



Answer the following question:- (24 marks)

Q1:- Give short notes on each of the following: (10 marks):

- 1- Types of feathers.
- 2- Pigeon milk.
- 3- Phylogenic origin of tetrapod limbs.
- 4- Common characters between Fishes and Amphibian
- 5- Specific characters of group Amniota.

Q2:- Explain and illustrate your answer with labeled digrame : (14 marks):

- 1- Digestive system in Aves.
- 2- Urinogeneital system in mammalia

With best wishes,
Dr: Hayam Elshaarawy



Answer the following question:- (24 marks)

Q1:- Give short notes on each of the following: (10 marks):

1- Types of feathers.

The feather can be divided into 3 groups

- a- The contour feathers: these are large feathers which cover the body, the wings and the tail. Each feather consists of two main parts: a central axis or stem and a flat part which is called the vane. The axis is composed of two parts quill and rachis. The vane is composed of a large number of structures (barbs). Each barb carries side branches none as barbules which connected together by hooks.
- b- The filoplumes: these are minute hair-like feathers which are found below the contour feathers. It consists of weak axis carries a few barbs and barbules without hooks.
- c- The down feathers: this type cover the body of young birds, composed of short quill with terminal part of barbs without hooks.

2- Pigeon milk.

In pigeon there is a special adaptation which is called the crop glands. They are two modified areas in the walls of the crop. Upon proper stimulation the crop glands enlarge and nutritious, cheesy material called pigeon milk is discarded into the cavity of the crop. This milk is used as food for the young. The activity of the crop glands is controlled by lactogenic hormone secreted by the anterior lobe of the pituitary body.

3- Phylogenic origin of tetrapod limbs.

The fossil remains of rhipidistian crossopterygian indicate that the skeletal parts of the fins of this primitive fish can be closely homologized with those of the limbs of tetrapods. It is believed that the first bone at the base of the fin is equivalent to the humerus (femur), and the 2nd to the ulna (fibula), the first radial is compaius rarable to the (tibia). The rest of the radials are believed finally to have become

carpal (tarsal) bones whereas metacarpals (metatarsals) and phalanges have arisen as new distal outgrowths from the margin of the fleshy, muscular portion of the paddle-like fin.

4- Common characters between Fishes and Amphibian larval stage

- 1- Presence of gill slits and gills.
- 2- Presence of a single ventral aorta.
- 3- ten pairs of cranial nerves
- 4- the lateral line systems
- 5- The presence of unpaired fins.

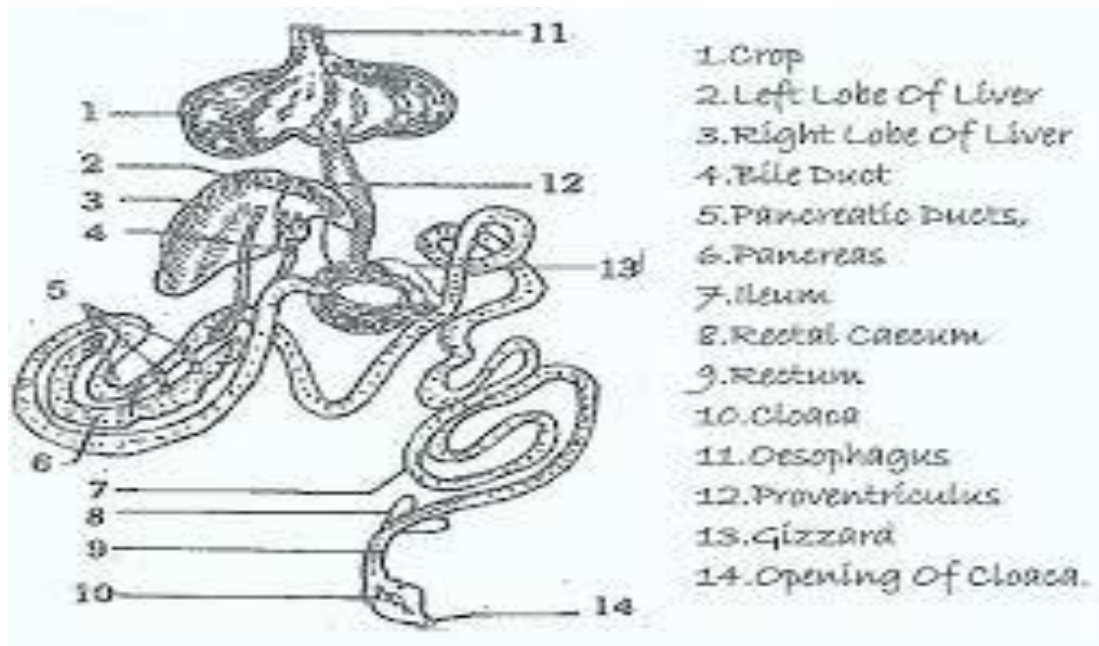
5- Specific characters of group Amniota.

- 1- The presence of an embryonic membrane called the amnion.
- 2- Lateral line system disappeared
- 3- Presence of neck region (7 cervical vertebrae).
- 4- 12 pairs of cranial nerves.
- 5- The ventricle is divided into 2 chambers.
- 6- Kidneys derived from metanephros not mesonephros.

Q2:- Explain and illustrate your answer with labeled diagram : (14 marks):

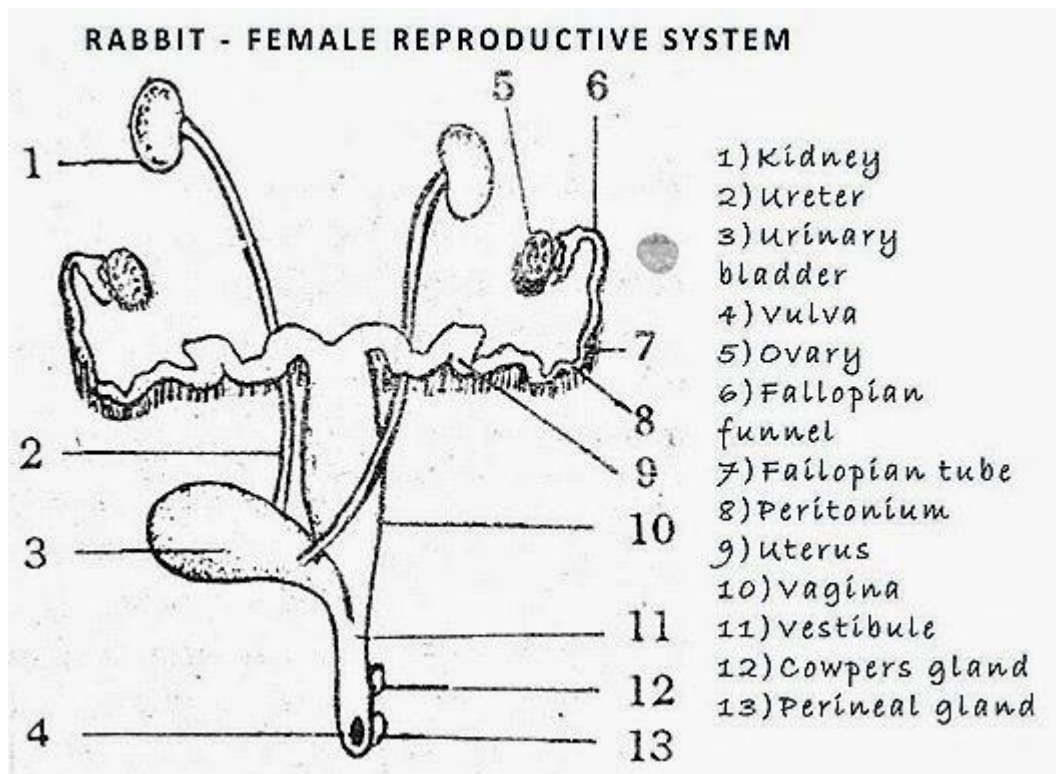
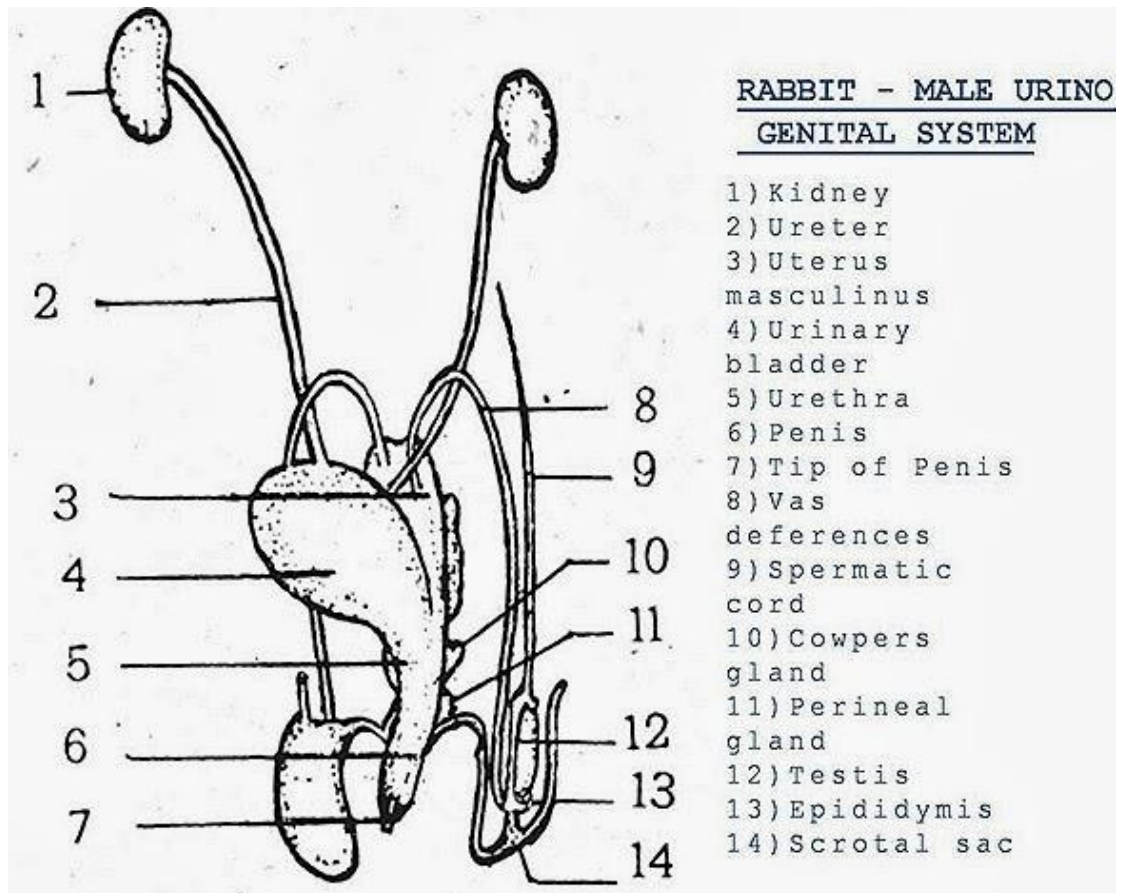
1- Digestive system in Aves.

- The large mouth is situated between the upper and lower beaks
- Inside the mouth is a large tongue, missing of teeth
- The esophagus is long tube with crop
- Food then passes to the stomach which is divided into proventriculus which secretes gastric juice and muscular gizzard which grinds the food
- The intestine which is divided into duodenum and ileum,
- Then followed by rectum (large intestine), which opens in cloaca.



2- Urinogenital system in Mammalia

The kidney is oval shape, ureters arises from them and open into urinary bladder. In male the two testes are situated in two scrotal sacs lying outside the body, a convoluted epididymis lies closely adhering to each testis. The epididymis enlarged anteriorly forming the caput and cauda. The vas deferens connected to the cauda. The urinary bladder and vas deferens open in the urethra, which passes through penis and open outside. In the female, there are two small ovaries situated in the body behind kidneys, there are two oviducts with anterior part (fallopian tube), posteriorly the fallopian tube leads into a wider thick-walled uterus. The uteri open into a median tube (the vagina) the latter opens together with the neck of urinary bladder into the wide urogenital canal (the vestibule). This opens to exterior at the vulva. Cowper's and prostate gland found in male to lubricates the passage for sperms. Perineal gland found in both male and female ;(sent and not genital gland)



With best wishes,
Dr: Hayam Elshaarawy