Introduction to Poultry Keeping

Poultry; this refers to all the domesticated birds such as

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Why do people rear poultry in Uganda

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Importance of poultry keeping in Uganda

- Requires little capital to start/ investment
- Provides a quick returns 2 months for birds
- Presence of ready market e.g. chicken
- Poultry droppings are used as bait / feeding of fish
- Offers many areas of specialisation e.g. feeds, eggs, broiler
- Requires a small area to rear birds
- Source of poultry manure

- Source of employment
- Diversity agricultural production
- Utilizes farm by-products / waste products
- Source of food proteins
- Used for festivities
- Used in cultural practices e.g. marriages
- Poultry products are more palatable e.g. eggs and meat
- Provides plumes/ feathers used in crafts, cushions
- High demand for poultry products

What do you think are challenges / problems of rearing poultry

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Problems / challenges associated with poultry keeping in Uganda

- Inadequate extension services to farmers
- High costs of feeds / feed ingredients
- Presence of parasites e.g. flea , mites
- Inadequate capital to invest in large scale poultry
- Presence of predators e.g. eagles, wildcats
- Inadequate supply of commercial breeds
- Conservativeness by most farmers
- Presence of diseases e.g. Newcastle

- Lack of quality drugs
- Lack of good quality feeds
- High costs of drugs
- Theft of birds/ insecurity
- Inadequate transport
- Lack of organised marketing
- High taxes / market dues
- High costs of commercial breeds
- Poor breeds especially local breeds

Requirements for starting a poultry project.

- Knowledge and skills of poultry keeping
- Capital for buying the birds and equipment
- Housing / land / area for keeping the birds
- Reliable source of the chicks
- Reliable source of feeds
- Availability of market for poultry products

Assignment

Types of chicken

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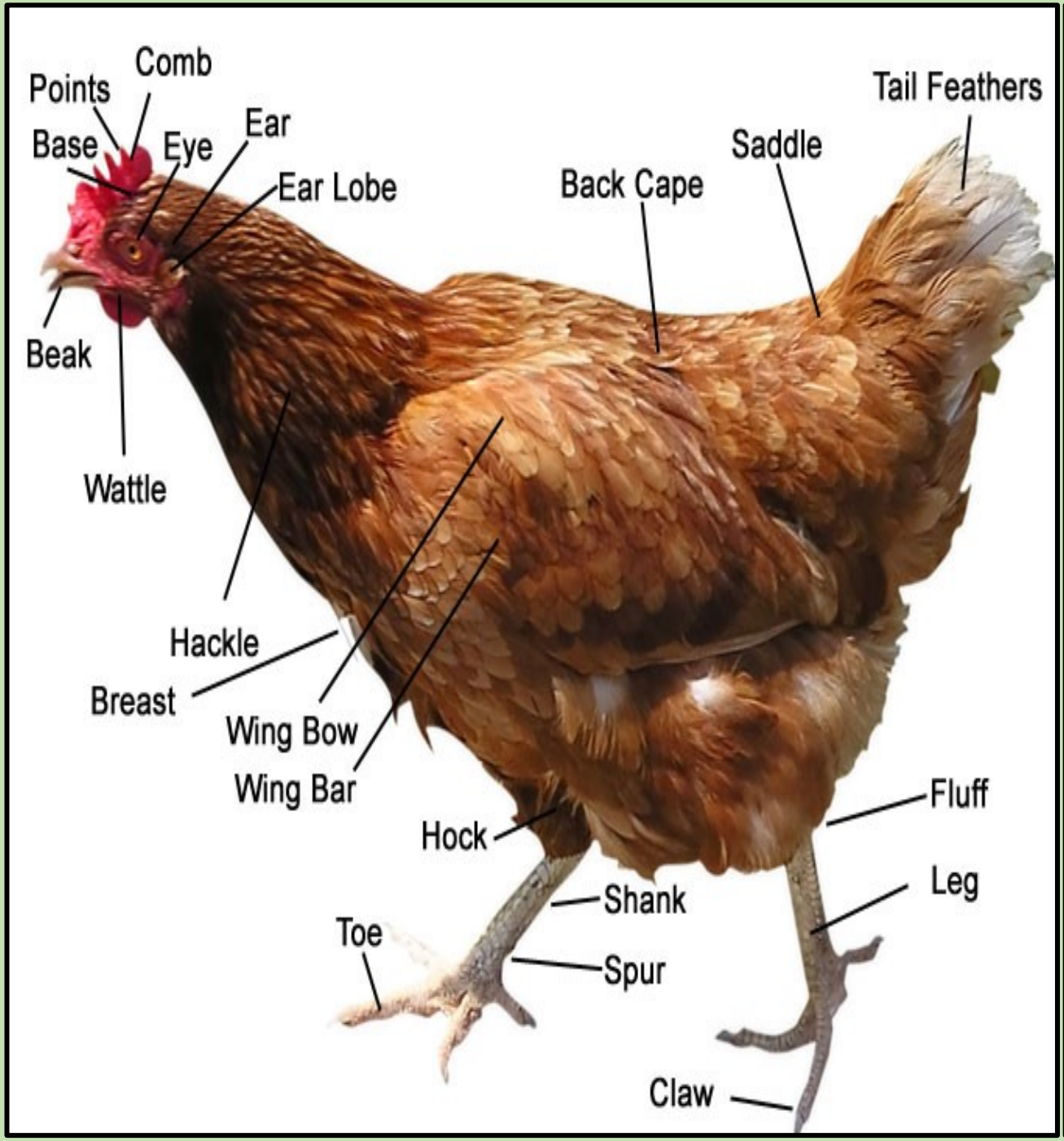
Breeds of chicken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Tail Feathers
Saddle
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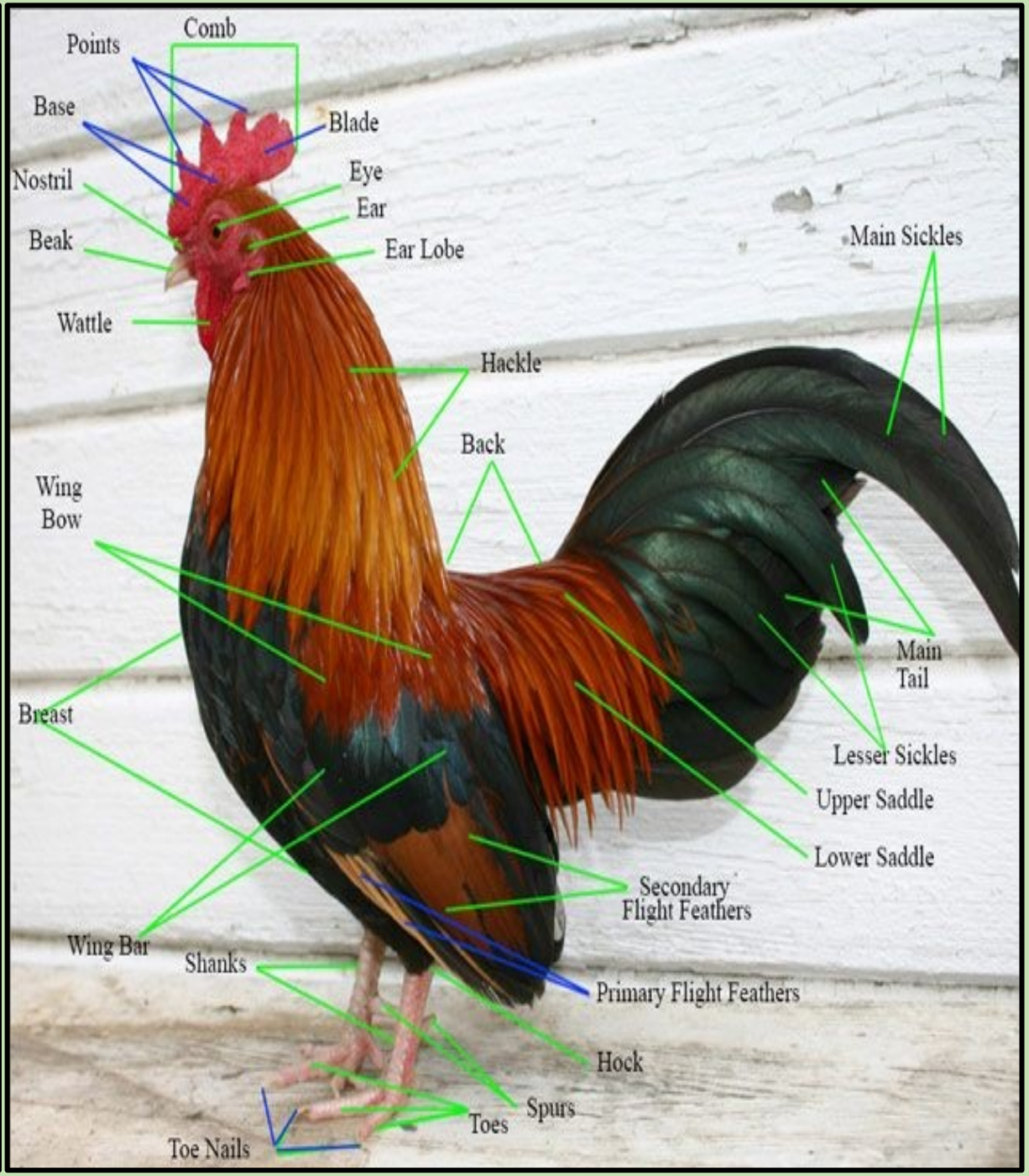
Hock
Fluff
Leg
Shank
Toe
Spur
Claw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Wattle
Hackle
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Wing
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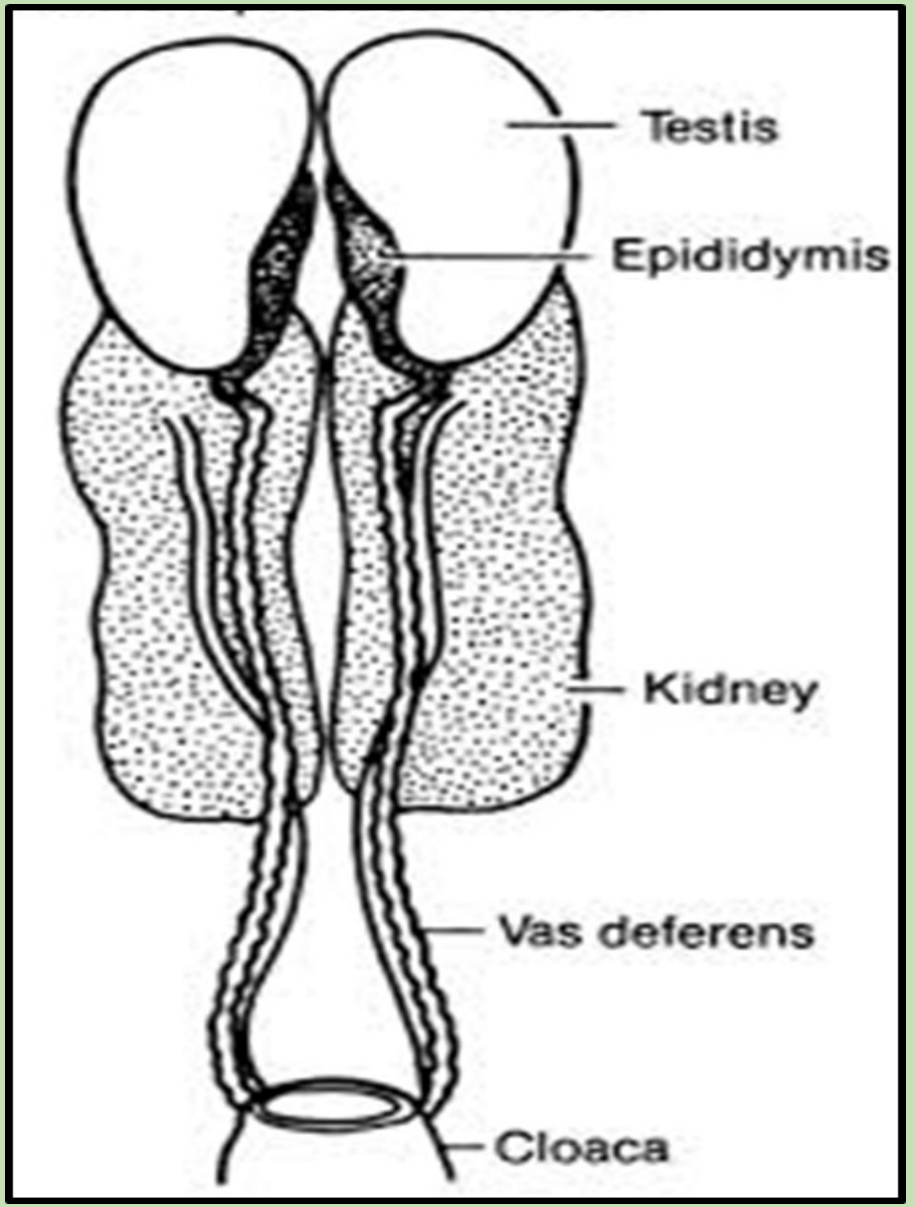
Main
Tail
Breast
Lesser Sickles
Upper Saddle
Lower Saddle
Secondary
Flight Feathers
Wing Bar
Shanks
Primary Flight Feathers
Hock
Spurs
Toes
Toe Nails

Reproductive System of a Cock

State the function of the parts

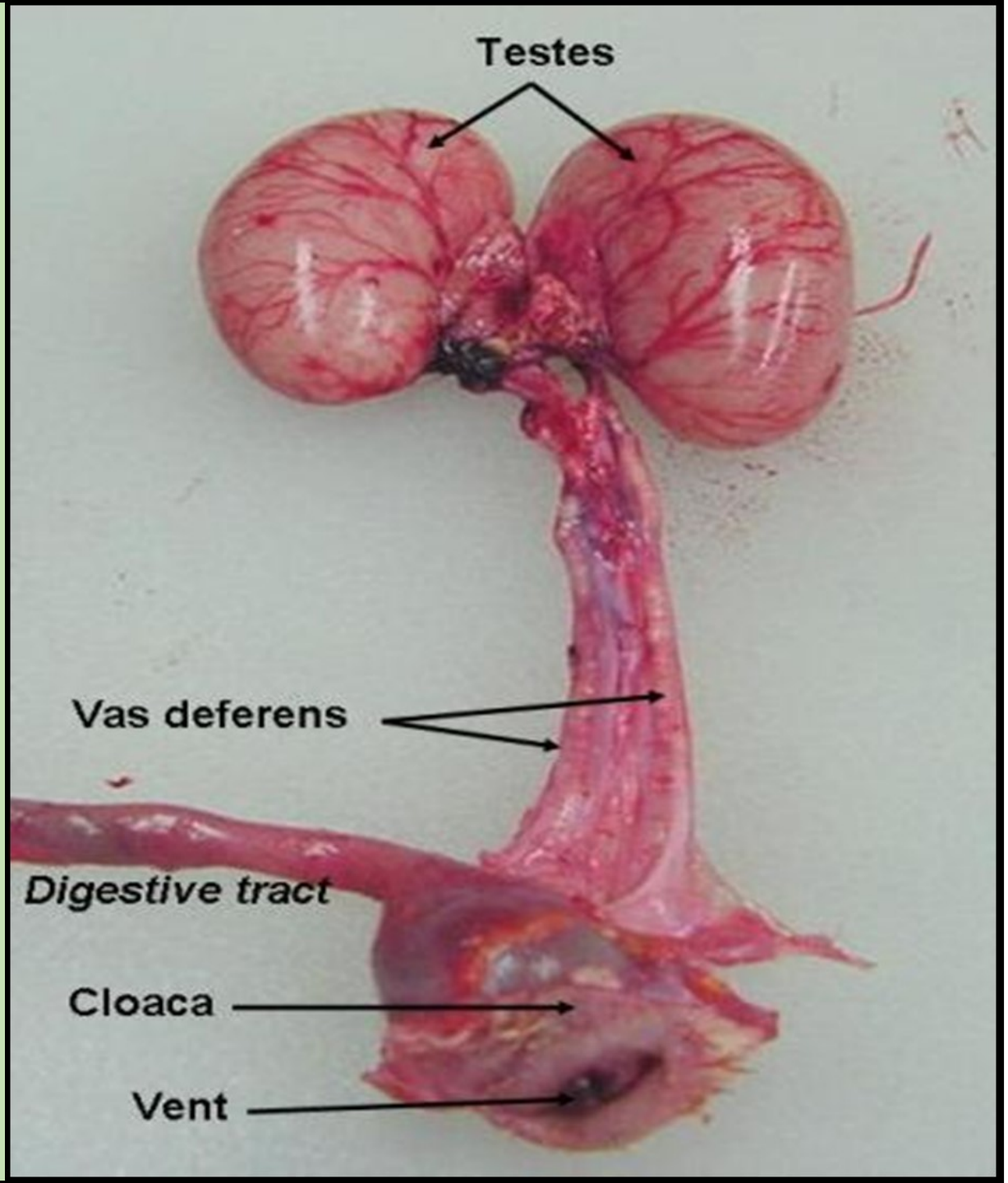


Testes; produces sperm cells and testosterone

Epididymis; functions is sperm storage

Vas deferens; function is transportation of sperm and sperm reservoirs.

Cloaca/vent; a passage for releasing semen and digestive waste

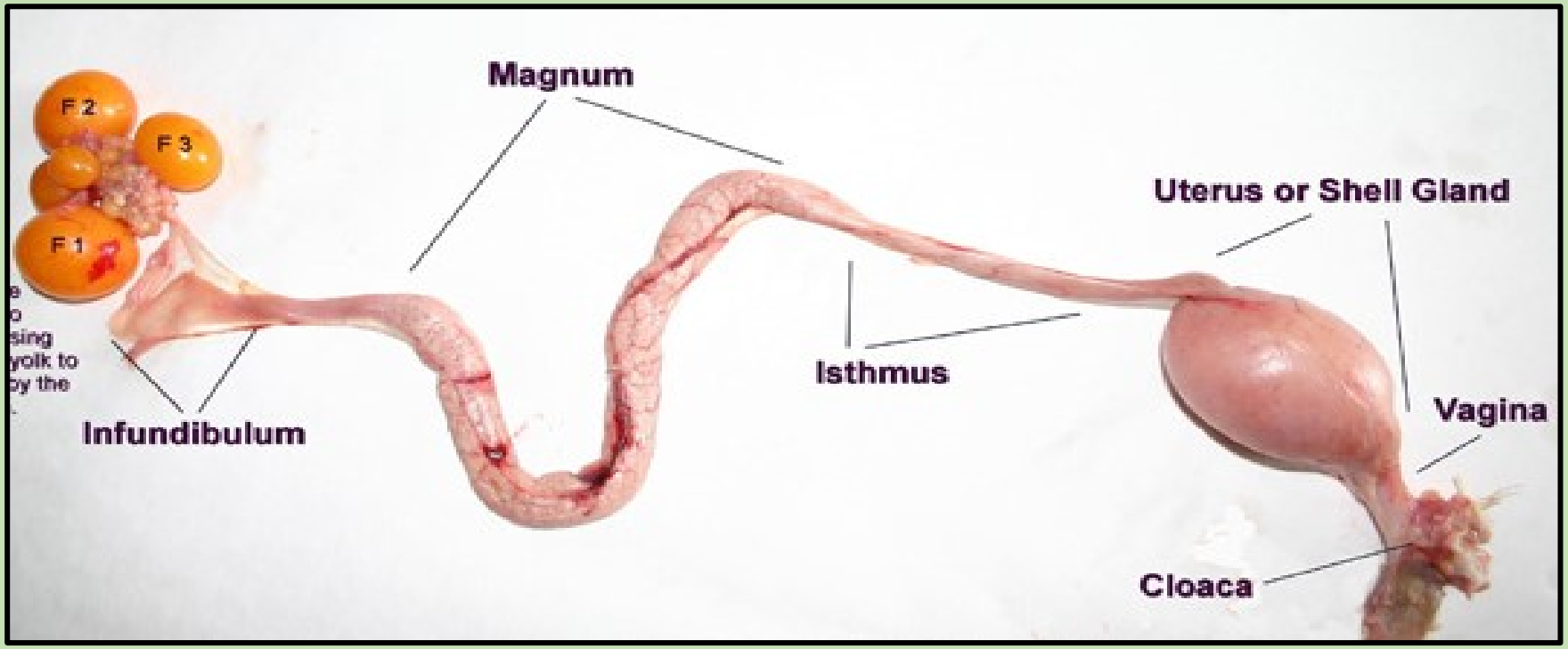


Reproductive System of a Hen

When does fertilization occur;

Where does it take place

Function of the parts



Ovary; where ovum is produced and develops in to egg yolk

Infundibulum; - receives the yolk
- is the site of fertilization
- where sperm is stored

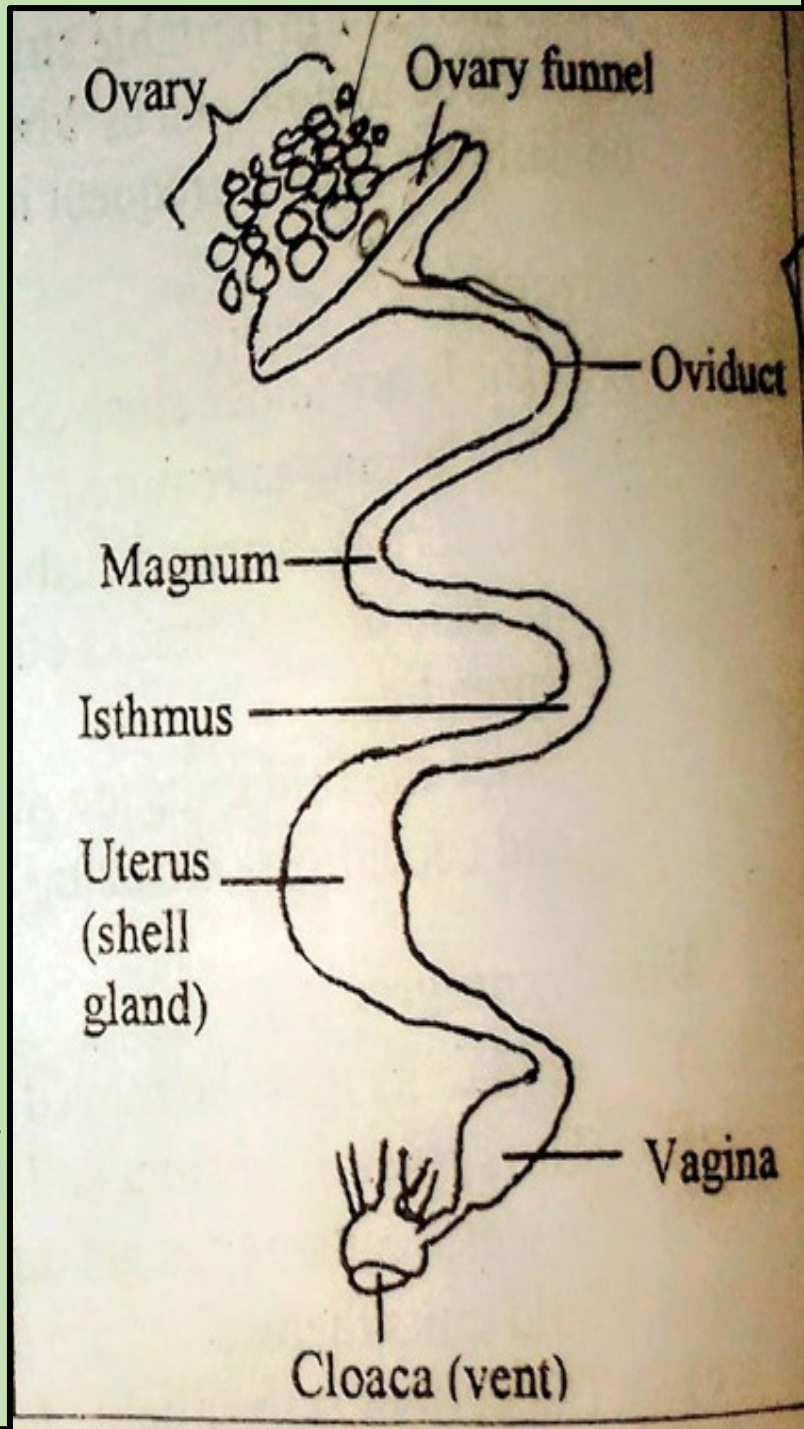
Magnum; - it secretes albumen (egg white)
- where chalaza is formed

Isthmus; secretes shell membranes

Uterus; produces hard shell and shell pigmentation occurs

Vagina; it secretes fluid which lubricates the egg during laying

Cloaca / Vent; passes out egg at the time of laying



The process of egg formation

The ovary produces the ova and develops in to egg yolk;

The egg yolk moves to Infundibulum where fertilization occurs

In the magnum, where chalaza and a thick egg white (albumen) is formed over the egg yolk

It moves to isthmus, where shell membrane is added to the egg and rolls to the uterus;

In the uterus, hard shell is formed over the egg and pigmentation also takes place;

While vagina, secretes fluid which lubricates the egg during laying;

Cloaca / Vent, passes out egg at the time of laying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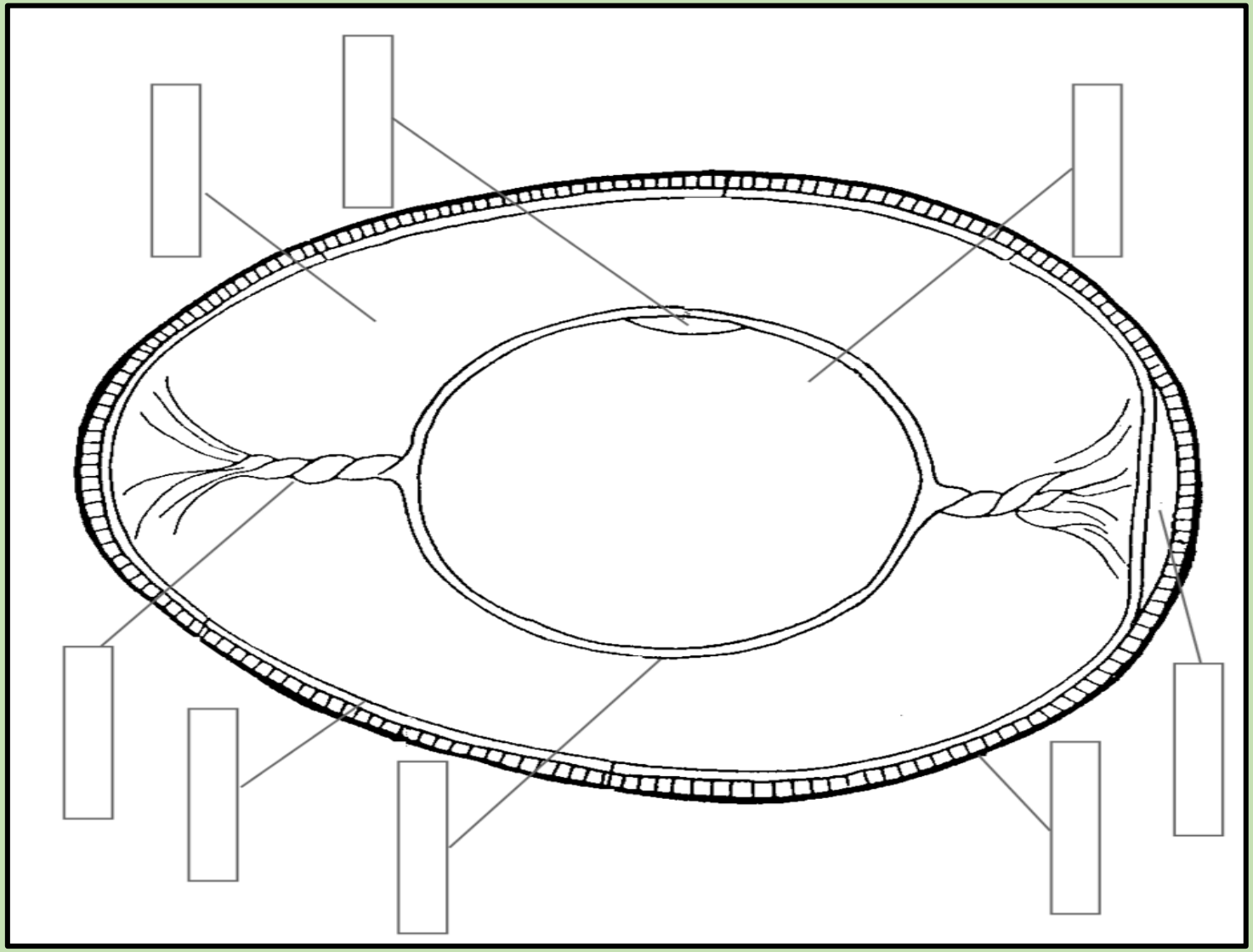
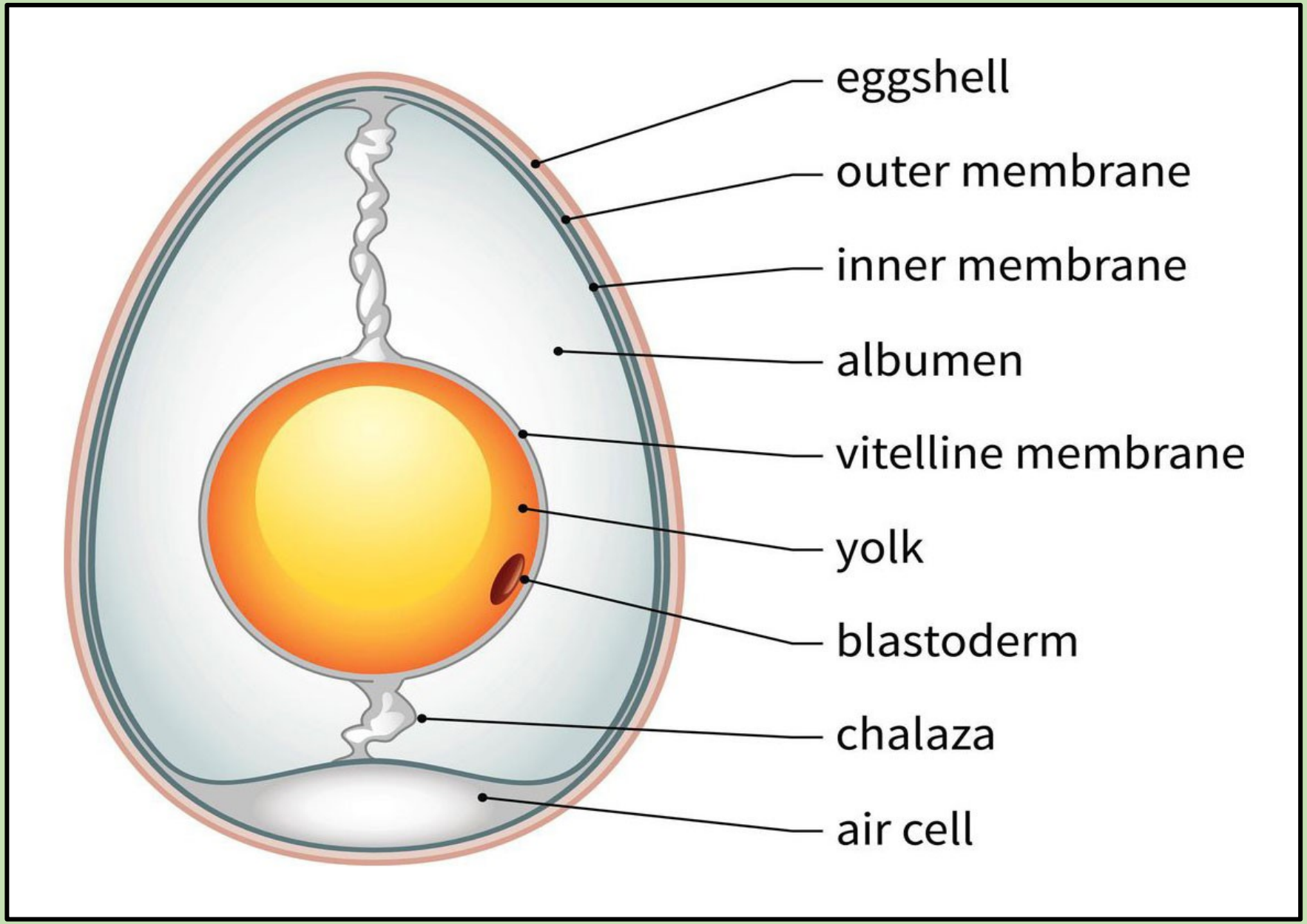
Structure of an egg

Name the parts



Function of the parts



Function of the parts

Germinal disc / blastoderm; contains the cells which develops into a chick if the egg is fertile

Yolk; contain nutrients for nourishing the developing embryo /chick

Vitelline membrane; holds the yolk content

Chalaza; for holding the yolk in a central position

Egg white /albumen; provides cushioning and additional nutrition for the developing chick

Inner & Outer membrane; prevents bacterial infection of the egg content

Air space; for gaseous exchange

Shell; protects the egg during handling

Abnormalities in eggs

- Blood spot; blood may drop together with the yolk during ovulation
- Meat spot; a piece of tissue may move together with the yolk during ovulation
- Double yolk; it occurs during ovulation when two yolks are released at the same time
- Abnormal shaped / deformed eggs; due to a defect in the isthmus where the oval shape is determined.
- Soft shelled eggs; may be due to lack of calcium and phosphorus

- Thinned shelled eggs; may be due to diseases or lack of calcium
- Rough shelled eggs; due to uneven deposition of the eggshell
- Abnormal colour or smell of the yolk; may be due to nature of feeds given to birds e.g. Carotene and sulphur
- Shell less eggs; Due to the defect in the uterus or failure of the shell gland to deposit calciferous shell around the egg
- Egg inside an egg;
- Dwarf / Yolkless egg;

Abnormalities in eggs

What do you see in the pictures?

What do you think is taking place?

What should be done for it to happen?

What conditions are necessary?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Incubation of Eggs

Refers to providing necessary conditions to a fertile egg to hatch in to chicks after 21 days

Factors / conditions necessary for hatching of eggs

- Good temperature regulation of about 38°C (100°F).
- Good relative humidity of about 55-60% and increased to about 75% towards the end of the brooding period, i.e. after the 18th day
- Good ventilation for fresh air within the incubation area
- Turning eggs at regular intervals to prevent embryo from sticking to the inside of the shell
- Using fertile eggs


Don’t Incubate these eggs
Blood stained
Cracked
Dirty
Elongated
Rounded
Toe punched
Wrinkled
Small and double

Selection of eggs for incubation / Qualities of a good egg for hatching

- Eggs selected must be fertilized or from hens mated by a cock two weeks before the laying period.
- Eggs must be without damage like cracks
- The eggs must be clean
- Choose medium sized eggs from hens which lay well.
- Collect the eggs regularly, for example three times a day.
- Let the eggs cool down as quickly as possible.
- Eggs can be saved up for a few days, but preferably for not more than 10 day

Methods of Incubation

Identify the methods of incubation above

How does a hen provide the factors / conditions needed for successful hatching of eggs

Natural method (mother hen)

Involves using a broody hen to sit on the eggs for 21 days to hatch

- The broody hens provides temperature using the body heat and heated sand carried under the feathers
- Humidity is provided by hen wetting the feathers in the water or dew
- Turning of eggs is done using the beak to rotate the eggs at intervals
- Ventilation is achieved by leaving the nest at certain interval during incubation
- Fertile eggs is produced by ensuring mating occurs with the cock

How to Improve the Management of Natural Incubation of Eggs

- Eggs selected must be fertilized or from hens mated by a cock two weeks before the laying period.
- Use undamaged eggs
- Use clean eggs.
- Choose medium sized eggs from hens which lay well.
- Collect the eggs regularly, for example three times a day.
- Let the eggs cool down as quickly as possible.
- Eggs can be saved up for a few days, but preferably for not more than 15 days week.
- Treat the brood hen with an insecticide against flies and lice before incubation.
- Use a clean and parasite-free brooding coop /cage of about 35 x 35 cm, & 40 cm high.
- Allow large hens to brood on 14 eggs & a smaller local hen to brood on 8 eggs at most.
- Place good feed and clean and fresh water in the vicinity of the brooding hen

Advantages of natural incubation

- Little capital investment
- No special skill is required
- Economical for small scale farmers

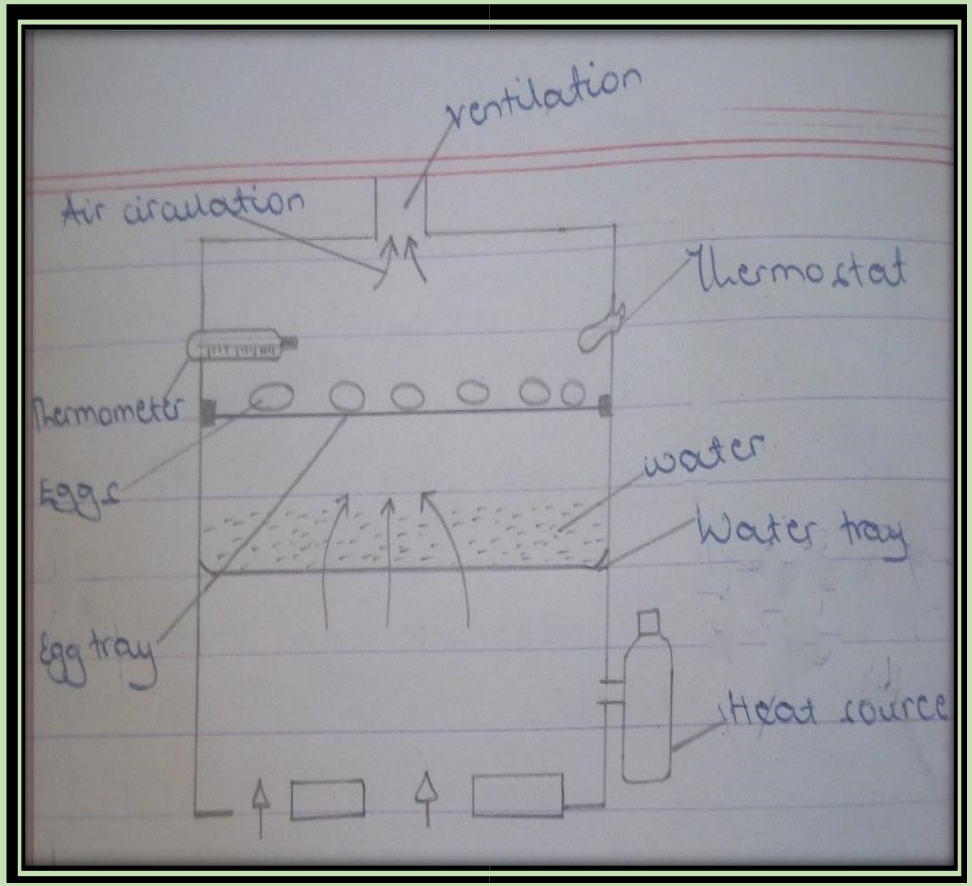
Disadvantages of artificial incubation

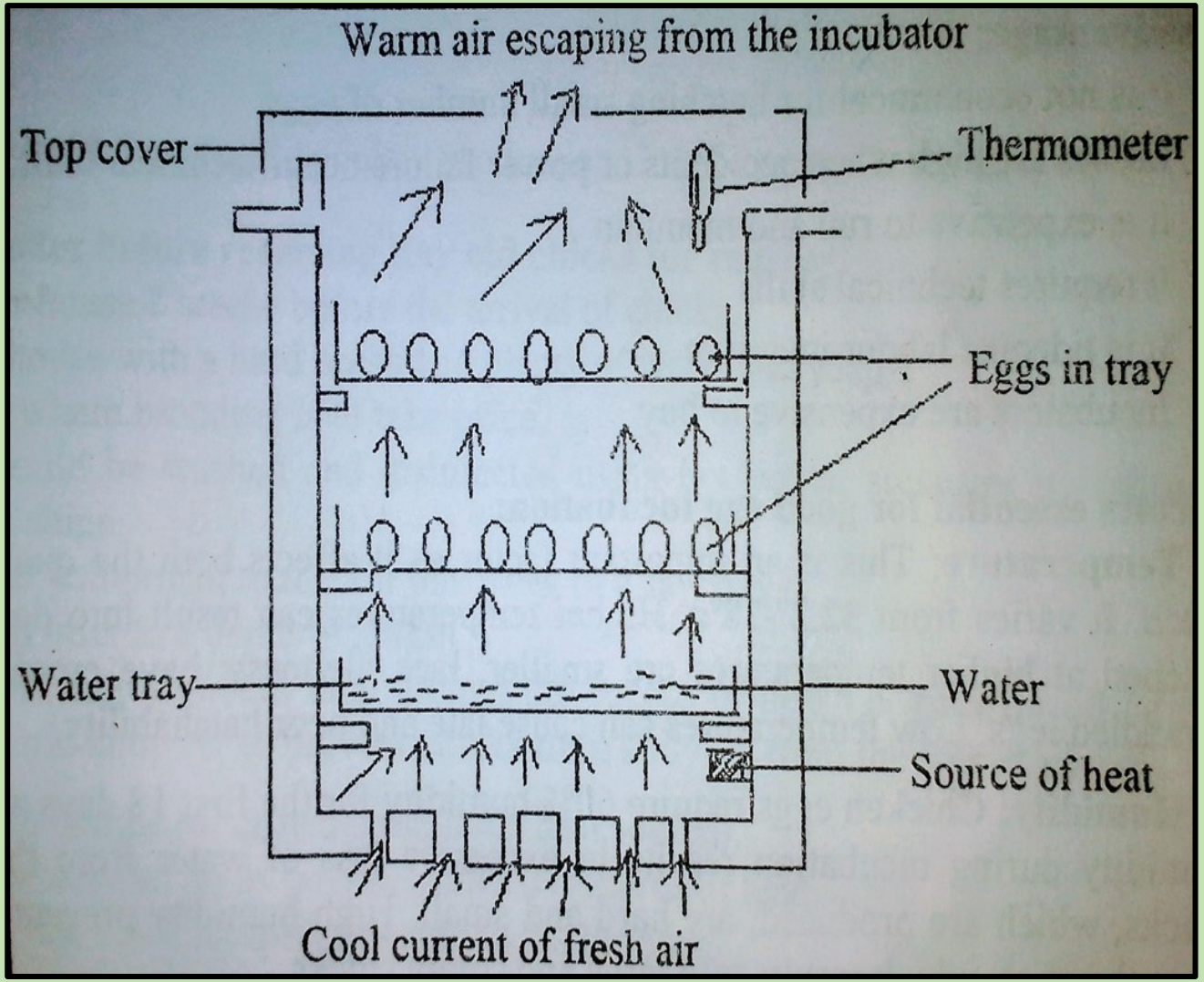
- Eggs cannot be incubated frequently
- Broody hens sometimes leaves the eggs unhatched
- Few eggs are incubated

Artificial Incubation

Refers to providing conditions necessary for hatching eggs using an incubator

Structure of an incubator





Function of the parts

- Thermometer; for measuring temperature
- Thermostat; for regulating humidity
- Egg tray; for holding eggs
- Water tray; for holding water
- Water; provides humidity for cooling eggs
- Heater; provides heat
- Ventilation; for gaseous exchange in the incubator

Advantages of artificial incubation

- Can hatch large number of eggs
- Can be used any time when required
- Easy to regulate the conditions for hatching
- Ensure continuous supply of chicks
- No incidence of leaving eggs as in natural incubation
- No incidence of egg eating as in natural incubation

Disadvantages of artificial incubation

- Expensive to buy
- Require skills to operate
- Losses is high in case of power failure / fault

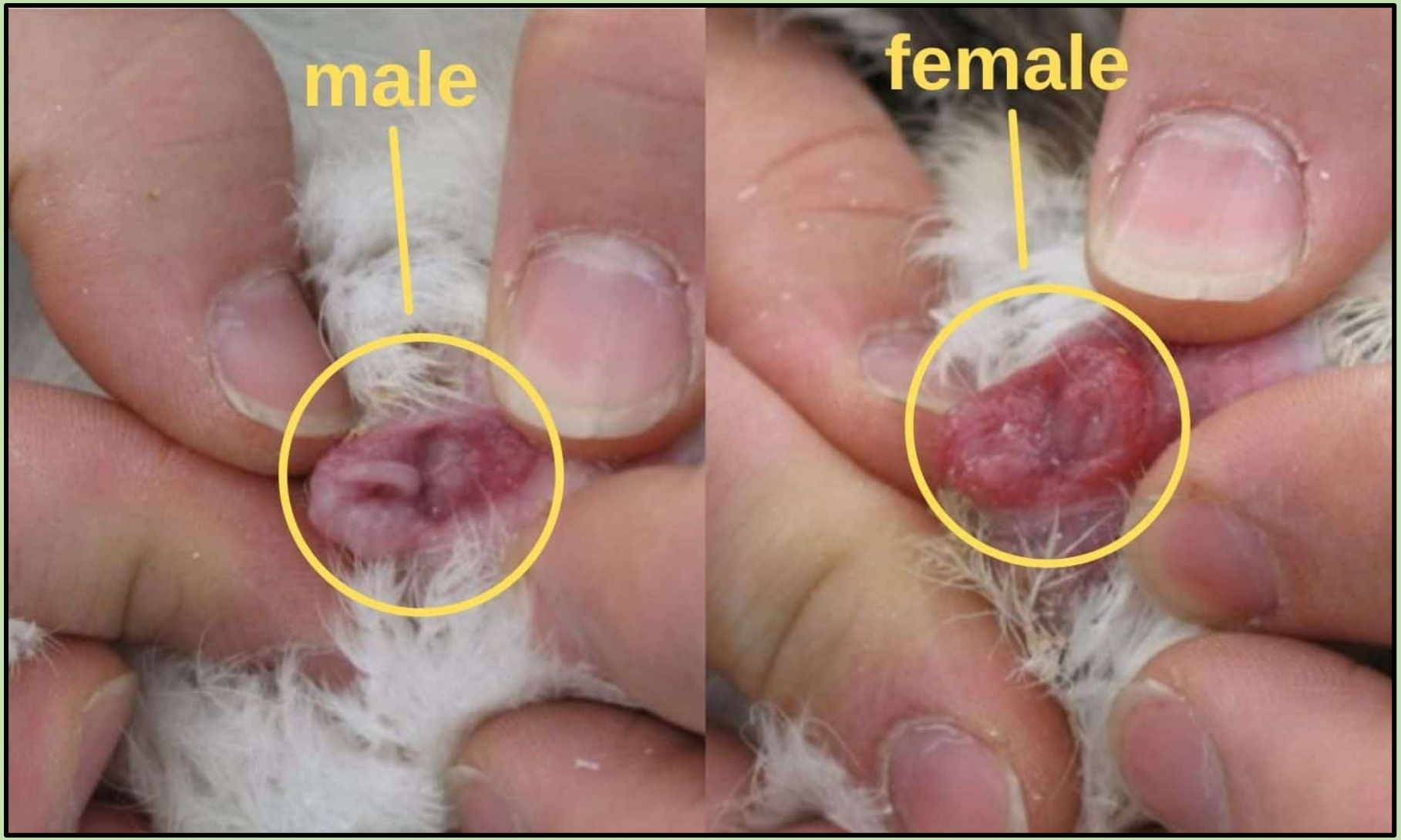
Sexing of day-old chicks

Refers to examining individual chicks to identify and separate it according to their sex before shipping to customers or housing.

Method of sexing chicks

- ***Vent sexing,*** in male chick the vent is protruding while for female chicks is flat.
- ***Colour sexing***, Females chicks, have buffy-red color, red around base of the beak and around the eyes, two or four red stripes on back. Male chicks, generally have yellow (white), may have round, red spot on head and neck, and may have one red stripe on back
- ***Feather sexing***, the female commercial chicks show fast feathering (primary wing feathers are longer than the covert feathers) and male chicks are slow feathering (primary and covert feathers are the same length).

Vent sexing, in male chick the vent is protruding while for female chicks is flat.



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NB: Sex-link crosses (hybrid chicken breeds) involve the crossing of two different breeds of chickens to get offspring that can be sexed at hatch by differences in down color.

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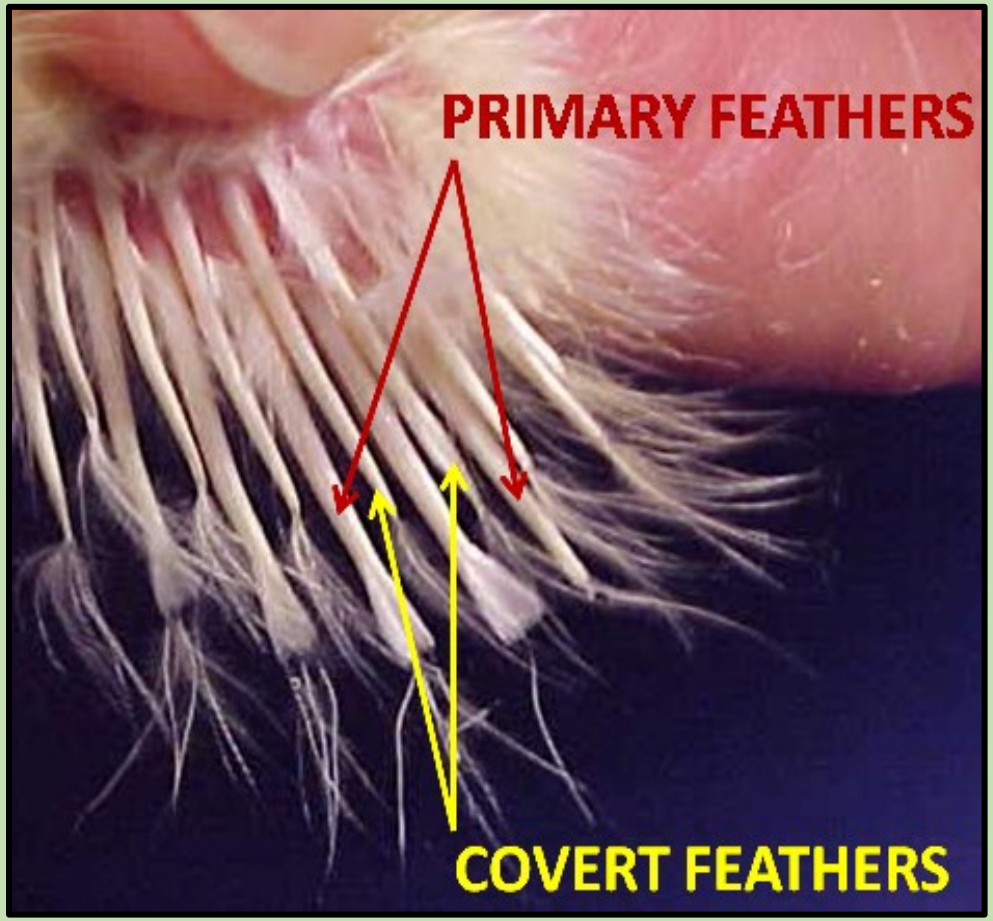

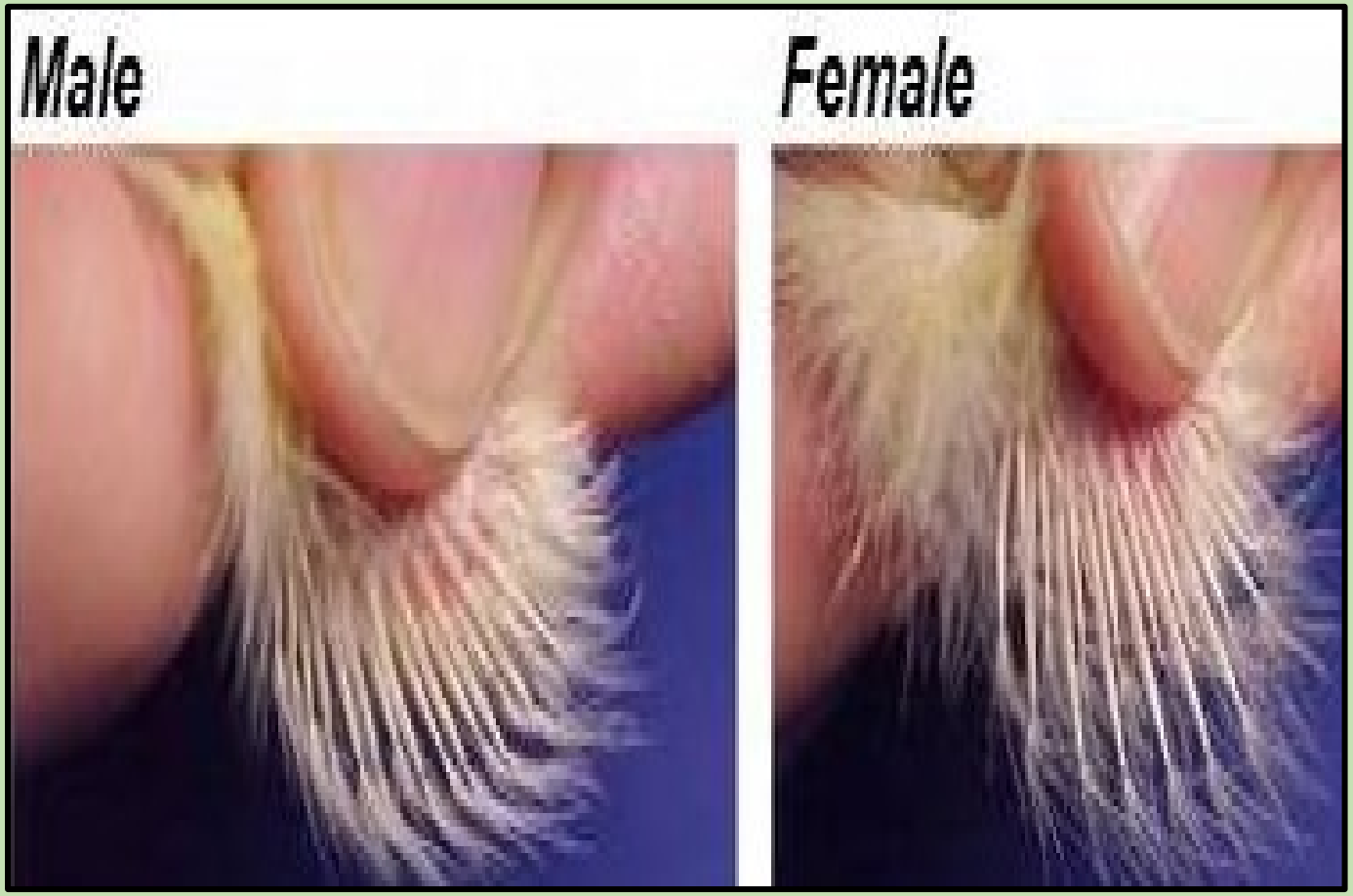

What do you think is taking place?

What name is given to the structure?

What features do you see in the structure?

Brooding Chicks

Brooding refers to care and management of chicks artificially in a brooder and naturally by broody hens

Artificial brooding

Refers to care and management of chicks in a brooder

Components of a brooder

- Source of light; for chicks to see and feed even at night
- Source of heat; to provide warmth / temperature
- Drinkers; provides water for drinking
- Feeders; provides feeds for chicks
- Thermometer; to measure the room temperature
- Confinement ring; prevents chicks from straying away from heat source and feeds
- Good ventilation; to allow gaseous exchange
- Litter; to cover the floor
- Litter cover; to avoid chicks from eating litter
- Brooder structures; protects chicks from harsh conditions, predators and vermin
- Foot bath; control the spread of diseases

Preparation of a brooder

- Sweep the brooder to keep it clean
- Mop the brooder with plenty of water and disinfect to kill the germs
- Cover the floor with dry litter to a depth of 3- 4cm
- Cover the litter with a polythene paper to avoid chicks from eating it as food
- Arrange the feeders and drinkers properly in the brooder
- Provide ring guard to avoid chicks from straying in case of a big brooder

- Ensure there is proper ventilation in the brooder for good air circulation
- Ensure there is proper lighting in the house for proper growth and feeding even at night
- Provide enough drinkers and feeders in the house to avoid competition
- Ensure there is a reliable heat source to provide warmth in the brooder
- Provide thermometer in order to measure the temperature in the brooder
- Ensure its rodent and vermin proof to avoid disturbing chicks

Management of Chicks

- Check and count the chicks on arrival to identify weak ones and know the number
- Provide chicks with water containing glucose on arrival to get energy
- Provide the chicks with starter / chick mash to give the birds the proper levels of nutrients.
- Arrange the feeders and drinkers properly in the brooder
- Provide enough feeders and drinkers in the house to avoid competition
- Provide enough clean water at all time
- Confine the chicks in the ring guard to avoid straying from heat source in case of a big brooder

- Ensure proper ventilation in the brooder for good air circulation
- Ensure there is proper lighting in the house for proper growth and feeding even at night
- Provide a temperature of about 35 Celsius in the first week and reduce gradually every week.
- Vaccinate chicks against diseases as required
- Remove dead chicks immediately from the house
- Control parasites and vermin’s from the house by dusting the house
- Keep the area around drinkers and feeders dry to avoid disease outbreak

Causes of mortality of chicks in a brooder

- Choking by feeds
- Cold or chilling conditions
- Disease out break
- Stepping on the chicks
- Burns / injuries from heat source
- Huddling in a corner

Systems of Rearing Birds

Outline the different systems / methods of rearing chickens

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Systems of Rearing Birds

- Deep litter system
- Free range system
- Battery cage system

Deep litter system

It’s a system where birds are kept in the house on litter for the rest of their laying life

Advantage of deep litter system

- Requires little land / space
- Birds are protected from predators
- Easy to collect eggs
- Requires less labour
- Birds are protected from harsh environment
- The litter produces good manure
- Large number of birds are kept in a small space
- Easy to notice diseases outbreak or vice in the house
- Makes it easy to handle / manage birds at all ages / stages of growth
- Easy to keep records of birds and production

Disadvantages of deep litter system

- High initial costs
- Vices are common in the house
- Disease can spread easily within the house
- Birds lack access to greens if not provided and insects
- Difficult to keep records of individual birds

Free range system

Its system where birds are left to roam / move freely on the compound. The area may be fenced or not. It's the most common system of keeping the local chickens in Uganda

Advantages of free range system

- Birds have access to green stuff and insects
- Birds have exercise as they run around
- Requires less labour
- Birds have access to vitamin D
- Feeding cost is reduced
- Good quality eggs are produced
- Reduces the incidence of vice like cannibalism
- Overcrowding is avoided

Disadvantages of free range system

- Birds may destroy crops
- Birds are exposed to harsh weather
- It’s difficult to collect eggs
- Requires large open space / area
- Birds are exposed to predators and thieves
- Difficult to control breeding
- Easy spread of diseases from neighborhoods
- Difficult to monitor production of each

Battery cage system

It is a system where birds are kept in individual cages which are arranged in row one above the other (tiers)

Advantage battery cage system

- Require less labour
- Clean eggs are produced
- Reduces the spread of diseases
- Easy to collect eggs
- It reduces the incidence of vices
- Large number of birds are kept in a small space
- No contamination of water and feeds with droppings
- Easy to supervise and cull birds
- Easy to identify unproductive and sick birds

Disadvantage of batter cage system

- It is expensive to construct the cages
- Birds lack exercise
- Requires high level of management

Managing laying birds

Housing

- Ensure the house is adequate enough to avoid overcrowding
- Ensure the house is well ventilated
- The house must be leak proof
- The house should be vermin proof
- Provide perches for roosting and exercise in the house
- Provide enough litter on the floor
- Rake the litter regularly to avoid caking
- Change the litter as required
- Keep the litter dry especially around the drinkers

Feeding

- Change the feeds from growers mash to layers mash
- Provide enough feeds to the birds
- Hang greens in the house to provide vitamin C and exercise
- Provide enough clean water for drinking
- Provide some grits to aid digestion
- Provide balanced feeds with minerals for strong egg formation
- Cull the birds to remove unproductive and sick layers

Health

- Deworm the birds regularly management
- Keep good sanitation in the house
- Vaccinate birds regularly as required
- Dust birds with pesticides to control external parasites
- Treat sick birds immediately disease appears
- De-beak the birds to prevent vices

Egg handling / processing

- Provide adequate laying boxes
- Collect eggs frequently
- Candle eggs for abnormalities like shells with cracks
- Clean dirty eggs by wiping with clean moist cloth
- Grade eggs according to sizes
- Pack the eggs in egg trays with the broad end facing up for gaseous exchange
- Store eggs in a cool dry place

Vices in Poultry (starts)

Refers to bad habit of birds which develops when birds are confined

Types of vices in poultry

- Egg eating
- Egg drinking
- Toe pecking
- Feather pecking
- Vent pecking
- Fighting
- Cannibalism (eating of flesh of another bird)

Causes of vices in poultry

- Heat stress due to poor ventilation
- Overcrowding in a small space
- Starvation of birds / inadequate feeds
- Poor laying nest
- Presence of dead birds in the house
- Introduction of new birds in the house
- Nutritional deficiencies
- Too bright light in the house
- Laying soft shelled eggs

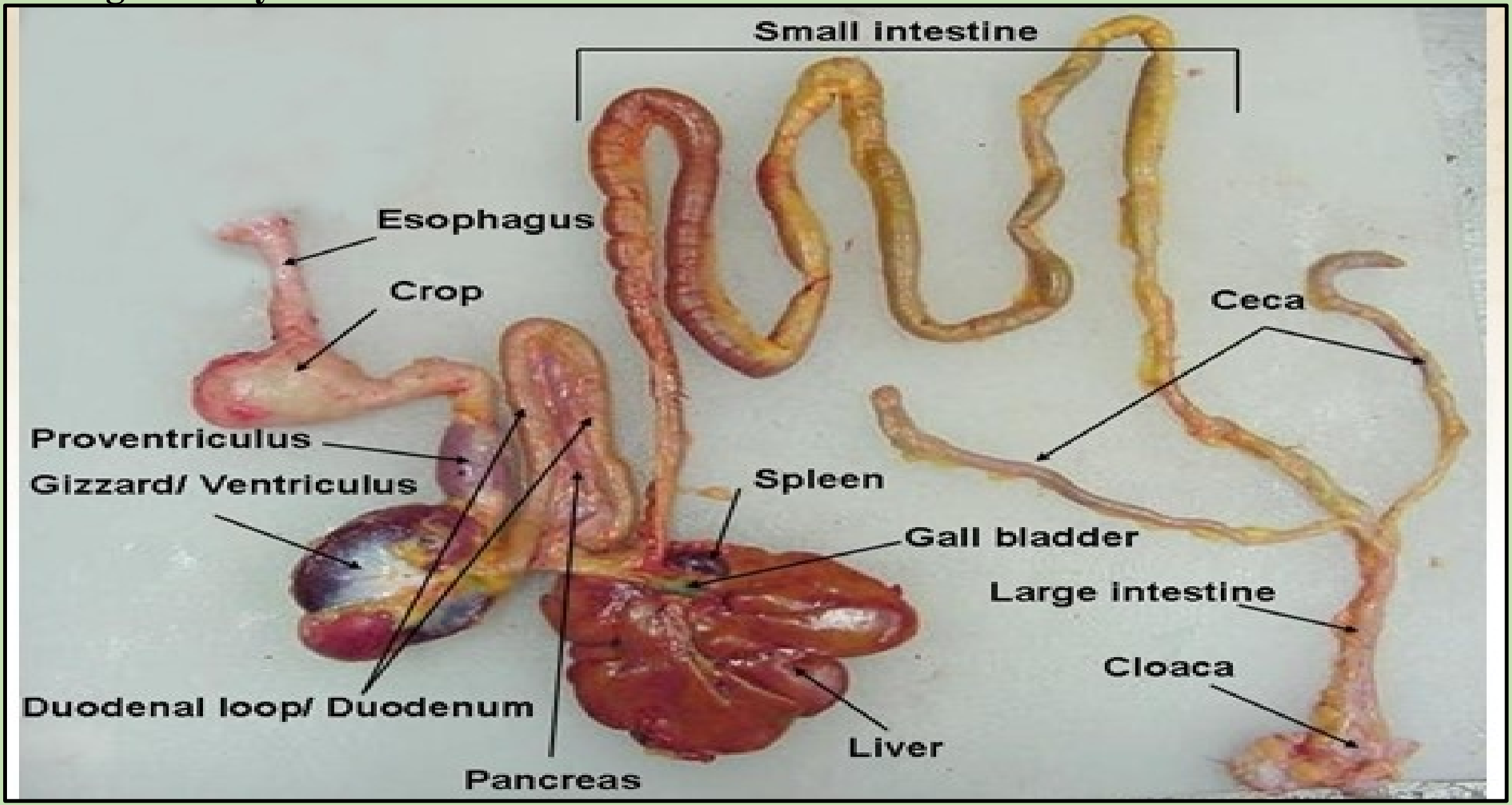
- Laying on the floor
- Presence of parasites e.g. Chicken flea
- Wet brooder making feeds to stick on the feet
- Moulting making feathers to regrow which are attractive to peck
- Poor culling / combining birds of different size
- Boredom due to lack of exercise
- Failure to collect eggs frequently
- Change in the routine

Preventive / Control Measures

- Collect the eggs frequently
- Provide enough laying boxes
- Give birds a well- balanced feeds
- Cull birds according to size and age
- De-beak all the birds in the house
- Isolate the pecked birds
- Control external parasites by dusting birds
- Cull birds with vice / offenders
- Provide enough feeds at the usual time

- Dim the light inside the house if too bright
- Avoid overcrowding in the house /proper stocking rate
- Provide good ventilation for free air circulation in the house
- Provide enough feeders and drinkers to avoid competition
- Provide enough perches in the house for exercise
- Hang green plants to provide vitamin C and exercise
- Scatter pellets / grains on the litter to keep birds busy looking for it
- Keep the litter dry to avoid feeds sticking on their feet

Digestive System of a Chicken / Fowl



Function of the parts

- Beak; gathers food
- Oesophagus; for passage of food to the crop
- Crop; for temporary storage and moistening of food
- Proventriculus; secrete HCI and gastric juices which acts on the food eaten
- Gizzard; for mechanical breakdown of food
- Duodenum; - its where pancreatic juice and bile are secreted to digest food occurs
  - where absorption of digested food occurs
- Small Intestine; where enzymatic digestion and absorption of digested food takes place
- Large Intestine; where absorption of water from undigested food occurs
- Caecum; where bacterial digestion occurs
- Cloaca / Vent; for exit of waste