

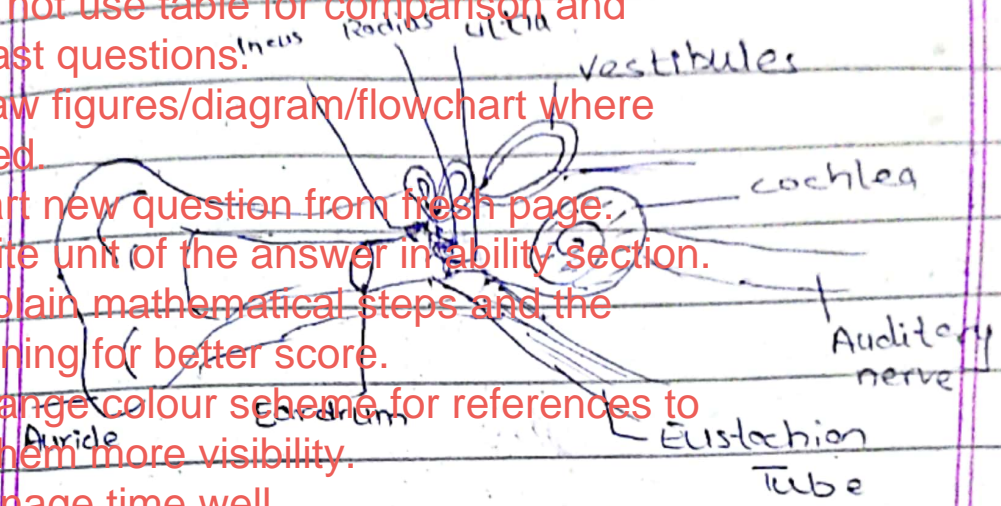
Part-II

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General Instructions

Q5) Structure and Function of human ear

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.
4. Draw figures/diagram/flowchart where needed.
5. Start new question from fresh page.
6. Write unit of the answer in ability section.
7. Explain mathematical steps and the reasoning for better score.
8. Change colour scheme for references to give them more visibility.
9. Manage time well.
10. Wide page borders are discouraged. Should be reasonable.
11. Avoid writing wrong references.
12. Give more weightage to expressedly asked part/s of the question.



Outer Ear: This consists of outer visible auricle which directs the sound waves inside the ear into the tube called ear canal. Sound waves after passing through canal hit the eardrum, a tiny flap that separates outer ear from Middle ear.

Middle Ear:

The sound waves after hitting eardrum enter the middle ear that consists of three smallest bones

- Incus
- Malleus
- Utricle

Inner Ear:

Inner ear consists of a snail-shaped cochlea that has fluid filled in it. The waves are absorbed by the fluid and are transmitted as impulses/electrical signals to the brain via the auditory nerve.

Functions

Hearing:-

Human ear is responsible for the sense of hearing.

Balance:-

Human ear has vestibular system which helps him maintain posture and stand upright.

b) Digestive Systems

Digestive system comprises of group of organs (GI-tract) associated with breakdown of large fluid food particles into smaller that can be absorbed readily.

Components of Digestive System:-

The mouth receives the food and it passes through many organs till the waste is eliminated through anus. This tube from mouth to anus is called

gastrointestinal tract. It includes

- Receiving end: The mouth after receiving the food starts mechanical breakdown via the teeth and saliva from salivary glands is mixed with it. The amylase in saliva helps breakdown starch. Food is converted into Bolus.

Esophagus: Food after being chewed is pushed to back of throat from which it slides down the food pipe. Peristalsis helps food move from mouth to stomach.

Stomach:

J-shaped organ has a cardiac sphincter which opens to receive the bolus and closes later. Stomach produces HCl and enzymes for the digestion. Food is now changed into paste called chyme.

Small Intestine :-

(Digestion & Absorption)

Small Intestine is divided into three parts

- Duodenum
- Jejunum
- Ileum

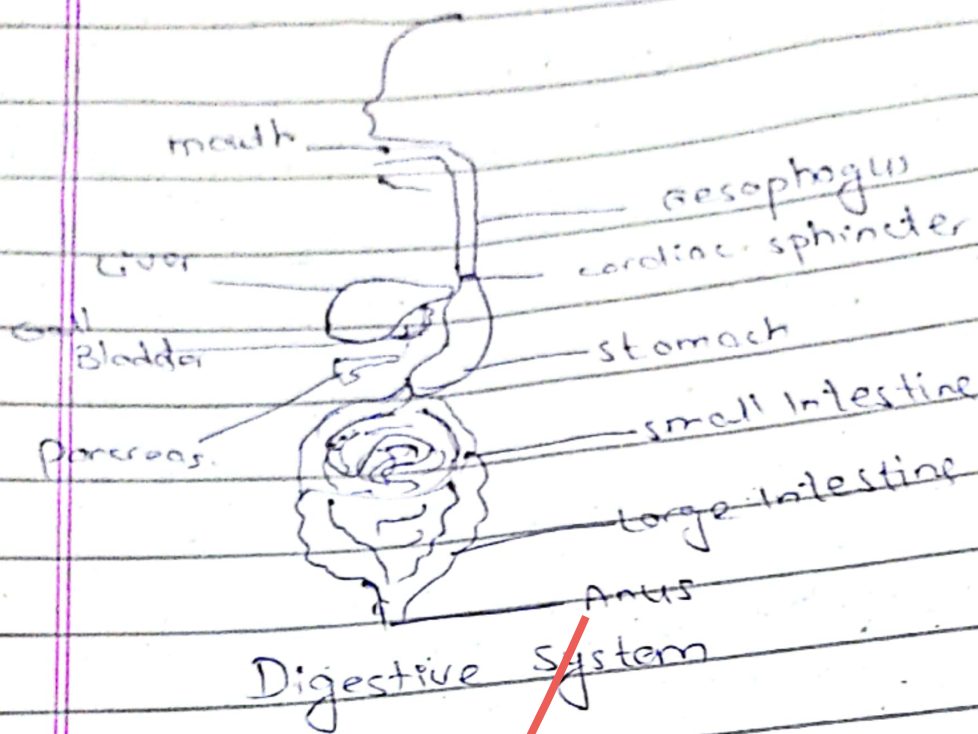
The intestinal tube receives food from stomach in form of acidic paste. The

Food is neutralized by bile and pancreatic fluid which are necessary for breakdown / proper emulsification of fats. Enzyme lipase is involved.

The intestinal tube contains finger-like projections called villi that give it appearance of a lawn. These villi have capillary networks near them. The essential components of food are absorbed by the body and sent to bloodstream.

- Large intestine:

Large intestine is involved in cutting eliminating the waste in the form of faeces. It, too is divided into 3 parts, caecum, colon and anus rectum.



c. Vitamins

Small organic substances required by body in small amount for essential growth and functioning.

Types of Vitamin:

There are two types of vitamins

• Water-soluble vitamins:

As the name implies, these vitamins are soluble in water and hence are not stored in body and are eliminated.

Example:

Vitamin B and C.

Vitamin B:

consists of group of vitamins known as vitamin B-complex

B₁ (Thiamine)

B₂ (Riboflavin)

B₃ (Niacin)

B₄ (Pyridoxine)

B₅ (pantothenic acid)

~~B₆~~

B₇ (Biotin)

B₉ (Folate)

B₁₂ (cyco-cobalamine)

Vitamin C:-

It is also known as Ascorbic acid is found in citrus fruits tomatoes etc. Its deficiency can cause scurvy.

• Fat-soluble Vitamins:-

Vitamin A, D, E and K are stored in body fats and are not required daily intake. These are called fat-soluble vitamins

Vitamin	Disease due to deficiency
A (Tocopherol)	Night Blindness
D (Calciferol)	Ricket
E	sterility
K	Bleeding or delayed clotting

Significance:

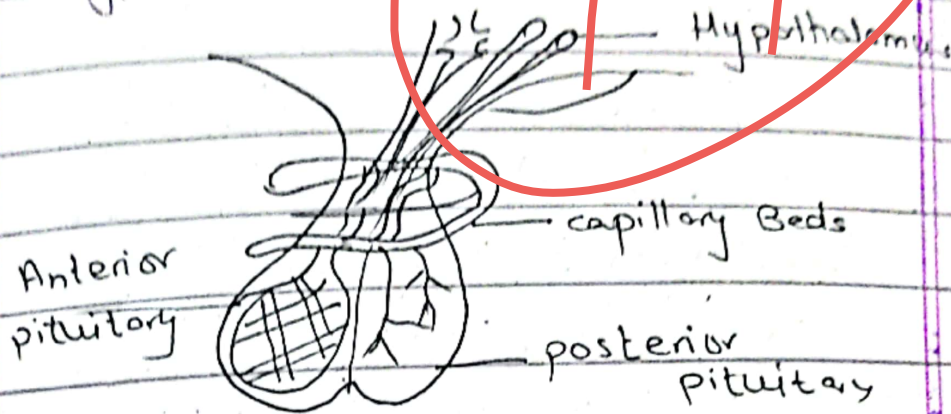
Vitamins don't have any nutritional values, they don't carry any calories but act as cofactors for many enzymes and regulate key processes of body related to growth.

d. Pituitary Gland Function: (The Master Gland)

This gland is responsible for regulating the hormonal secretions of rest of glands and hence is known as the master gland.

• Connecting Nervous system to Endocrine system:

Pituitary gland is connected to hypothalamus and receives stimulus and hormones for the posterior pituitary from hypothalamus.



• Feedback Control:

The pituitary gland produced stimulating hormones which triggers the secretions of many others

Pituitary Hormone	Target Gland	Hormone of target	Secret
TSH	Thyroid	T ₃ , T ₄	
FSH, LH	Gonads	Testosterone or estrogen	
GH	Bone muscles	Growth Hormone	
ACTH	Adrenal Glands	cortisol	

Physiological Processes:

Following physiological processes are under control of pituitary

- Lactation
- stress response
- Growth
- Reproduction
- Metabolism
- Homeostasis

Section - II

Q6

a.

Identify the series.

10, 100, 200, 310, 430

$$10 + 90 = 100$$

$$100 + 100 = 200$$

$$200 + 110 = 310$$

$$310 + 120 = 430$$

C B)

Age of Romi = x

Age of Nisha = $15 + x$

5 Years ago

$(x - 5)$ — Romi

$(15 + x) - 5$ — Nisha

Nisha was 3 times older.

$$(x-5) = (15+x)5$$

Q7
b) Brother is written as
Q D G S N G A

BROTHER Q D G S N G A

Explain the reasoning in words

SISTER Q D S R H R

Q D S R H R Ans.

Q7

(d) Number of Pizza slices = 8
No. of slices with raisins = 3

Probably of picking slice
with raisin.

Probability = $\frac{\text{No. of time out come can occur}}{\text{Total no. of outcomes}}$

$$= \frac{3}{8}$$

probability of shila picking a
raisin slice is $\frac{3}{8}$.

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