QB365 Question Bank Software Study Materials

Organ Systems in Animals Important 2,3 & 5 Marks Questions With Answers (Book Back and Creative)

9th Standard

Science

Total Marks : 75

2 Marks

9 x 2 = 18

1) How is the small intestine designed to absorb digested food?

Answer : Small intestine comprises of three parts.

i) Duodenum

ii) Jejunum

iii) Ileum

Ileum contain minute finger like projection called villi. It is one millimetre in length. Absorption of food takes place here. In this way digested food is absorbed by ileum.

2) Why do we sweat?

Answer : The human body functions normally at a temperature of about 37°C. When it gets hot sweat glands start secreting sweat, which contains water with small amounts of other chemicals like ammonia, urea, lactic acid and salts (mainly sodium chloride). The sweat passes through the pores in the skin and gets evaporated which reduces the body temperature.

3) Mention any two vital functions of human kidney.

Answer : i) Maintains the fluid and electrolytes balance in our body.

ii) Regulate acid-base balance of blood.

iii) Maintain the osmotic pressure in blood and tissues.

iv) Help to retain the important plasma constituents like glucose and amino acids.

4) What is micturition?

Answer : Micturition is otherwise called as urination. The elimination of urine from urinary bladder through urethra. This flow of urine is called micturition.

5) What is chyme?

Answer : The action of the gastric juice and churning of food in the stomach convert thebolus into a semi digested food called chyme

6) Name the bile salts.

Answer : Sodium glycolate and sodium tauraglycolate

7) Tabulate the types of Teeth and its functions.

Answer : Incisors, canines, premolars and molars are the teeth present in human beings.

8) Give the dental formula.

Answer : The dental formula is $\frac{2,1,2,3}{2,1,2,3} = 16 \times 2 = 32$

9) What are the stages involved in urine formation?

Answer : The process of urine formation includes the following three stages

i) Glomerular filtration

ii) Tubular reabsorption

iii) Tubular secretion

3 Marks

9 x 3 = 27

10) Name the types of teeth present in an adult human being. Mention the functions of each.

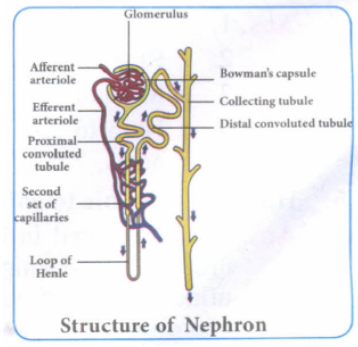
Answer : Permanent teeth are of four types (Heterodont), according to their structure and function namely incisors, canines, premolars and molars.

Types of teeth	**Number of teeth**	**Functions**
Incisors	8	Cutting and biting.
Canines	4	Tearing and piercing.
Premolars	8	Crushing and grinding
Molars	12	Crushing, grinding and mastication.

Types of teeth and their functions

11) Explain the structure of nephron.

Answer :



Structure of Nephron

Each kidney consists of more than one million nephrons. Nephrons or uriniferous tubules are structural and functional units of the kidneys. Each nephron consists of Renal corpuscle or Malphigian corpuscle and renal tubule. The renal corpuscle consists of a cup-shaped structure called Bowman's capsule containing a bunch of capillaries called glomerulus. Blood enters the glomerular capillaries through afferent arterioles and leaves out through efferent arterioles. The Bowman's capsule continues as the renal tubule which consists of three regions proximal convoluted tubule, U-shaped hair pin loop, the loop of Henle and the distal convoluted tubule. The distal convoluted tubule opens into the collecting tubule. The nitrogenous wastes are drained into renal pelvis of kidney which leads to ureters and stored in the urinary bladder. Urine is expelled out through the urethra.

12) Define the following terms:

a. Digestion

b. Osmoregulation

c. Emulsification

d. Ovulation

Answer : **a. Digestion:**The breakdown of large complex insoluble food molecules into small, simpler, soluble and diffusible particles by the action of digestive enzymes is called digestion.

b. Osmoregulation:The maintenance of constant osmotic pressure in the fluids of an organism by the control of water and salt concentrations

c. Emulsification: Bile salts help in the digestion of fats by bringing about their emulsification (conversion of large fat droplets into small ones).

d. Ovulation:The process of release of ovum from the ovary is known as ovulation.

13) What are the functions of ovaries and uterus in female reproductive system?

Answer : **Functions of ovaries :**

(i) The ovaries are the female gonads which produce ova or the female gametes.

(ii) They also secrete the female sex hormones namely oestrogen and progesterone.

Functions of uterus :

(i) Uterus is a pear-shaped muscular, hollow structure present in the pelvic cavity.

(ii) Development of foetus occurs inside the uterus

14) Give reasons for the following:

a. Scrotum remains outside the body of human males.

b. The wall of the stomach is not digested by its own enzyme.

Answer : a. The two testes lie in the respective scrotal sacs. The scrotum acts as a thermoregulator organ and provides an optimum temperature for the formation of sperms. The sperms develop at a temperature of 1-3°C lower than the normal body temperature. Hence scrotum remains outside the body of human males.
b. The wall of the stomach is protected by mucus. Hence the wall of the stomach is not digested by its own enzymes. Further the gastric enzyme pepsinogen is present only in inactive form and converted into active pepsin only when food enters the stomach

15) Reproductive organs are also considered as endocrine glands

Answer : The testes apart form producing sperms also produces male sex hormone called testosterone. Similarly the ovary apart from producing the ovum also produces the female sex hormone called oestrogen. Hence the gonads are also considered as endocrine glands.

16) Skin is considered to be an excretory organ - Justify.

Answer : Skin eliminates metabolic wastes through perspiration. Hence it has an excretory role also.

17) What is homeostasis

Answer : The tendency of the body to seek and maintain a balance condition or equilibrium within its internal environment, even when faced with external challenges is called homeostasis

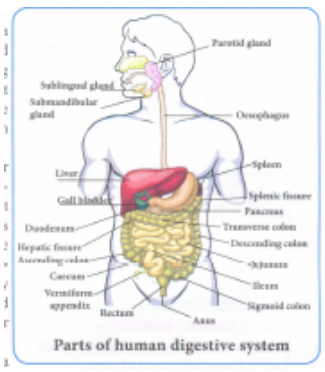
18) Write the names of male and female sex hormone

Answer : Male sex hormone is testosterone and female sex hormone is osterogen. These are responsible for secondary sexual characters.

5 Marks 6 x 5 = 30

19) Describe the alimentary canal of man.

Answer :



Parts of human digestive system

Alimentary canal of man:

Alimentary canal is a muscular coiled, tubular structure. It consists of mouth, buccal cavity, pharynx, oesophagus, stomach, small intestine (consisting of duodenum, jejunum and ileum), large intestine (consisting of caecum, colon and rectum) and anus.

Mouth: The mouth leads into the buccal cavity. The buccal cavity is a large space bound above by the palate (which separates the wind pipe and food tube), below by the throat and on the sides by the jaws. The jaws bear teeth.

Teeth: Teeth are hard structures meant for holding, cutting, grinding and crushing the food. In human beings two sets of teeth (Diphyodont) are developed in their life time.

Each tooth has a root fitted in the gum (Theocodont). Permanent teeth are of four types (Heterodont), according to their structure and function namely incisors, canines, premolars and molars.

Dental formula represents the number of different type of teeth present in each half of a jaw (upper and lower jaw).

For Permanent teeth in each half of upper and lower jaw:

$$\frac{2,1,2,3}{2,1,2,3} = 16 \times 2 = 32$$

Salivary glands: Three pairs of salivary glands are present in the mouth cavity. They are: parotid glands, sublingual glands and submaxillary or submandibular glands

i. Parotid glands are the largest salivary glands, which lie in the cheeks

ii. Sublingual glands are the smallest glands and lie beneath the tongue.

iii. Submaxillary or Submandibular glands lie at the angles of the lower Jaw.

Tongue: The tongue is a muscular, sensory organ which helps in mixing the food with the saliva.

Pharynx: The pharynx is a membrane lined cavity behind the nose and mouth, connecting them to the oesophagus. It serves as a pathway for the movement of food from mouth to oesophagus.

Oesophagus: Oesophagus or the food pipe is a muscular-membranous canal about 22 cm length. It conducts food from pharynx to the stomach by peristalsis (wave-like movement) produced by the rhythmic contraction and relaxation of the muscular walls of alimentary canal.

Stomach: The stomach is a wide J-shaped muscular organ located between oesophagus and the small intestine

Small intestine: The small intestine is the longest part of the alimentary canal, which is a long coiled tube measuring about 5 - 7 m. It comprises three parts duodenum, jejunum and ileum.

1. Duodenum is C-shaped and receives the bile duct (from liver) and pancreatic duct (from pancreas).

2. Jejunum is the middle part of the small intestine. It is a short region of the small intestine.

3. Ileum forms the lower part of the small intestine and opens into the large intestine. Ileum is the longest part of the small intestine. It contains minute finger like projections called villi (one millimeter in length) where absorption of food takes place. Internally, each villus contains fine blood capillaries and lacteal tubes. The small intestine serves both for digestion and absorption. It receives (i) the bile from liver and (ii) the pancreatic juice from pancreas in the duodenum.

Liver: It is the largest digestive gland of the body which is reddish brown in colour. Bile salts help in the digestion of fats by bringing about their emulsification (conversion of large fat droplets into small ones).

Pancreas: It is a lobed, leaf shaped gland situated between the stomach and duodenum. Pancreas acts both as an exocrine gland and as an endocrine gland.

Large intestine: The unabsorbed and undigested food is passed into the large intestine. It extends from the ileum to the anus. It is about 1.5 meters in length. It has three parts- caecum, colon and rectum .

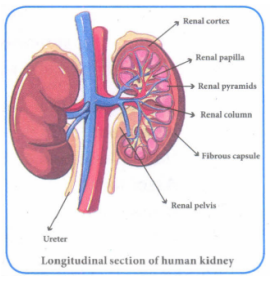
The caecum is a small blind pouch like structure situated at the junction of the small and large intestine. From its blind end a finger - like structure called vermiform appendix arises. It is a vestigeal (functionless) organ in human beings

The colon is much broader than ileum. It passes up the abdomen on the right (ascending colon), crosses to the left just below the stomach (transverse colon) and down on the left side (descending colon).

The rectum is the last part which opens into the anus. It is kept closed by a ring of muscles called anal sphincter which opens when passing stools.

20) Explain the structure of kidney and the steps involved in the formation of urine

Answer :



Longitudinal section of human kidney

Kidneys:

(i) Kidneys are bean-shaped organs reddish brown in colour.

(ii) The kidneys lie on either side of the vertebral column in the abdominal cavity attached to the dorsal body wall.

(iii) The right kidney is placed lower than the left kidney as the liver takes up much space on the right side.

(iv) Each kidney is about 11 cm long, 5 cm wide and 3 cm thick.

(v) Internally the kidney consists of an outer dark region, the cortex and an inner lighter region,the medulla.

(vi) The medulla consists of multitubular concial masses called the medullary pyramids or renal pyramids whose base are adjecent to cortex.

(vii) On the inner concave side of each kidney,a notch called hilum is present through which blood vessels and nerves enter in and the urine leaves through the ureter.

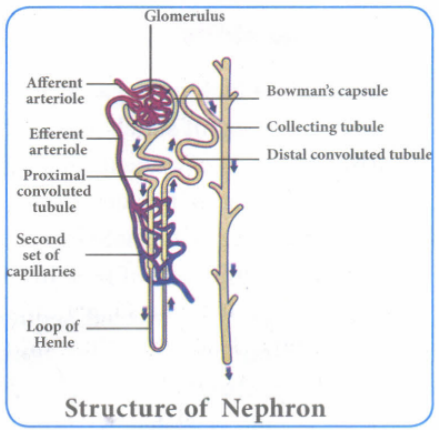
Process of Urine formatiom:

The process of urine formation includes the following three stages.

(i) Glomerular filtration

(ii) Tubular reabsorption and

(iii) Tublar secretion



Structure of Nephron

Glomerular filtration: Urine formation begins with the filtration of blood through epithelial walls of the glomerulus and Bowman's capsule. The filtrate is called as the glomerular filtrate. Both essential and non-essential substances present in the blood are filtered.

Tublar reabsorption: The filtrate in the proximal tubule consists of essential substances such as glucose, amino acids, vitamins, sodium, potassium, bicarbonates and water that are reabsorbed into the blood by a process of selective reabsorption.

Tubular secretion: Substances such as H^+ or K^+ ions are secreted into the tubule. Certain substances like potassium and a large number of drugs like penicillin and aspirin are passed into the filtrate in the distal convoluted tubule. This tubular filtrate is finally known as urine, which is hypertonic in man. Finally the urine passes into collecting ducts to the pelvis and through the ureter into the urinary bladder by urethral peristalsis (waves of constriction in the ureters). When the urinary bladder is full the urine is expelled out through the urethra. This process is called micturition

21) Draw a chart to show the various enzymes produced during digestion is our body and their action

Answer :

Digestive glands	**Enzymes**	**Substrate (nutrient)**	**Product of digestion**
Salivary glands	Ptyalin (Salivary amylase)	Starch	Maltose
Gastric glands	Pepsin	Proteins	Peptones
	Rennin (in infants)	Milk protein or caseinogen	Curdles milk to Peptides casein amino acids
Pancreas	Pancreatic amylase	Starch	Maltose
	Trypsin	Proteins and peptones	Peptides and amino acids
	Chymotrypsin	Protein	Proteoses, Peptones Polypeptide, tri and dipepetides
	Pancreatic lipase	Emulsified fats	Fatty acids and Glycerol
Intestinal glands	Maltase	Maltose	Glucose and Glucose
	Lactase	Lactose	Glucose and Galactose
	Sucrase	Sucrose	Glucose and Fructose
	Lipase	Fats	Fatty acids and Glycerol

22) Write a note on teeth of humans

Answer : **Teeth:**

(i) Teeth are hard structures meant for holding, cutting, grinding and crushing the food.

(ii) In human beings two sets of teeth (Diphyodont) are developed in their life time. The first appearing set of 20 teeth called temporary or milk teeth are replaced by the second set of thirty two permanent teeth, sixteen in each jaw.

Each tooth has a root fitted in the gum (Theocodont).

(iii) Permanent teeth are of four types (Heterodont), according to their structure and function namely incisors, canines, premolars and molars.

(iv) Dental formula represents the number of different type of teeth present in each half of a jaw (upper and lower jaw).

(v) The types of teeth are denoted as incisors (i), canine (c), premolars (pm) and molars (m). The dental formula is presented as:

For Milk teeth in each half of upper and lower jaw:

$$\frac{2,1,2}{2,1,2} = 10 \text{ X } 2$$

For Permanent teeth in each half of upper and lower jaw:

$$\frac{2,1,2,3}{2,1,2,3} = 16 \text{ X } 2 = 32$$

Types of teeth	**Number of teeth**	**Functions**
Incisors	8	Cutting and biting.
Canines	4	Tearing and piercing.
Premolars	8	Crushing, grinding and mastication.
Molars	12	Crushing, grinding and mastication

Types of teeth and their functions

23) Write a note on functions of liver in digestion.

Answer : (i) It is the largest digestive gland of the body which is reddish brown in colour.

(ii) It is divided into two main lobes, right and left lobes. The right lobe is larger than the left lobe.

(iii) On the under surface of the liver, gall bladder is present. The liver cells secrete bile which is temporarily stored in the gall bladder.

(iv) Bile is released into small intestine when food enters in it. It has bile salts (sodium glycolate and sodium tauraglycolate) and bile pigments (bilirubin and biliviridin).

(v) Bile salts help in the digestion of fats by bringing about their emulsification (conversion of large fat droplets into small ones).

24) List the functions of Liver.

Answer : 1. Controls blood sugar and amino acid levels

2. Synthesizes foetal red blood cells

3. Produces fibrinogen and prothrombin, used for clotting of blood

4. Destroys red blood cells

5. Stores iron, copper, vitamins A and D.

6. Produces heparin (an anticoagulant)

7. Excretes toxic and metallic poisons

8. Detoxifles substances including drugs and alcohol