HIGHER SECONDARY PRACTICAL EXAMINATION-2021

ZOOLOGY

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HIGHER SECONDARY PRACTICAL EXAMINATION-2021 ZOOLOGY

- Time: 1½ Hrs
- Total score: 20

Instruction

- All the items are compulsory
- The materials needed will be provided in the Centre.
- Preparation time- 10 min

- 01-Identify the given invertebrate animal. Write one identifying character/one economic importance/ one adaptation.

Hydra, Liver fluke, Ascaris, Leech, Earthworm, Silkworm, Honey bee, Pila, Starfish)

- Identification - ½ score
- One Value Point -½
- score Time - 4 min

A-HYDRA

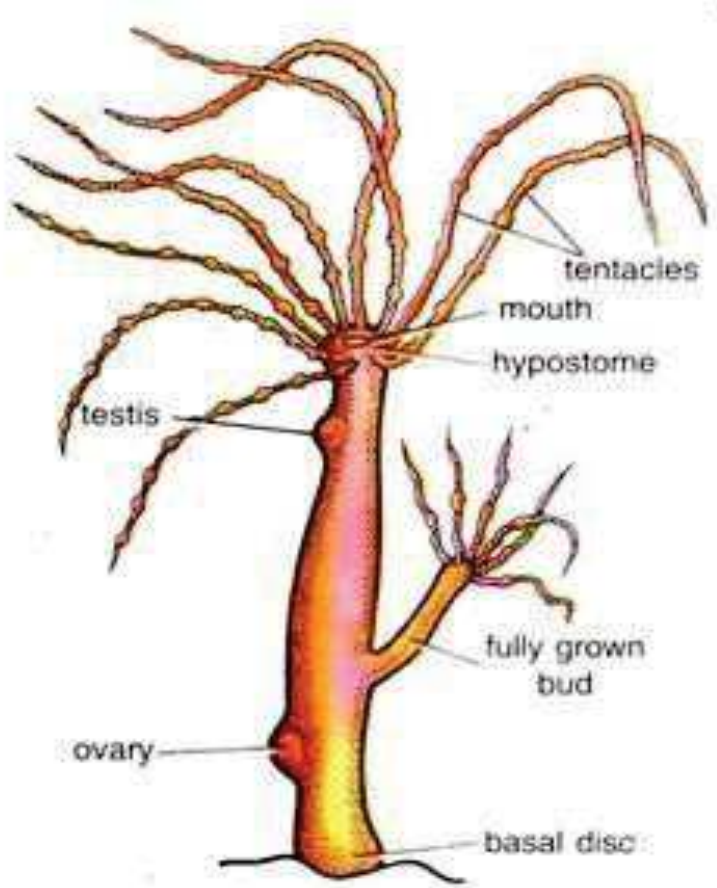


Fig. 31.1. *Hydra.*

A-HYDRA

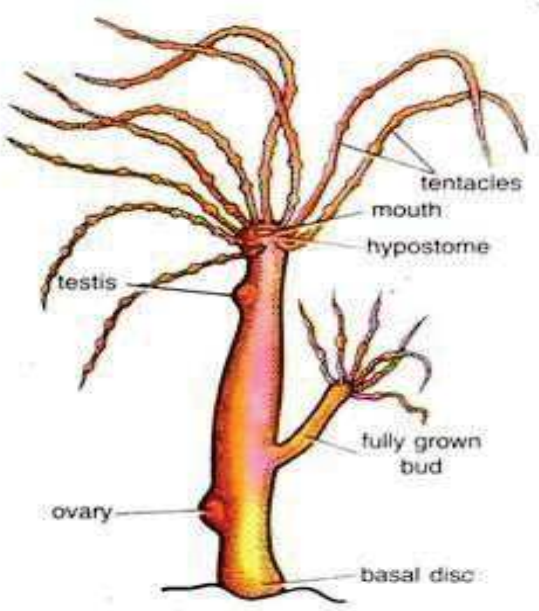


Fig. 31.1. *Hydra*.

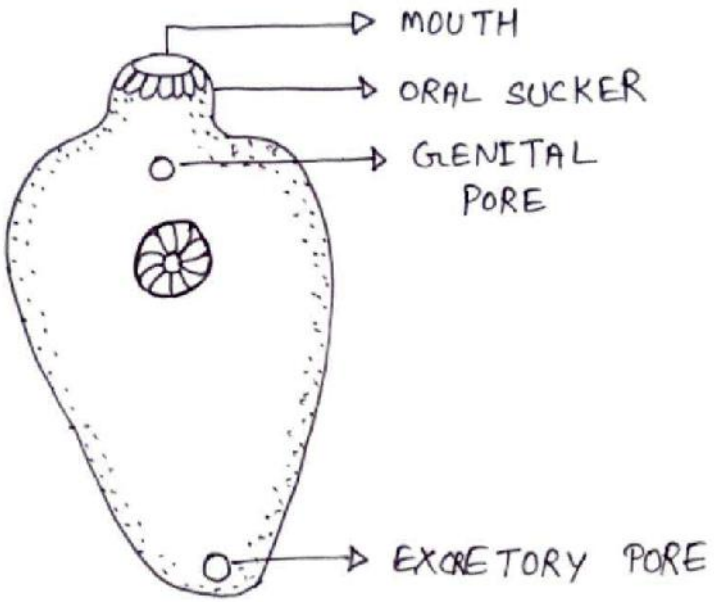
Characters

- Tissue level of organisation
- Radially symmetrical
- Presence of gastrovascular cavity
- Digestion Both Extra cellular and intra cellular
- Presence of Tentacle
- Shows alternation of generation (metagenesis)

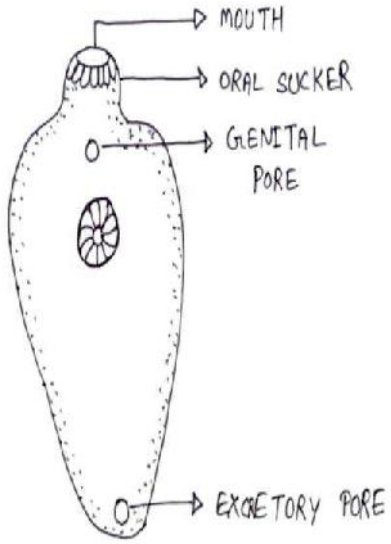
Adaptation

- Tentacle helps in food gathering and locomotion
- Cnidoblast present. It helps in Anchoring, defence, capture of prey

B- LIVER FLUKE



B-LIVER FLUKE



Characters

- Dorso ventrally flattened leaf like body
- They are endoparasite of sheep
- Oral suckers present
- Excretory organs are Flame cells
- They are Hermaphrodites

Adaptation

- Oral suckers helps in attachment of the parasite within the host
- Muscular pharynx helps to suck blood and fluid from host
- Body is covered by cuticle. It helps to protect the liver fluke from the action of host's Enzymes.
- Respiration anaeroboc

Economic importance

- Liver fluke causes Fasciolasis (Liver rot diseases)
- This disease cause death of sheep. It result great economic loss to farmers

C- ASCARIS

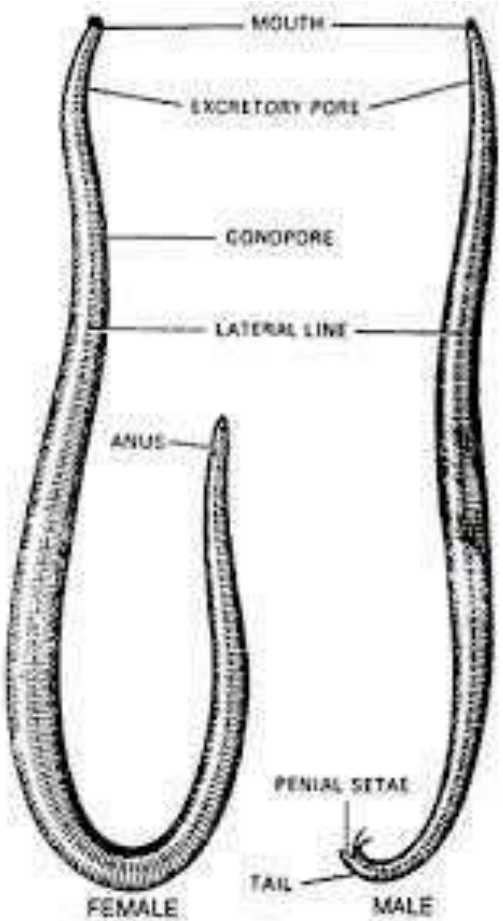


Fig. 189. ASCARIS

C-ASCARIS

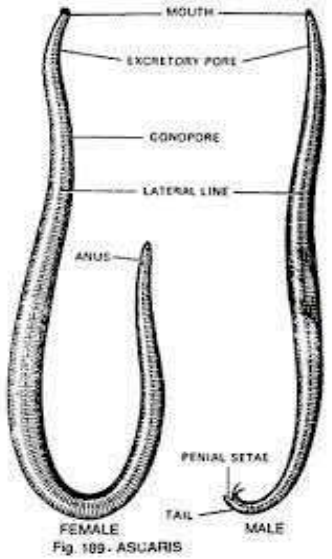


Fig. 189. ASCARIS

Characters

- Long cylindrical Body, pointed at both ends
- They are endoparasite in the small intestine of man
- Sexes are separate. Females are longer than male
- Body is covered by cuticle. It helps to protect the liver fluke from the action of host's Enzymes

Adaptation

- Body is covered by cuticle. It helps to protect the liver fluke from the action of host's Enzymes
- Anaerobic respiration present
- Digestive food is sucked by Muscular pharynx

Economic importance

- This worm cause Ascariasis in man.

D-LEECH

D-LEECH

Characters

- It is ectoparasite
- It is Sanguivorous (Blood sucking) animal
- It is Hermaphrodite
- Saliva of leech contain anticoagulant Hirudin
- Body is formed of 33 segments

Adaptation

- It has saw like tooth for making wound in the host
- It has suctorial pharynx for sucking blood
- Saliva of leech contain an anticoagulant hirudin
- It has large crop for storing blood

Economic importance

- It is used in the treatment of Rheumatism for sucking venous blood
- It is used as fish bait in some countries

E- EARTHWORM

E-EARTH WORM

Characters

- Body is metamerically segmented
- Dorsal side contains dorsal blood vessel
- Locomotory organs are 'S' shaped Setate
- It has cutaneous respiration
- Excretory organ is Nephridia
- It is hermaphrodite

Adaptation

- First segment of earthworm is called Peristomium, it has anterior extension called prostomium. It helps in cracking the soil while crawling
- Skin is moist and helps in respiration (Cutaneous)

Economic importance

- It makes burrows in the soil, it permit aeration and easy penetration of plant roots.(Friend of farmer)
- It increases the fertility of soil by vermicomposting
- It is used as a bait in fishing

F- SILKWORM

F-SILKWORM

Characters

- Silk worm is the caterpillar of silk moth
- The life cycle of silk moth has 4 stages-Egg, caterpillar, pupa, adult
- Silk worm has segmented body
- The body is divided into head, thorax and abdomen
- The head bear silk gland , it produce silk

Adaptation

- Malpighian tubules are excretory organs
- Silk glands helps silk production

Economic importance

- Natural silk is obtained from the cocoon of silk worm
- A single caterpillar is said to produce about 300 m of silk thread
- The rearing of silk (Silk worm production) for the production of silk is called sericulture. It provide employment opportunities
- Silk is used in textile industry
- The rearing of silkworm for the production of silk is called sericulture.It provide employement in textile industry

G- HONEYBEE

G- HONEYBEE

Characters

- It has jointed appendages
- Body is divided into head, thorax and abdomen
- Honey bees have very interesting mode of communication through sound, dance, scent, gestures
- The colony contains-Queen, worker and Drone

Adaptation

- Mouth parts are adapted for collecting honey from flowers
- Presence of hairy legs helps in pollination
- Body is covered by chitin

Economic importance

- They provide honey and wax
- Honey has great medicinal and nutritive importance
- Bee wax is used for making candle, cosmetics etc
- Bee keeping (Apiculture) provide employment opportunities

H- PILA

H-PILA

Characters

- It is a amphibious mollusc
- Body is divided into head, visceral hump and muscular foot
- It has 2 pairs of tentacle and eyes are stalked
- Gills helps in both respiration and excretion

Adaptation

- Calcareous shell protect the body
- Radula is a rasping organ and helps in feeding
- Aestivation or summer sleep is performed by the animall to escape from drought
- Gills helps in respiration

Economic importance

- Its flesh is used as food by man
- Its shell is used for making decorative ornamental articles
- It is used as a fish bait
- It is used as a food for ducks

I- STARFISH

I-STAR FISH

Characters

- Star shaped marine animal
- Larva is bilaterally symmetrical while adult is Radialy symmetrical
- It has 5 arms
- Water vascular system present.
- It has greater power of regeneration

Adaptation

- Tube feet helps in locomotion and food collection
- It has spiny exoskeleton, that helps in defence
- It has high power of regeneration.

Economic importance

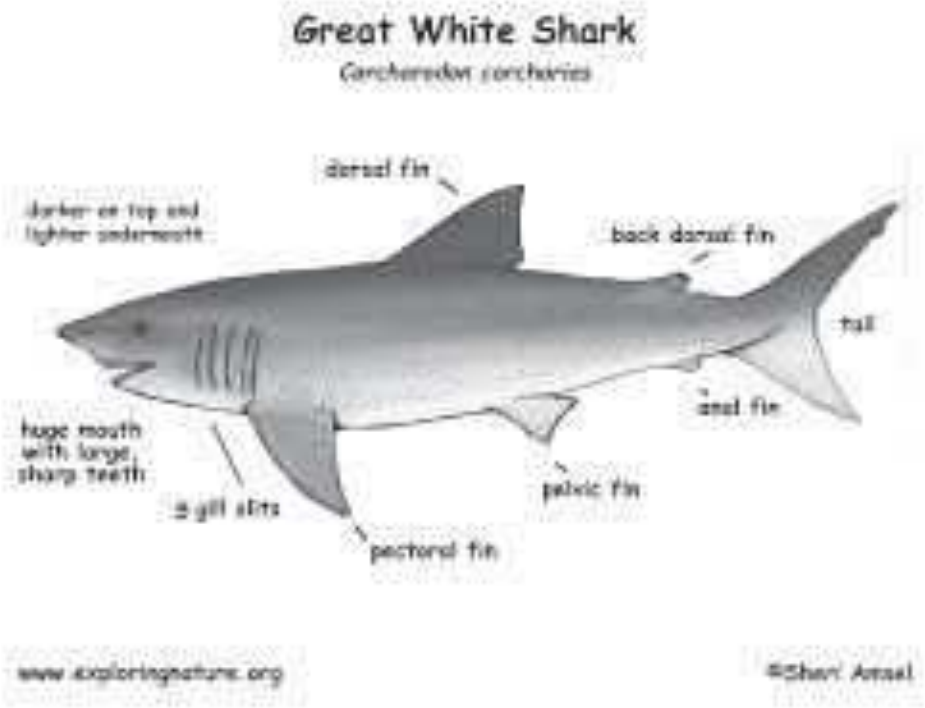
- It is used as food in some areas
- It is dried and powdered and used as a source of calcium to plants in agriculture

02-Identify the given vertebrate animal. Write one identifying character/ one economic importance/ one adaptation

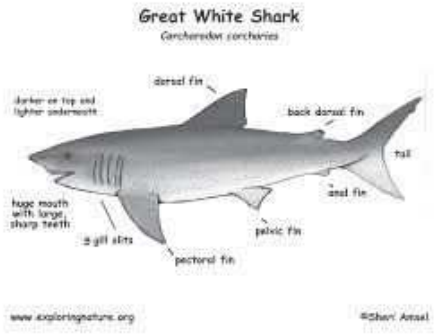
(Shark, Frog, Calotes, Pigeon, Rabbit)

- Identification - ½ score
- One Value Point -½score
- Time - 4 min

A- SHARK


Great White Shark
dorsal fin
back dorsal fin
tail
anal fin
pelvic fin
pectoral fin
5 gill slits
huge mouth with large, sharp teeth
www.exploringnature.org

A-SHARK



Characters

- Cartilaginous fish
- Mouth located ventrally
- Skin is tough covered by Placoid scale
- Spindle shaped body

Adaptation

- **Gills are present for aquatic mode of respiration**
- **Body is spindle shaped**
- **Fins helps in swimming**

Economic importance

- **It is used as food**
- **It is used form making fish oil**
- **Shark liver oil is rich in Vitamin A and D**
- **Its skin is used in leather industry**

B- FROG

B-FROG

Characters

- Body is divided into head and trunk
- The skin is moist and smooth
- Respiration takes place through skin, lungs and buccal cavity
- The larvae is aquatic and called it as tadpole
- Frog is Ureotelic while tadpole is ammonotelic
- It shows hibernation (Winter sleep) and aestivation (summer sleep)

Adaptation

- Body is well adapted for both aquatic as well as terrestrial mode of life
- The intestine is short because they are carnivores
- Skin is moist and smooth and it helps in cutaneous respiration
- It shows hibernation (Winter sleep) and aestivation (summer sleep)

Economic importance

- Its flesh is used as food
- It plays an important role in the biological control of pest in agriculture

C- CALOTES

C-CALOTES

Characters

- The body is divided into head, neck, trunk and tail
- Body is coved by epidermal scale
- It is capable of changing colour according to surrounding (Camouflage)
- Male lizards ad larger than female
- Neck of male lizard become crimson red during breeding season to attract female

Adaptation

- Body is coved by epidermal scale
- It is capable of changing colour according to surrounding (Camouflage) to protect from predators
- Neck of male lizard become crimson red during breeding season to attract female
- It excrete uric acid to prevent water loss
- It has sticky tongue for capturing prey

Economic importance

- It is an important member of food web and maintain balance of nature
- It eat insect and protect the crop

D- PIGEON

D-PIGEON

Characters

- Body is covered by feathers
- The body is divided into head, neck, trunk and tail
- Forelimbs are modified as wings
- Hind limbs are clawed
- It make nest. Both male and female incubate the eggs

Adaptation

- Fore limbs are modified as wings
- Bones are pneumatic
- Boat shaped body reduce friction while flying
- It has keen power of vision
- Beaks are adapted for feeding seeds and grains
- Presence of additional air sacs helps in respiration and buoyancy

Economic importance

- Both flesh and eggs are used as food by man
- Their excreta form a good manure
- Feathers are used for decoration
- Badminton shuttlecocks are manufactured from its feather
- Pigeons are used as messengers in war and love affairs

E- RABBIT

E-RABBIT

Characters

- Body is covered by fine hairs
- It has large movable pinna
- It has sensory hairs called Vibrissae
- It has muscular hind limb for leaping
- It has short bushy upwardly curved tail

Adaptation

- Fore limbs are adapted for digging the burrows where as hind limbs are adapted for leaping
- Mammary glands helps in nourishing the babies
- Tail used as a warning signal to other rabbits when danger approaches
- Hairy skin help to keep body temperature

Economic importance

- Its flesh is edible
- Skin is used in leather industry
- It is used as an experimental animal in medical and genetic research
- Rearing of rabbit for food and skin offer employment opportunities

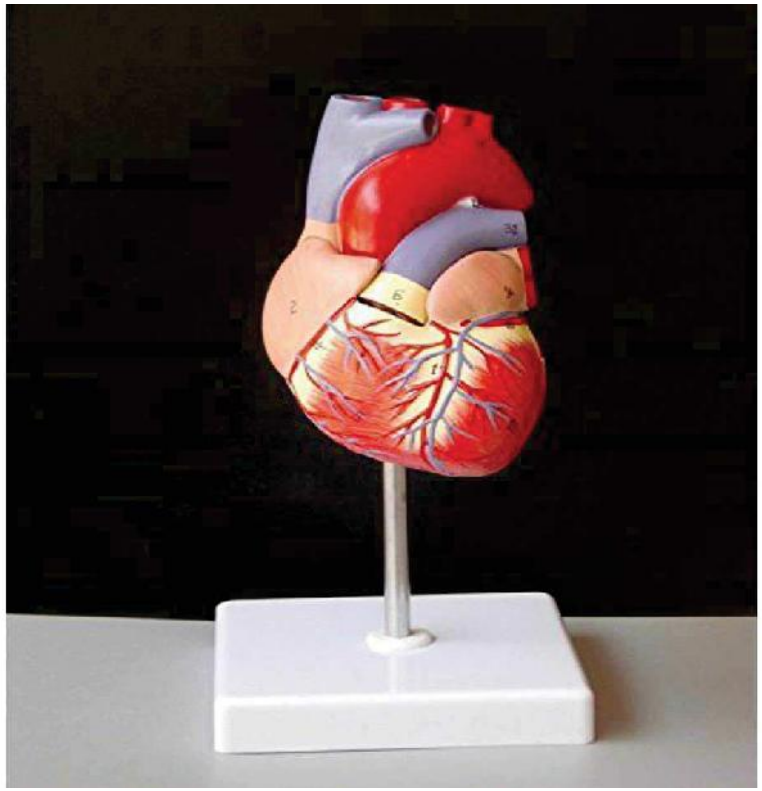
03-Identify the given model or Name the marked part. Write one physiological function.

(Heart, Brain, Kidney, Ear, Eye)

- Identification - ½ score
- Function - ½ score
- Time - 4 min

A-HEART

- The given model is Human Heart

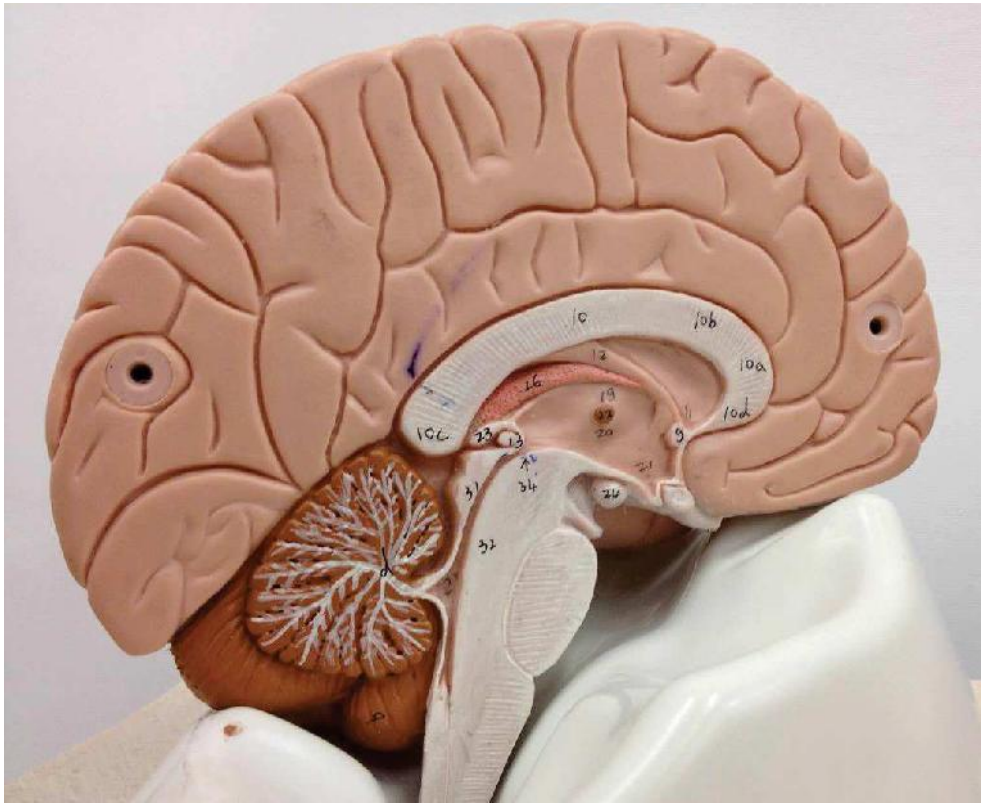


A-HEART

Sl No.	Specified part	Functions
1	Right Atrium	It receives impure blood (deoxygenated blood) from various body parts through superior and inferior vena cava
2	Left Atrium	It receives pure blood (Oxygenated blood) from lungs through Pulmonary vein
3	Right Ventricle	It receives impure blood from right atrium through tricuspid valve and pump the blood to lungs through Pulmonary artery
4	Left Ventricle	It receives pure blood from left atrium through bicuspid valve (Mitral valve) and pump the blood to various Body parts through aorta
5.	Aorta	It pumps out pure blood (oxygenated blood) from left ventricle to various body parts
6.	Superior vena cava	It carry impure blood (Deoxygenated blood) from anterior part of the body
7.	Inferior Vena cava	It carry impure blood (deoxygenated blood) from posterior part of the body
8.	Pulmonary artery	It carry impure blood (deoxygenated blood) from right ventricle to lungs
9.	Pulmonary Vein	It carry pure blood (Oxygenated blood) from lungs to Left atrium
10.	Coronary artery	It carry pure blood (oxygenated blood) to Heart Muscle
11.	Tricuspid valve	It is located between right atrium and right ventricle. It prevent backward flow of blood from right ventricle to right atrium during ventricular systole
12	Bicuspid valve/Mitral valve	It is located between left atrium and left ventricle. It prevent backward flow of blood from left ventricle to left atrium during ventricular systole

B- BRAIN

- The given model is Human Brain



B-BRAIN

Sl No.	Specified part	Functions
1	Cerebrum	It coordinate, memory, intelligence and judgement. It control voluntary action and also involuntary actions. It is the centre of vision, hearing,taste, touch and smell
2	Corpus Callosum	It contain fibre tract, that connect 2 cerebral hemisphere.
3	Cerebellum	It maintain equilibrium of the body, control and coordinate the involuntary activities of the muscle.
4	Medulla oblongata	It control various involuntary actions like respiration, circulation, salivation, vomiting, and swallowing
5	Hypothalamus	It regulate temperature, hunger, thirst and emotional actions. It also secrete neurohormones such oxytocin, Vasopressin, releasing hormone and Inhibitory hormone
6.	Thalamus	It act as a relay centre from and to the cerebrum

C- KIDNEY

- The given model is Human Kidney

C-KIDNEY

Sl No.	Specified part	Functions
1	Right and left kidney	Excretion and osmoregulation
2	Ureter	It carry urine from kidney to urinary bladder
3	Urinary bladder	Storage of urine
4	Urethra	It transport urine from urinary bladder to outside
5	Renal Cortex	It contains Bowman's capsule, PCT, and DCT.
6.	Renal Medulla	It contains ascending, descending limb of nephron. Renal medulla also contains vasa recta. Both Henles loop and vasa recta helps in concentrating urine.
7.	Renal Pelvis	It collect urine from collecting duct and pass it through Ureter.

D- EAR

- The given model is Human Ear

D-EAR

Sl No.	Specified part	Functions
1	Pinna	It collect sound waves and send it into auditory canal
2	Auditory canal	It sends sound waves to ear drum. It secretes ear wax. The hair and the wax trap dust and other foreign bodies that enter the ear
3	Ear Drum	It produce vibrations according to the sound waves
4	Malleus	It transmit the vibration from ear drum to the Inner ear
5.	incus	
6.	stapes	
7.	Eustachian tube	It equalises the middle ear pressure with atmospheric pressure
8.	Semicircular canal	They maintain equilibrium or balance of the body
9.	Cochlea	It cause hearing
10.	Auditory canal	It send auditory signal from ear to brain

E-EYE

- The given model is Human Eye

E-EYE

Sl No.	Specified part	Functions
1	Sclera	It is the outermost layer of the eye that gives protection, rigidity and shape to the eye ball
2	Cornea	Light enters into eye through the cornea
3	Iris	It gives colour to the eye. It control the amount of light entering into retina
4	Choroid	Middle layer of human eye. it contain blood vessel, that supply nutrients and oxygen to the eye ball. It also prevent reflection within the eye ball
5	Lens	It is biconvex in shape. It focuses light from object onto the retina
6.	Retina	It produce the image of the object which result in vision.It contain photosensitive cells cones and rods
7.	Optic Nerve	It transmit impulse for vision to visual cortex of the brain
8.	Yellow spot	It is also called macula lutea, where visual acuity is maximum. Here Cone cells are highly concentrated or it is the area of sharpest vision
9.	Bind spot	Both Rods and Cones are absent here. Image falling at this spot cannot be carried to the brain.

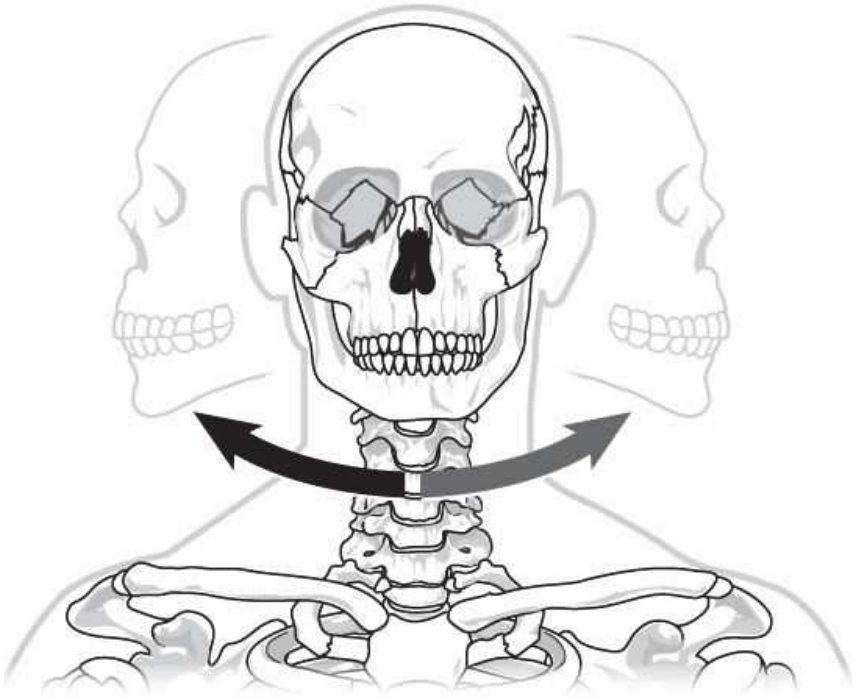
04-Identify the type of joint. Write one peculiarity.

(Pivot Joint, Ball & Socket joint, Hinge Joint)

- Identification - ½ score
- Peculiarity - ½ score
- Time - 4 min

A- PIVOT JOINT

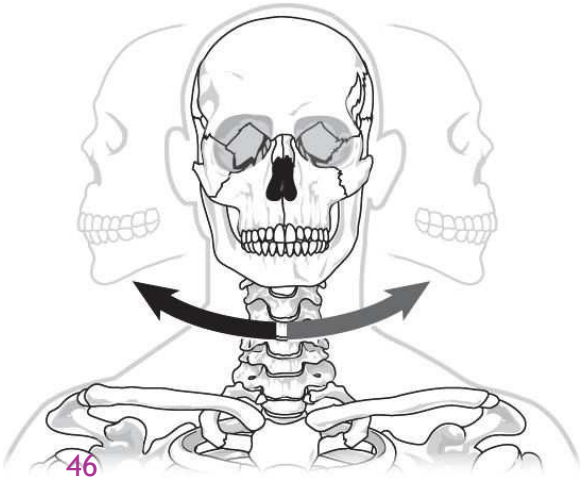
- The given type of joint is Pivot joint



A-PIVOT JOINT

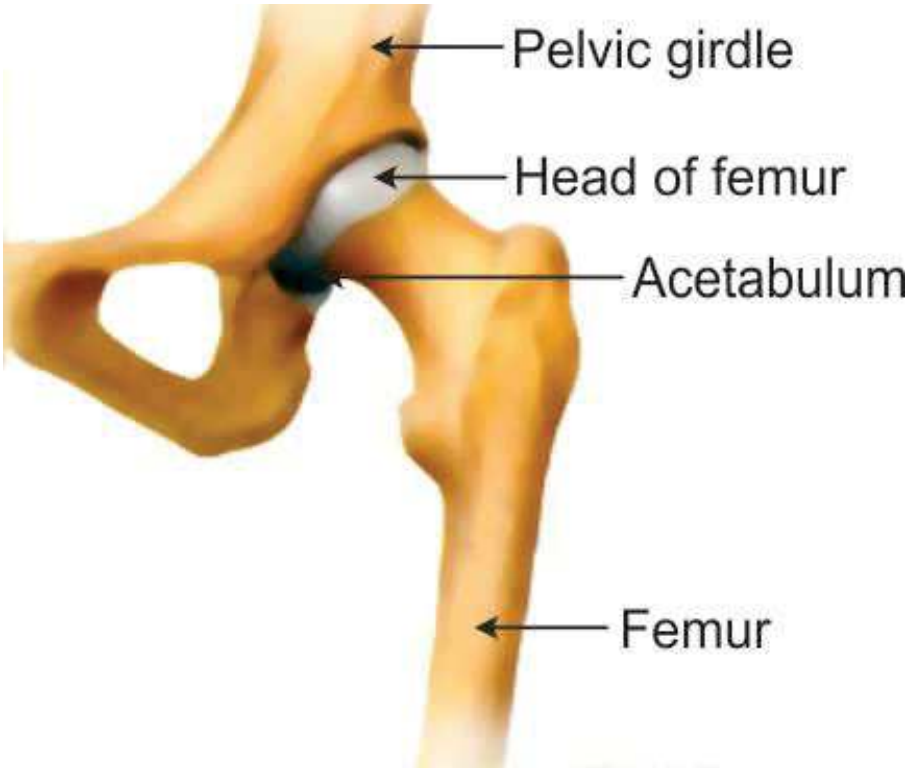
- It is a type of synovial joint.
- It allows rotary movement around a single axis

Eg: first vertebrae (atlas) and skull



B- BALL & SOCKET JOINT

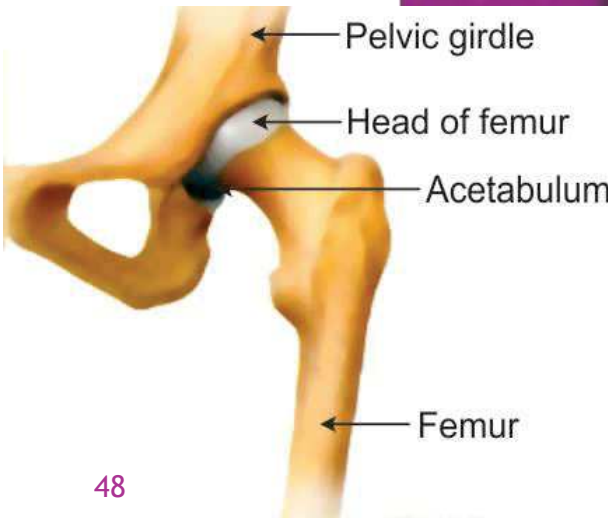
- The given type of joint is Ball and socket



B- BALL & SOCKET JOINT

- It is a type of synovial joint.
- It allows free movement of bone in all directions
- **It allow** backward, forward, sideways, and rotating **movements**

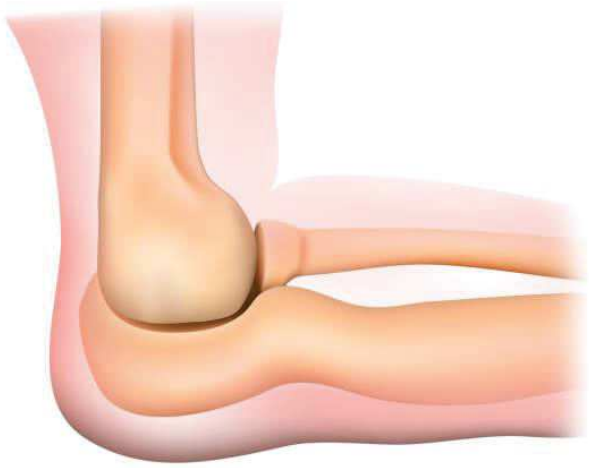
  Eg: Shoulder joint, Hip joint



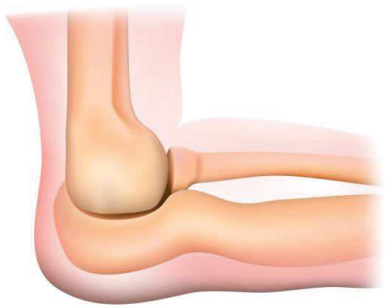
C- HINGE JOINT

- The given type of joint is Hinge joint

The elbow joint



C-HINGE JOINT



- It is a type of synovial joint.
- It allows movement in one plane only.
- It allows to and fro movements
- Eg: Elbow joint, knee joint

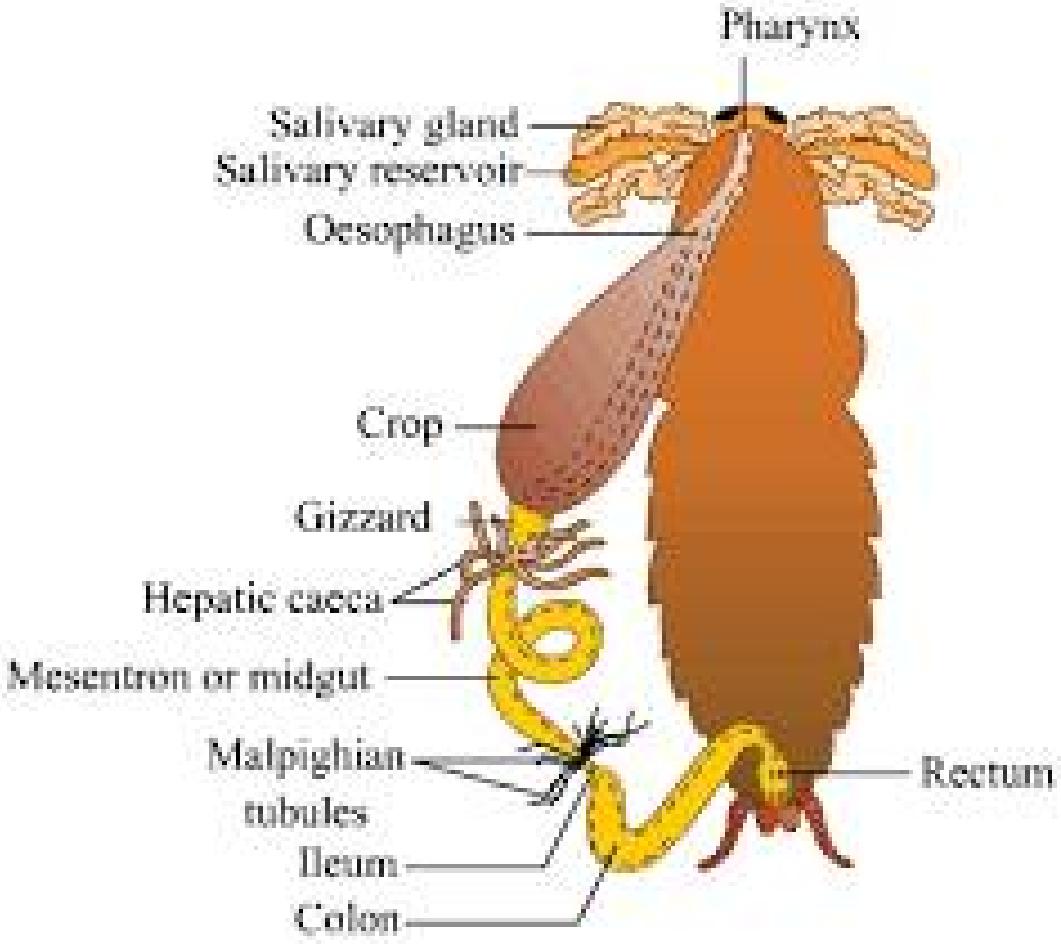
05- Draw the digestive system of cockroach. Label three parts.

OR

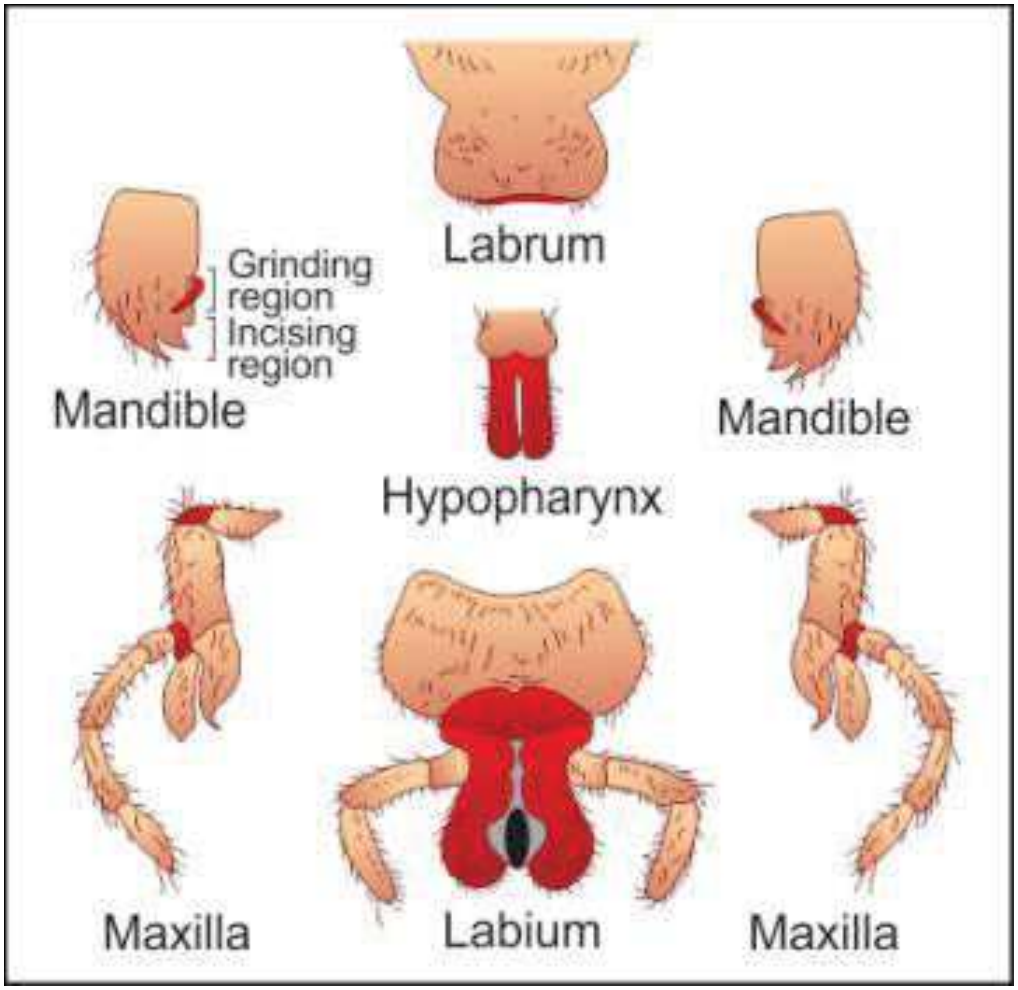
Draw the mouth parts of cockroach. Label three parts

- Diagram – 1 score
- Label three parts - 1×3 = 3 score
- Time - 15 min

DIGESTIVE SYSTEM OF COCKROACH.



MOUTH PARTS OF COCKROACH



06- Two samples A & B are given. Identify the samples **with glucose.**

OR

Two urine samples A & B are given. Identify the **urine of diabetic patient** from the samples

- Experiment -1 score
- Procedure -½ score
- Result -½ score
- Time -15 min

TEST FOR GLUCOSE

Sample A

Procedure	Observation	Inference
Benedict's test : Take 2 ml of the given urine sample, add equal amount of Benedict's reagent into it and heat it	A brick red precipitate	Presence of glucose
Fehling's test : Take equal volumes of Fehling's A and B solution in a test tube. Add 2ml of given solution into it and boil it	The colour turns to orange and then to brick red	Presence of glucose confirmed

Sample B

Procedure	Observation	Inference
Benedict's test : Take 2 ml of the given urine sample, add equal amount of Benedict's reagent into it and heat it	No brick red precipitate	Absence of glucose

RESULT : The given Sample A is Glucose/Urine sample A belongs to diabetic patient

Write any one test in exam*

07- Two samples A & B are given. Identify the samples with **protein/starch.**

- Experiment -1 score
- Procedure -½ score
- Result -½ score
- Time -15 min

TEST FOR PROTEIN

Sample A

Procedure	Observation	Inference
Biuret test: To about 5ml of the given solution added few drops of Biuret reagent. Then mix well	A violet precipitate colour was formed	Presence of protein
Sulphosalicylic test: Take 2 ml of urine in a dry test tube. Add 2 drops of suphosalicylic acid to it	Cloudy white ppt	Presence of albiumin
Nitric acid ring test : Take 3ml of Conc. HNO_3 in a test tube . Add a few drops of given solution through the sides of the test tube	A white ring appears at the junction between 2 solutions	Presence of protein confirmed

Sample B

Procedure	Observation	Inference
Biuret test : To about 5ml of the given solution added few drops of Biuret reagent. Then mix well	violet precipitate colour was not formed	Absence of protein

RESULT : The given Sample A is Protein

Write any one test in exam*

TEST FOR STARCH

Sample A

Procedure	Observation	Inference
Iodine test : to 2ml of given solution add two drops of iodine solution. Shake well to mix	A dark blue colour appears	Presence of starch
Heat test : The above solution is heated	The blue colour disappears on heating and reappears on cooling	Presence of starch confirmed

Sample B

Procedure	Observation	Inference
Iodine test : to 2ml of given solution add two drops of iodine solution. Shake well to mix	No colour change	Absence of starch

RESULT : The given Sample A is Starch

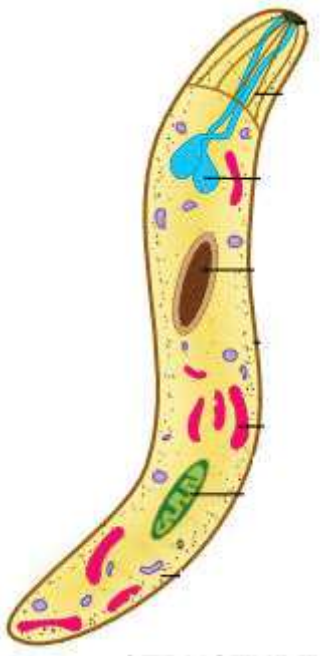
Write any one test in exam*

08- Identify the pathogen, name the disease caused by it and write one symptom.

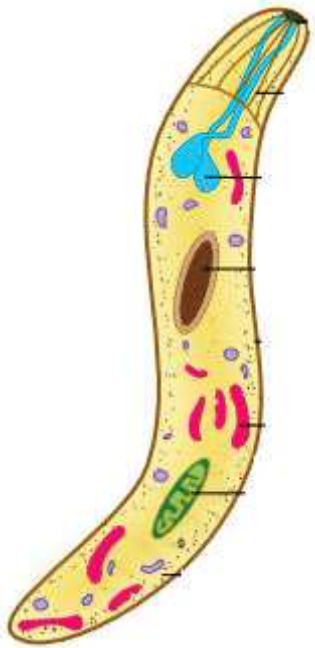
(Plasmodium,Entamoeba,Ascaris)

- Identification -½ score
- Disease -½ score
- Symptom -1 score
- Time -4 min

A-PLASMODIUM

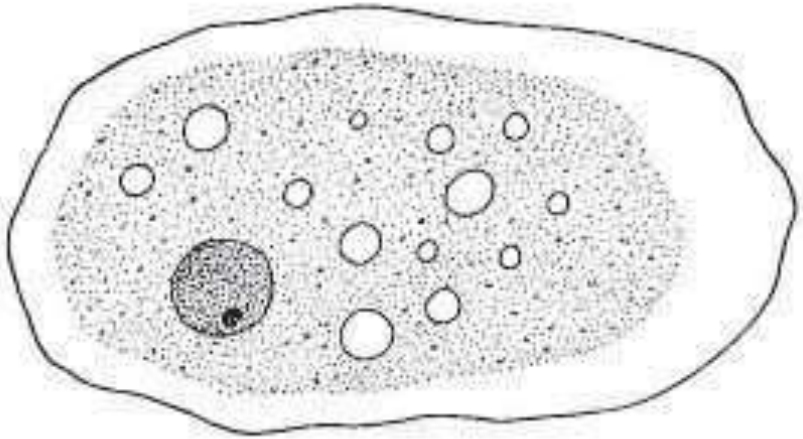


A-PLASMODIUM

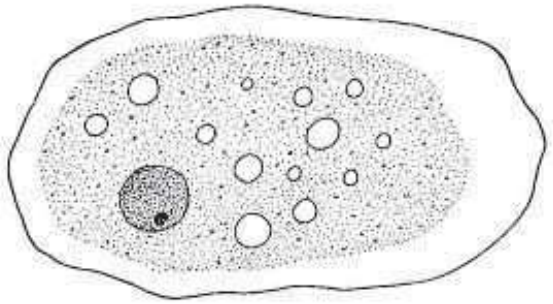


- **Disease : Malaria**
- **Pathogen:** *Plasmodium vivax*, *Plasmodium malariae*, *Plasmodium falciparum*
- **Part of the body it infect :** Liver, RBC
- **Symptoms :** Recurrent fever, Chill, Muscular pain,Anaemia

B-ENTAMOEBA

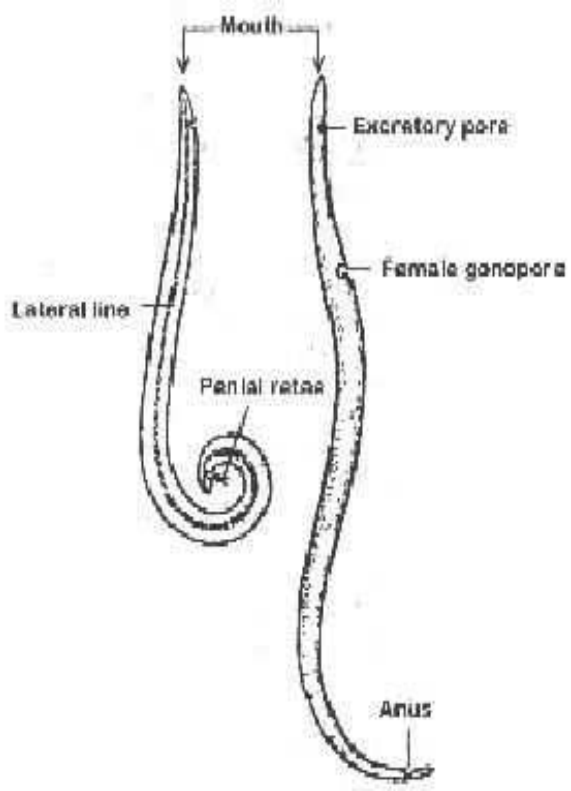


B-ENTAMOEBA

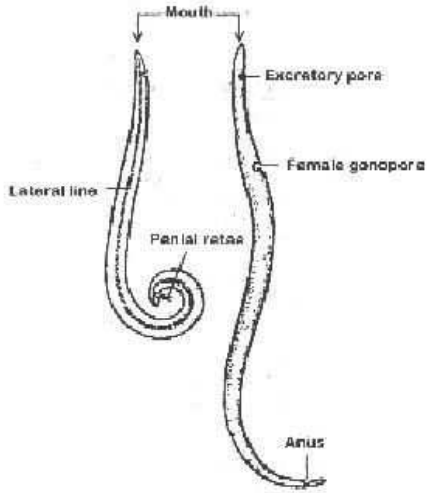


- **Disease: Amoebiasis** (amoebic dysentery).
- **Pathogen:** *Entamoea histolytica*
- **Symptoms :**
  - constipation,
  - abdominal pain and cramps,
  - stools with excess mucous and blood clots.

C-ASCARIS


Mouth
Excretory pore
Female genopore
Lateral line
Penial retae
Anus

C-ASCARIS



- **Disease :** Ascariasis
- **Pathogen:** Ascaris(Round worm)
- **Symptoms :** internal bleeding, muscular pain, fever, anemia and blockage of the intestinal passage.

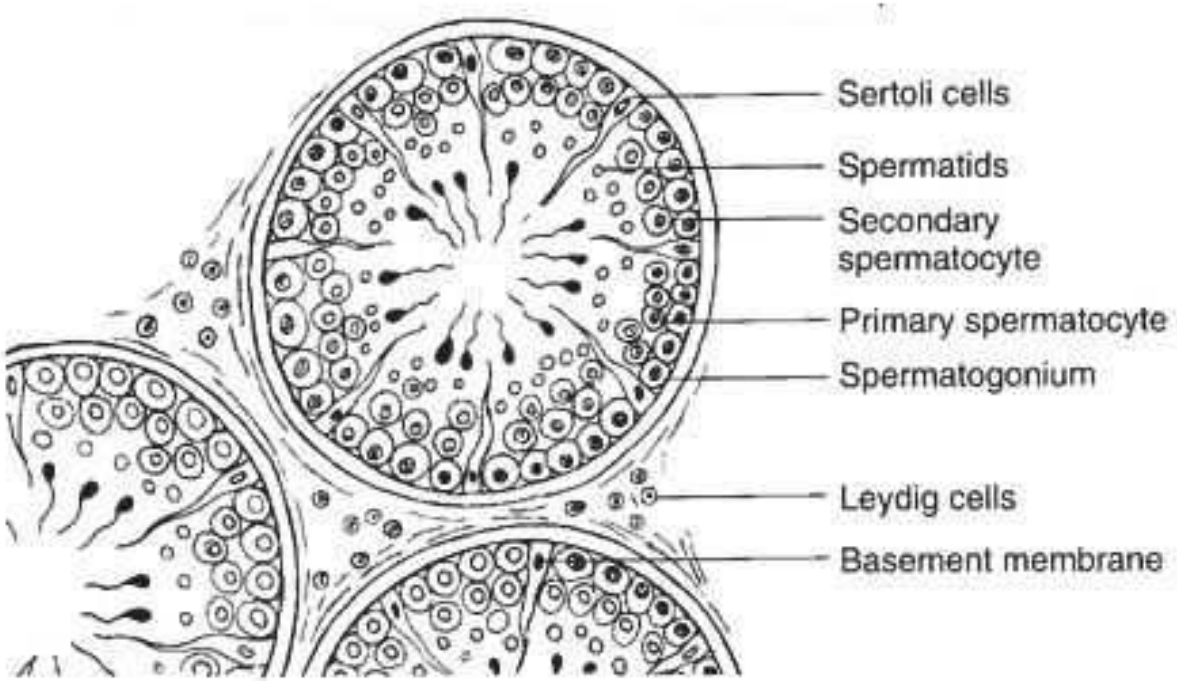
09- Identify the picture related to embryology. Sketch and label one part.

(T.S. of Testis/Ovary/Blastula of human)

- Identification -½ score
- Sketch and lebelling -1+½ = 1½ score
- Time -7 min

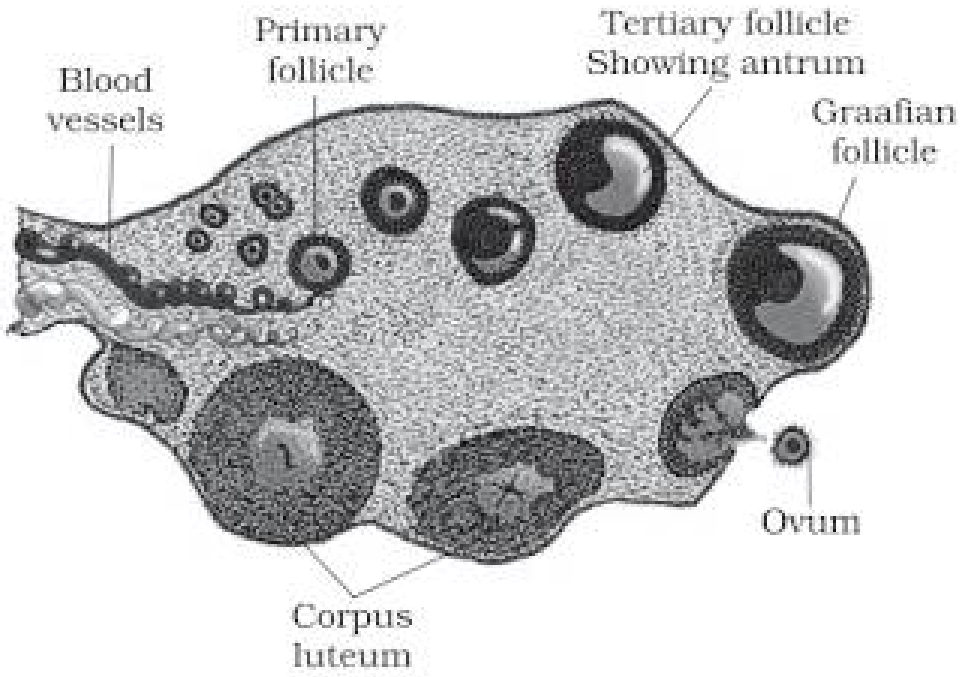
01-T.S. OF TESTIS

- The picture is TS of human Testis



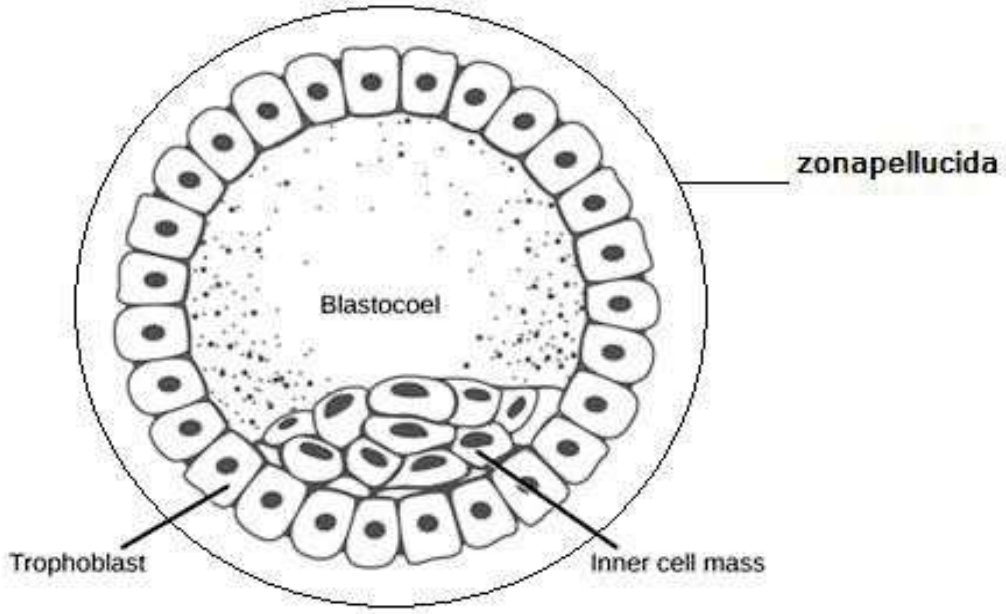
02-T.S OVARY

- The picture is TS of human ovary



03-T.S. OF BLASTULA

- The given image is T.S of human blastula



10-Viva-voce

(questions related to Physiological experiments)

- Score 1
- Time-1 min

- 11. Practical diary
- Score=3

THANK YOU

Navas cheemadan

SOHSS AREEKODE