is the long axis of house should be in East - West direction.

4) Size:-

i) The floor requirment for a broiler is one square foot of floor space. A layer requir two square feet floor space.

ii) The house is constructed according to the number of birds to be reared.

iii) A shed of 2000 birds may be constructed

iv) The house may be constructed always with increasing length keeping the width of about 20 feet

5) Pens:-

The long house can be divided into different compartment using wire meshes is called pens.

6) Foundation.

A foundation of 1 to 1½ feet below the surface of the Earth are essential.

7) Height

The height of 1 to 1/2 feet below the surface of the Earth is essential.

8) Walls:-

The walls must be plastered.

9) Ventilation:-

The walls must be fixed with chicken mesh for aeration

10) Roof Type:-

The roof type ~~must~~ should be slooping towards the South & North

11) Roofing materials:-

Asbestos is the best for poultry house.

12) Overheating:-

The overhang of the roof should not be less than about 3.5 feet on each side is essential.

13) Door:-

The door should be on the Southern side.

14) Foot Bath

A foot bath is constructed near the door

15) Flooring:-

The flooring must be concrete.

② Cage System

1) Rearing poultry birds in cages is called cage rearing. It is an intensive method of poultry keeping. It is also called battery system
2) In cage system, mainly layer birds are reared. However broilers are also reared in the cage system.
3) Cages are constructed in a poultry house
4) The cages are either suspended from the roof of the poultry house or they are erected from the floor on iron rods.
5) The cages are arranged in longitudnal rows in the poultry house.
6) The cage is made up of wire-mesh.
7) A typical cage has 18 inches deep, 18 inches height infront & 15 inches height in the back. There is a slope forwards. The length of the cage depends upon the space available in the poultry house.
8) The top of cage has a lid.
9) The floor of the cage is extended forward for 7 inches is an egg collecting tray. The egg remain here.
10) Feeder & waterer are installed above the
11) If overhead tank is available nipple drinkers

12) In a poultry shed, the cages are arranged in many rows one above the other. This is the Californian type. The cages are erected from the floor.
13) The drooping directly fall on the floor.
14) The floor is spread with deep litters materials. The litter materials can be retained for few months.

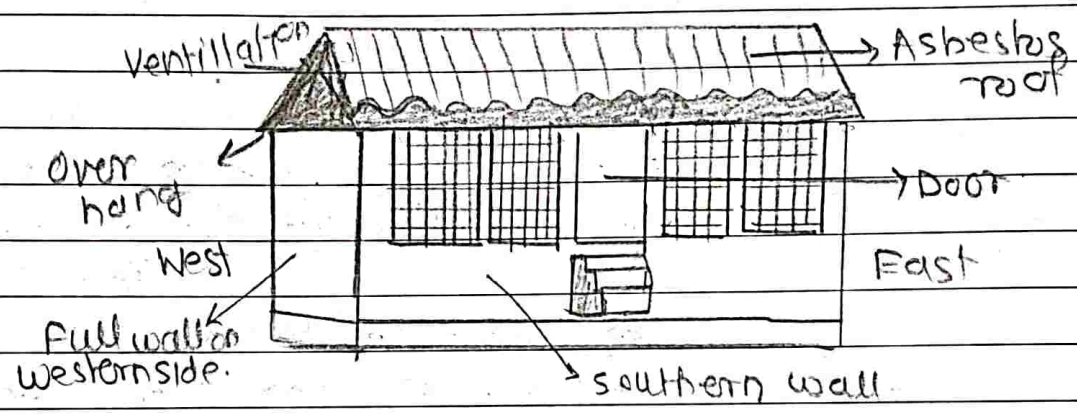


Fig:- A model poultry house.

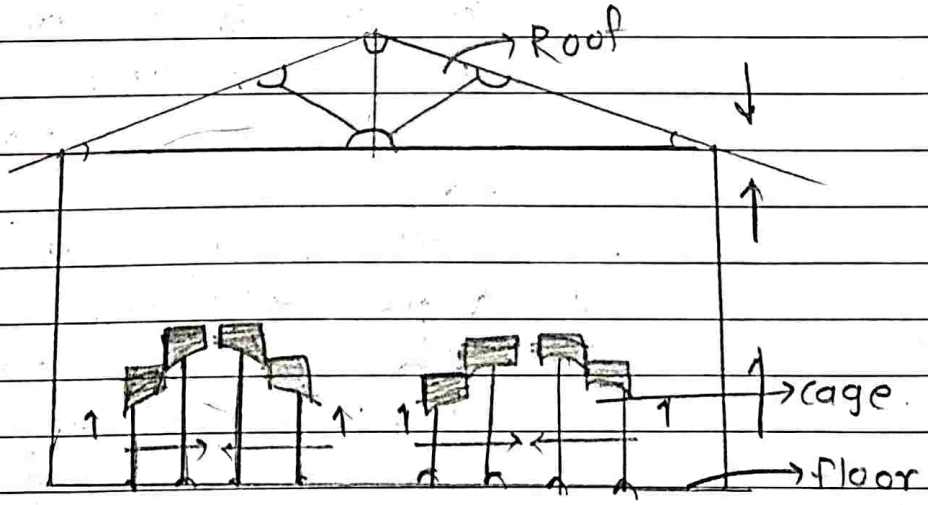


Fig:- Cage System

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