

The hardest substance in the human body?

UNIT - I (Sr. INTER)

DIGESTION - ABSORPTION & BREATHING - EXCHANGE OF GASES

These two topics of digestion and breathing belong to Unit - I under the title Human Anatomy and Physiology - I. The topic digestion and absorption covers the parts of digestive system which include alimentary canal and digestive glands. It covers the process of digestion and absorption also.

The topic breathing and exchange of gases covers the parts of respiratory system, mechanism of breathing, exchange of gases and transportation of gases. This unit covers the disorders of the digestive system and respiratory system also.

- It carries 8 marks weightage for IPE in the form of two SAQs.
- It carries 2 - 4 marks for NEET.

IPE Preparation plan

- Students should practice the diagrams like L.S. of tooth, human

digestive system, Oxyhaemoglobin dissociation curve etc.,

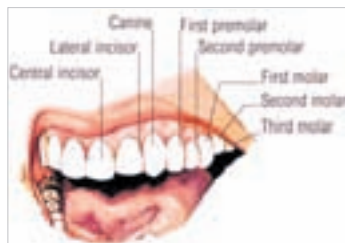
Important VSAQs with answers

1. Give the dental formula of adult human beings.

A. Dental formula represents the arrangement of various types of teeth in each half of both the jaws of man in the order Incisors, Canines, Premolars and Molars.

$$\text{In adult man, it is } \dots \frac{2123}{2123} = 32.$$

Dental formula of milk dentition is $\frac{2}{2}, \frac{1}{1}, \frac{0}{0}, \frac{2}{2} = 20$



2. What is chyme?

A. Semi fluid mass of partly digest-



ed acidic food formed in the stomach is called chyme.

3. Name the different types of salivary glands of man and their locations in the human body?

A. Three pairs of salivary glands are present in man. They are....

- Parotid glands - present below the pinna/ inner surface of the cheeks.
- Sub maxillary (or) Sub mandibular glands - located at the angles of lower jaw.
- Sublingual glands- present below the tongue.

4. Name different types of papillae present on the tongue of man.

A. The upper surface of the tongue has small projections called papillae, representative of taste buds. In humans, the tongue bears 3 types of papillae namely..

- Fungiform papillae - present on tip and margins of tongue.
- Filiform papillae - present on surface of tongue.
- Circumvallate papillae - present on posterior part/ base of tongue.

5. What is the hardest substance in the human body? What is its origin?

A. Enamel of tooth is the hardest substance in the human body. It covers the crown of tooth.

Enamel is secreted by ameloblasts of ectodermal origin.

6. Distinguish between diarrhea and constipation.

A. **Diarrhea:** The abnormal frequency of bowel movement and increased liquidity of the faecal discharge. It reduces the absorption of food and results in loss of water (dehydration).

Constipation: The condition in which the faeces are retained within the rectum as it is hard due to low content of water and the movement of bowel occurs irregularly.

7. Name two hormones secreted by the duodenal mucosa.

A. The hormones secreted by epithelium of duodenal mucosa are secretin and cholecystokinin (cck)/

cholecystokinin pancreozymin.

8. Mention any two occupational respiratory disorders and their causes in human beings.

A. Occupational respiratory disorders are caused by exposure of the body to the harmful substances from certain industries....

- Asbestosis:** It occurs due to chronic exposure to asbestos dust in the people working in asbestos industry.
- Silicosis:** It occurs because of long term exposure to 'silica dust' in the people working in mining industries, quarries, etc.
- Siderosis:** It occurs due to deposition of iron particles in tissues.

Important SAQs

- Draw a neat labeled diagram of L.S. of a tooth.
- Describe the process of digestion of proteins in stomach.
- If you take butter in your food, how does it get digested and absorbed in the body? Explain.
- What are the functions of liver?
- Explain the process of inspiration and expiration under normal conditions.

Tips to prepare for NEET

This unit is one of the important topics for NEET. Students should concentrate over the sequence of various parts of alimentary canal, sphincters, types of cells in gastric glands and their secretions, formation of succus entericus, functions of liver, sequence of the action of proteases etc., They should learn the methods followed by the end products of digestion during their entry

into blood capillaries and lacteals. Prepare the comparative study of various types of digestive juices, their pH values and enzymes in them.

TRUTHS about TEETH in human beings...

- Dental formula of adult (permanent): $\frac{2}{2}; \frac{1}{1}; \frac{2}{2}; \frac{3}{3}$
- Dental formula of milk dentition: $\frac{2}{2}; \frac{1}{1}; \frac{0}{0}; \frac{2}{2}$
- Teeth which is part of milk dentition: Incisors, Canines, Molars except wisdom teeth.

4) Number of teeth formed for only time: 12 (8 premolars, 4 molars)

5) Number of teeth of different categories: a) Incisors - 8; b) Canines - 4; c) Premolars - 8; d) Molars - 12

In the topic of breathing and exchange of gases, they should concentrate over mechanism of breathing, respiratory volumes and capacities, transport of gases etc.,

Students should practice about changes in oxyhaemoglobin dissociation curve at various places like alveoli, tissues and active skeletal muscles.

Occurrence of Chloride shift and reverse chloride shift and their significance is also important.

They should prepare the role of nervous system in the maintenance of respiratory rhythm in different conditions.

Previous Questions

1. Which hormones do stimulate the production of pancreatic juice and bicarbonate?

(NEET-2, 2016)

- Angiotensin and epinephrine
- Gastrin and insulin
- Cholecystokinin and secretin
- Insulin and glucagon

2. The partial pressure of oxygen in the alveoli of the lungs is:

(NEET-2, 2016)

- Equal to that in the blood
- More than that in the blood
- Less than that in the blood
- Less than that of carbon dioxide

3. Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because:

(NEET-2, 2016)

- There is a negative pressure in the lungs
- There is a negative intrapleural pressure pulling at the lung walls
- There is a positive intrapleural pressure
- Pressure in the lungs is higher than the atmospheric pressure

4. Name the chronic respiratory disorder caused mainly by cigarette

smoking: (NEET-1, 2016)

- Emphysema
- Asthma
- Respiratory acidosis
- Respiratory alkalosis

5. Asthma may be attributed to: (NEET-1, 2016)

- bacterial infection of the lungs
- allergic reaction of the mast cells in the lungs
- inflammation of the trachea
- accumulation of fluid in the lungs

6. In the stomach, gastric acid is secreted by the: (NEET-1, 2016)

- gastric secreting cells
- parietal cells
- peptic cells
- acidic cells

7. The primary dentition in human differs from permanent dentition in not having one of the following type of teeth: (AIPMT 2015)

- Incisors
- Canine
- Premolars
- Molars

Answers

- 3
- 2
- 2
- 1
- 2
- 2
- 3

Enzymes of different digestive juices					
Digestive juice	Amylases	Proteases	Lipases	Enzymes of Nucleic acids	Others
1. Saliva	Ptyalin	----	Lingual lipase	----	-----
2. Gastric juice	----	Pepsin, Rennin	Gastric lipase	-----	HCl, bicarbonates, Castle's intrinsic factor
3. Bile	----	----	-----	---	Bile salts, pigments
4. Pancreatic	Amylase	Trypsin, chymo-Trypsin, carboxy-Peptidases	Steapsin	Nucleases (DNAase, RNAase)	-----
5. Intestinal juice (succusentericus)	Disaccharidases	Amino, tri and Dipeptidases	Lipase	Nucleotidases, Nucleosidases	Enterokinase