

## Anatomy of bird

### Digestive System

The digestive system consists of the alimentary canal along which the food passes to where the residual wastes are eliminated from the body, together with liver and pancreas. the digestive system is responsible for the ingestion of food, it breakdown into its constituent nutrients and their absorption of into the bloodstream and the elimination of wastes from this process.

The alimentary canal is long tube-like organ that starts at the beak and end with the vent or cloaca in the abdominal region.

### Mouth

The mouth in birds characterized by don't have lips and cheeks and jaws which cover by the beak, as wall the mouth toothless. the hard palate that forms the roof of the mouth, presents a long narrow medium ridge also has five transvers rows.

### Salivary glands

A-maxillary gland- in roof of moth

B- palatine gland –on either of nasal opening in roof of mouth

C-Apheno-pterygoid gland –in the roof of the pharynx

D-Anterior submandibular glands

E-Posterior submandibular glands

F-lingual gland –in the tongue

G-crico arytenoid glands- around the glottis

H-Small gland in the angle of mouth

The tongue is narrow and the triangular in outline

In some bird species the tongue is more activity used for collecting, manipulating and swallowing food. the tongue has the apex, body and base which presents a median slit or glottis.

**Pharynx:** the pharynx is continuous with, and follows; the mouth. The combined cavity of mouth, pharynx is often referred to as the oropharynx. the common opening for the two Eustachian tubes is located of dorsal wall(roof)

**Esophagus:** is muscular tube lies between the trachea and cervical muscle but soon deviates to the right. The esophagus consists of three parts, cranial, crop and caudal part. Both cervical esophagus and crop are subcutaneous and palpable. the crop stores food for short period when the muscular stomach is full .in some species like owls, gull and penguins, which have no crop, food enters directly into the proventriculus.

**Stomach:** the stomach consists of glandular portion (proventricularis) and muscular portion(gizzard). the proventricularis is spindle –shape and about 4cm long.the wall is very thick and composed of five layers a-outer serous membrane, b-muscular layer-layer of areolar tissue containing blood and lymph vessels d-thick layers of glandular tissue, e-mucous merman.

**Gizzard's:** muscular stomach has, a flatted, rounded shape somewhat like a convex lens and located immediately after the proventriculars, partly between the lobes and partly of the left lobe of liver.

**Small intestine:** the intestines occupy the caudal part of body cavity, making extensive contact with the gizzard and reproductive organs. Small intestine composed of duodenum,

jejunum and ileum. The duodenum starts at the gizzard and forms an elongated loop that is approximately 20 cm.

Jejunum and ileum, together about 120 cm long. commence at the caudal end of duodenum, where the bile and the pancreatic duct papilla are located and terminate at the ileo colic junction.

**Large intestine:** very short, consist of two caecum, colon and cloaca.

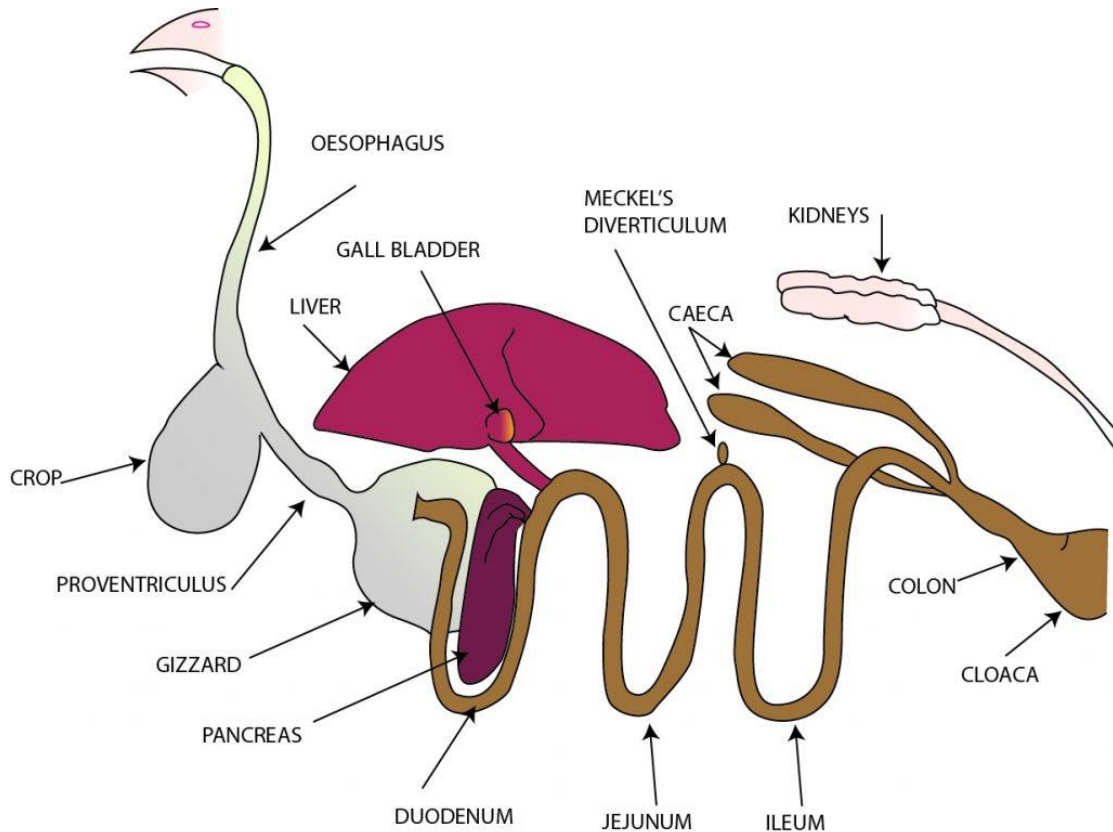
**Caecum:** the two caecum or blind pouches are about 16-18 cm in adult, each caecum has three main parts a-Narrow base and thick wall b- middle part thin wall c-the wide blind apex with thick wall

**Colon:** is about 10 cm long in chickens and ends by enlargement at the cloaca.

**Cloaca:** the cloaca is tubular cavity opening to the exterior of the body and is common to the digestive, urogenital tract.

The liver and pancreas it is somewhat similar that in mammalian.

The spleen is reddish-brown, rounded body.



## Respiratory System

The respiratory system composed of 1-nostrils 2-nasal cavity 3-larynx 4-trachea 5-syrinx 6-air sacs 7-lungs (two lung).

1-Nostrils (nares) located at the base of the beak surrounded by thick cere.

2- Nasal cavities: Extend to large orbits, rostral, middle and caudal concha.

3- Larynx: occupies amount on the floor of oropharynx, it supported by a- cricoid cartilage b- paired arytenoid cartilage c- glottis.

4- Trachea: composed of tightly, complete and overlapping cartilaginous rings, it divided left and right bronchus

5- Syrinx: is formed by the terminal part of trachea and first parts of primary bronchi. The voice production occurs in the syrinx.

6- Lungs (two lung): the lungs are small, unlobed, bright pink, soft and velvety to touch.

7- Air sacs: air sacs are blind, thin –wall (two cell thick.

Types of air sacs:

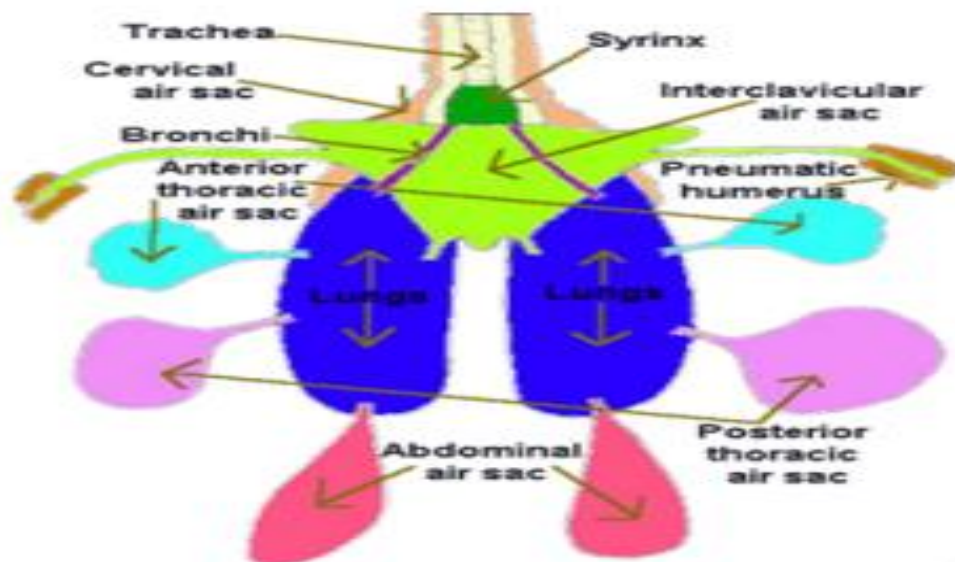
A-cervical sac.

B-larger clavicular sac.

C-paired cranial thoracic sacs.

D-paired caudal thoracic sacs

E-paired abdominal sacs.

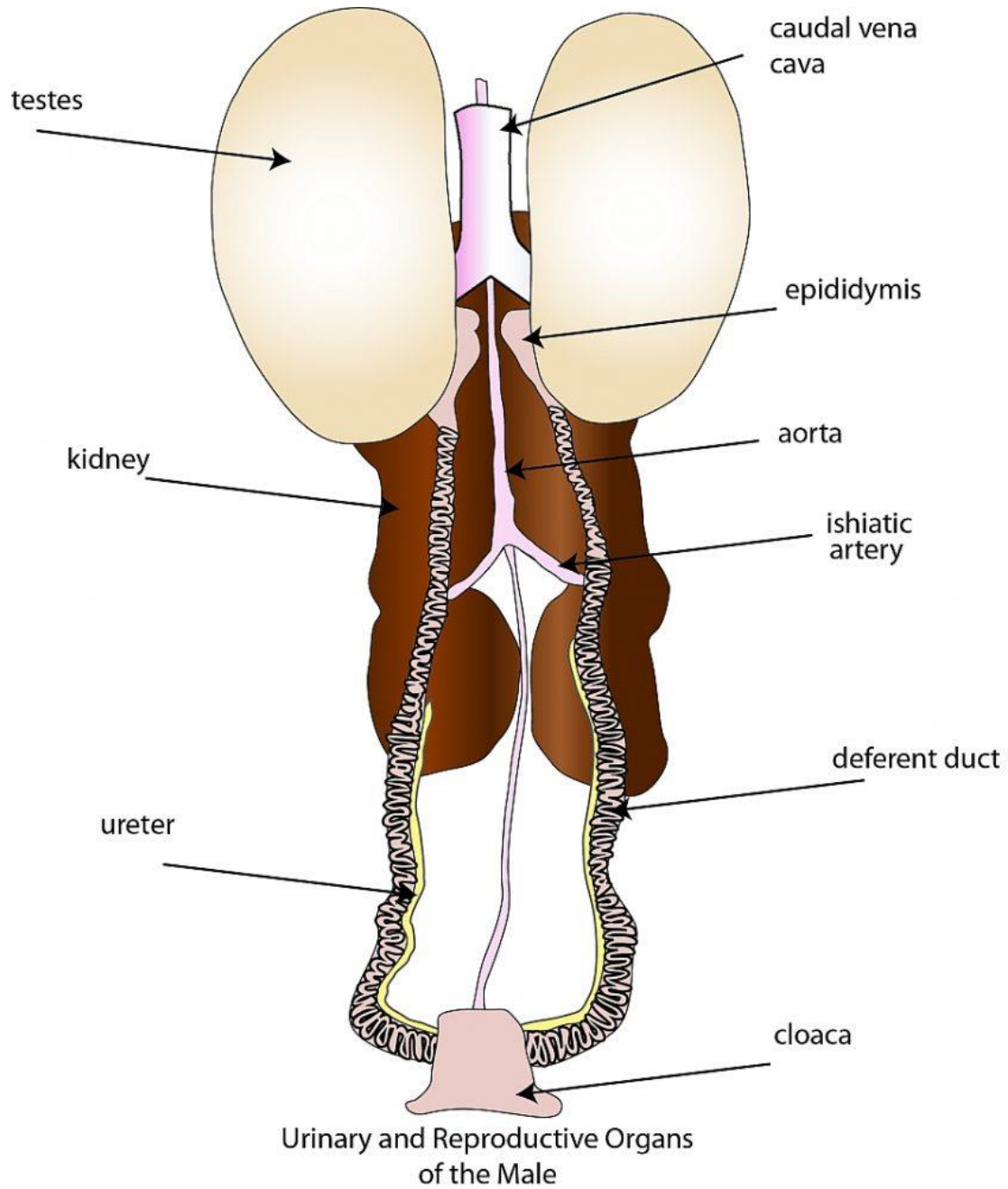


## Male reproductive system

The composed of paired testes, epididymis and vas deferent duct.

Testes: there are two bean-shaped inside the body cavity which produce both the spermatozoa and male hormones. the testes located a long back, near the elliptical and light yellow.

Vas deference: is the duct through which sperms are transported from the testes. The male chicken has two vas deferent. the vas deferent is also the main area of sperm storage. each vas deferens opens into small pump or papilla of cloaca.



## Female reproductive system

The female productive system composed of 2 ovaries ,2 oviducts generally only left organs are functional in birds. The right set is formed but later regresses.

The ovary is cluster of developing yolk or ova and is located midway between the neck and tail of birds, attached to the back

Oviduct: is second major part of the female productive system. The oviduct is convoluted tube (25-27 inch).

The oviduct divided into five major section:

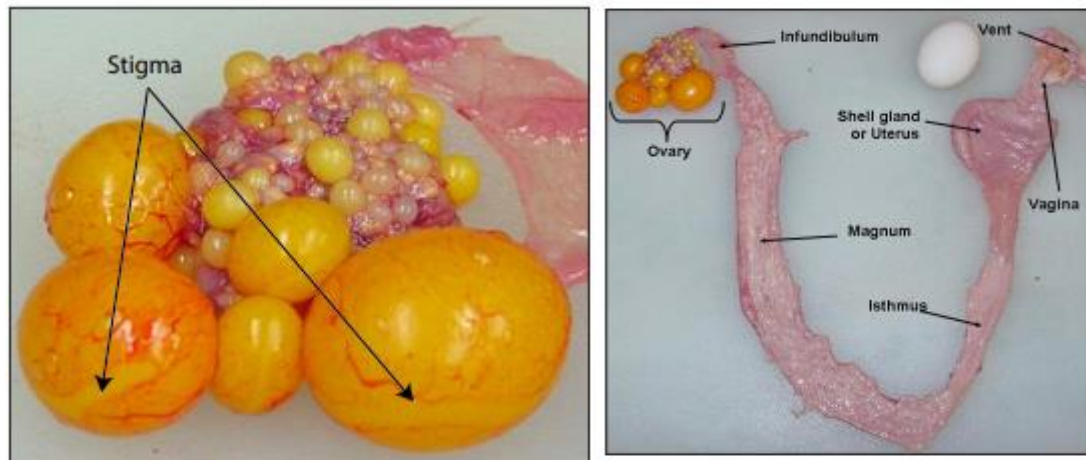
a- infundibulum or faunal

b-magnum

c-isthmus

d- shell gland

e-vaginal.





## Urinary system

The urinary system in the birds composed of 2 kidney and ureters.

The kidneys of birds are situated in the pelvic region of body cavity, their posterior ends are usually jointed. They are lobulated structures with short ureters that open independently into the cloaca, except for the ostrich. Birds lack urinary bladder, urinary wastes chiefly in the form semisolid uric acid are eliminated through the cloaca with feces.

