

DIGESTION AND ABSORPTION

Scientific words and their meaning

Scientific vocabulary is crucial for clearing NEET as it helps in understanding and interpreting questions, comprehending texts and case studies, reviewing study materials, effectively communicating answers, and accessing supplementary resources. Developing a strong command of scientific vocabulary will significantly contribute to your success in the NEET examination. The answer choices in NEET questions may contain scientific terms that need to be understood and evaluated. By having a strong grasp of scientific vocabulary, you can decipher the meaning of the answer choices and select the most appropriate one.

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- 1) **Carbohydrates:** Organic compounds made up of carbon, hydrogen, and oxygen. They are an important source of energy and include sugars, starches, and fibers.
 - 2) **Proteins:** Complex macromolecules composed of amino acids. They play a crucial role in building and repairing tissues, as well as in various physiological processes in the body.
 - 3) **Fats:** Also known as lipids, they are a group of molecules that are insoluble in water. Fats serve as a concentrated source of energy and are involved in cell structure, insulation, and the absorption of fat-soluble vitamins.
 - 4) **Vitamins:** Essential organic compounds required in small quantities for various physiological functions. They are classified into different groups (e.g., vitamin A, B, C, D, etc.) and are involved in processes like metabolism, immune function, and growth.
 - 5) **Minerals:** Inorganic elements required in small amounts for normal body functioning. Examples include calcium, iron, potassium, and zinc. Minerals are involved in processes like bone formation, nerve function, and enzyme activity.
 - 6) **Digestion:** The process by which complex food substances are broken down into simpler, absorbable forms. It involves mechanical (physical) and biochemical (chemical) processes and occurs primarily in the digestive system.
 - 7) **Digestive System:** The organs and structures involved in the ingestion, digestion, and absorption of food. It includes the mouth, esophagus, stomach,

small intestine, large intestine, liver, gallbladder, and pancreas.

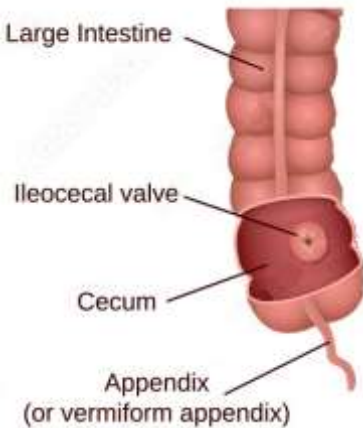
- 8) **Mechanical Digestion:** The physical breakdown of food into smaller pieces by chewing, mixing, and churning actions. It increases the surface area of food for better enzymatic digestion.
- 9) **Biochemical Digestion:** The chemical breakdown of complex molecules into simpler substances through the action of enzymes. This process involves the hydrolysis of proteins, carbohydrates, and fats into their respective building blocks.
- 10) **Absorption:** The process by which digested nutrients are taken up by the body's cells and transported to the bloodstream for distribution to various tissues and organs.
- 11) These terms provide a general understanding of the scientific aspects of food, digestion, and the human digestive system.
- 12) **Alimentary Canal:** Also known as the gastrointestinal tract (GI tract), it is a long muscular tube that extends from the mouth to the anus and is involved in the digestion and absorption of food.
- 13) **Buccal Cavity:** Another term for the oral cavity or mouth, which contains teeth and the tongue.
- 14) **Deciduous Teeth:** Also known as milk teeth or baby teeth, these are the first set of temporary teeth that are eventually replaced by permanent teeth.

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- 15) Permanent Teeth: The second set of teeth that replace the deciduous teeth and usually last for a lifetime in humans.
 - 16) Dental Formula: A notation system that represents the arrangement of teeth in each half of the upper and lower jaws. In humans, the dental formula is represented as 2123, indicating the number and types of teeth (incisors, canines, premolars, and molars) on one side of the mouth.
 - 17) Mastication: The process of chewing and grinding food with the help of teeth and jaw muscles.
 - 18) Papillae: Small projections on the upper surface of the tongue that contain taste buds and help in detecting different tastes.
 - 19) Pharynx: A short tube that serves as a common passage for both food and air. It connects the oral cavity and the esophagus, as well as the nasal cavity and the larynx.
 - 20) Epiglottis: A cartilaginous flap located at the base of the tongue that prevents food from entering the windpipe (trachea) during swallowing.
 - 21) Esophagus: A muscular tube that connects the pharynx to the stomach and carries swallowed food to the stomach through peristaltic contractions.

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- 22) Stomach: A J-shaped, muscular organ located in the upper left portion of the abdominal cavity. It receives food from the esophagus and partially digests it through mechanical and chemical processes.
- 23) Small Intestine: A long, coiled tube located between the stomach and the large intestine. It is divided into three regions: the duodenum, jejunum, and ileum. The small intestine is where most of the digestion and absorption of nutrients occur.
- 24) Large Intestine: Also known as the colon, it is the last part of the digestive tract. It consists of the cecum, colon, and rectum, and is primarily responsible for water absorption and the formation and elimination of feces.
- 25) Muscularis: The layer of smooth muscles in the digestive tract that helps in the movement and propulsion of food through peristalsis.
- 26) Submucosa: A layer of loose connective tissue containing blood vessels, nerves, and lymph vessels. Glands are also present in the submucosa of the duodenum.
- 27) Rugae: Irregular folds present in the stomach lining that allow for expansion of the stomach when it fills with food.

28) Vermiform Appendix: A small, finger-like projection attached to the cecum. Although its exact function in humans is unclear, it is believed to have a role in immune function.

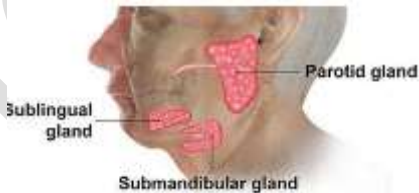
29) Cecum : is a pouch-like structure located at the beginning of the large intestine in the digestive system of many vertebrates, including humans.



30) Villi: Small, finger-like projections found in the small intestine that greatly increase the surface area for absorption of nutrients. They are covered with microvilli, forming a brush border.

31) Serosa: The outermost layer of the digestive tract, composed of a thin mesothelium (epithelium of visceral organs) and connective tissues.

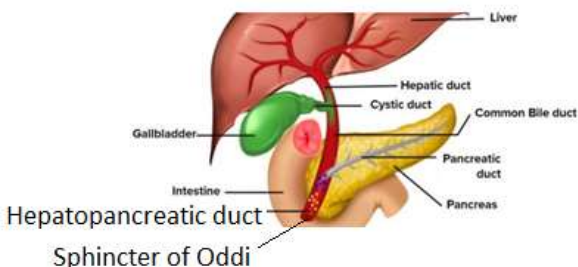
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- 32) Mucosa: The innermost layer of the digestive tract lining the lumen. It contains folds, such as rugae in the stomach lining
- 33) Salivary Glands: Glands that produce saliva, which is a watery fluid containing enzymes (such as amylase) that initiate the digestion of carbohydrates in the mouth.
- 34) Parotid Glands: The largest pair of salivary glands located on the sides of the face, near the ears.
- 35) Submaxillary/Submandibular Glands: A pair of salivary glands located beneath the lower jawbone that produce saliva containing enzymes and mucus.
- 36) Sublingual Glands: A pair of salivary glands located below the tongue that produce saliva containing mucus.



- 37) Liver: The largest gland in the human body, situated in the abdominal cavity, below the diaphragm. It has two lobes and performs numerous functions, including the production of bile, detoxification of harmful substances, storage of vitamins and glycogen, and synthesis of various proteins.

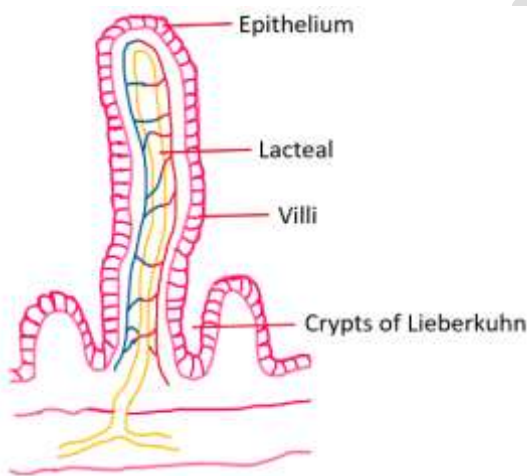
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- 38) **Hepatic Lobules:** The structural and functional units of the liver, consisting of hepatic cells arranged in the form of cords and separated by hepatic sinusoids.
- 39) **Bile Duct:** Ducts that carry bile, a substance produced by the liver, out of the liver. The bile ducts eventually merge to form the common hepatic duct.
- 40) **Gallbladder:** A thin muscular sac located beneath the liver that stores and concentrates bile produced by the liver. The bile is released into the duodenum when needed for the digestion of fats.
- 41) **Pancreas:** A compound organ situated between the limbs of the "U"-shaped duodenum. It has both exocrine and endocrine functions. The exocrine portion of the pancreas secretes pancreatic juice containing digestive enzymes, while the endocrine portion secretes hormones such as insulin and glucagon.
- 42) **Pancreatic Juice:** The digestive fluid secreted by the exocrine cells of the pancreas, which contains various enzymes, including amylase, lipase, and proteases, for the digestion of carbohydrates, fats, and proteins.
- 43) **Hepato-Pancreatic Duct:** The duct formed by the union of the common bile duct (carrying bile) and the pancreatic duct (carrying pancreatic juice). It opens

into the duodenum and is regulated by the sphincter of Oddi.



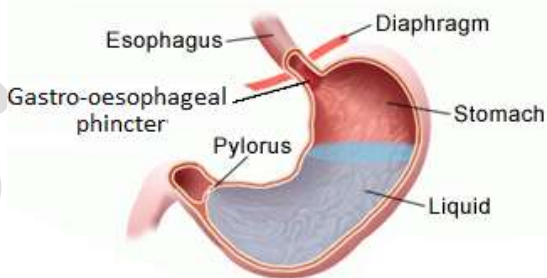
- 44) Sphincter of Oddi: A muscular valve located at the opening of the common hepato-pancreatic duct into the duodenum, which regulates the flow of bile and pancreatic juice into the small intestine.
- 45) Goblet Cells: Specialized cells found in the mucosal epithelium of the digestive tract, particularly in the stomach and intestine. Goblet cells secrete mucus, a sticky substance that helps lubricate and protect the lining of the digestive tract.
- 46) Microvilli: Microscopic projections present on the surface of the villi in the small intestine. These tiny, finger-like structures further increase the surface area available for absorption of nutrients by the small intestine.
- 47) Brush Border: The collective term for the microvilli covering the surface of the small intestine. The brush border gives the appearance of a brush-like border and aids in the absorption of digested nutrients.

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- 48) Lacteal: A large lymphatic vessel found within each villus of the small intestine. Lacteals play a crucial role in absorbing dietary fats, specifically fatty acids and fat-soluble vitamins.



- 49) Crypts of Lieberkuhn: Tubular invaginations or pits located between the bases of the villi in the small intestine. The crypts contain specialized cells that secrete intestinal juices and participate in the final stages of digestion and nutrient absorption.
- 50) Gastric Glands: Glands located in the stomach lining that secrete gastric juice, which contains enzymes (such as pepsin) and hydrochloric acid. These substances aid in the breakdown of food and the initial stages of protein digestion.

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- 51) **Mastication:** The mechanical process of breaking down food into smaller pieces by chewing and grinding actions of the teeth and tongue.
- 52) **Bolus:** A cohesive mass of partially digested food that forms after mastication and mixing with saliva. The bolus is swallowed and passes from the mouth into the pharynx.
- 53) **Deglutition:** The process of swallowing, which moves the bolus from the mouth through the pharynx and into the esophagus.
- 54) **Peristalsis:** Waves of muscular contractions that propel food through the esophagus and other parts of the digestive tract. In the esophagus, peristalsis helps move the bolus towards the stomach.
- 55) **Gastro-oesophageal Sphincter:** A muscular ring located at the junction between the esophagus and the stomach. It controls the passage of food from the esophagus into the stomach and prevents the backflow of stomach contents into the esophagus.



- 56) **Salivary Amylase:** An enzyme present in saliva that initiates the breakdown of complex carbohydrates

(starches) into smaller sugar molecules, such as maltose.

- 57) **Mucus Neck Cells:** Cells present in the gastric glands of the stomach that secrete mucus. The mucus helps protect the stomach lining from the corrosive effects of stomach acid.
- 58) **Parietal Cells:** Cells in the gastric glands that secrete hydrochloric acid (HCl) and intrinsic factor. HCl creates an acidic environment in the stomach necessary for the activation of pepsin and optimal digestion of proteins. Intrinsic factor is required for the absorption of vitamin B12.
- 59) **Chief Cells:** Cells in the gastric glands that secrete the inactive enzyme pepsinogen. Pepsinogen is converted into its active form, pepsin, by the acidic environment of the stomach. Pepsin is responsible for the digestion of proteins.
- 60) **Chyme:** The partially digested, semi-liquid mixture of food and gastric juices that is produced in the stomach. Chyme is further broken down and processed in the small intestine.
- 61) **Proteases:** Enzymes that break down proteins into smaller peptides and amino acids. Pepsin is an example of a protease enzyme found in the stomach.

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- 62) **Rennin:** A proteolytic enzyme found in the gastric juice of infants. It aids in the digestion of milk proteins.
- 63) **Lipases:** Enzymes that break down lipids (fats) into fatty acids and glycerol. Small amounts of lipases are secreted by the gastric glands in the stomach.
- 64) **Muscularis:** The muscular layer of the small intestine responsible for generating various types of movements, such as segmentation and peristalsis. These movements help mix the food with digestive secretions and facilitate digestion.
- 65) **Bile:** A secretion produced by the liver and released into the small intestine. It contains bile pigments, bile salts, cholesterol, and phospholipids. Bile aids in the emulsification of fats, breaking them down into smaller droplets to increase their surface area for digestion. Bile also activates lipases, enzymes that break down fats.
- 66) **Pancreatic Juice:** A secretion produced by the pancreas and released into the small intestine. It contains various enzymes, including trypsinogen, chymotrypsinogen, procarboxypeptidases, amylases, lipases, and nucleases. These enzymes are initially inactive but are activated in the small intestine. Pancreatic juice plays a crucial role in the digestion of proteins, carbohydrates, fats, and nucleic acids.
- 67) **Intestinal Juice (Succus Entericus):** The secretion produced by the brush border cells and goblet cells of

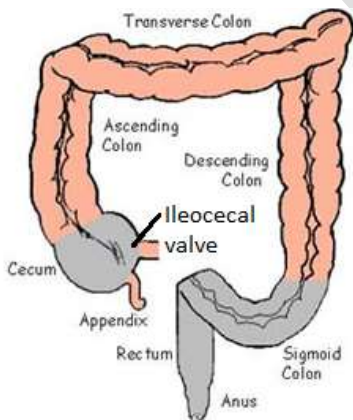
the intestinal mucosa. It contains a variety of enzymes, including disaccharidases (e.g., maltase), dipeptidases, lipases, and nucleosidases. Intestinal juice aids in the final digestion and absorption of carbohydrates, proteins, fats, and nucleic acids.

- 68) **Goblet Cells:** Specialized cells in the intestinal mucosa that secrete mucus. Mucus helps lubricate and protect the intestinal mucosa from acid and enzymes, as well as provides an alkaline environment for enzymatic activities.
- 69) **Bicarbonates:** Alkaline compounds, such as sodium bicarbonate, secreted by the pancreas and brush border cells of the intestinal mucosa. Bicarbonates help neutralize the acidic chyme entering the small intestine from the stomach, providing an optimal pH for enzymatic activities.
- 70) **Brunner's Glands:** Submucosal glands located in the duodenum of the small intestine. They secrete mucus and bicarbonates, further contributing to the protection and alkaline environment of the intestinal mucosa.
- 71) **Proteolytic Enzymes:** Enzymes that break down proteins into smaller peptides and amino acids. Proteolytic enzymes present in pancreatic juice, such as trypsinogen and chymotrypsinogen, play a key role in the digestion of proteins in the small intestine.

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- 72) Segmentation: The type of movement in the small intestine where the circular muscles contract and relax in alternating segments, mixing the chyme and enhancing its contact with the intestinal mucosa for absorption.
- 73) Peristalsis: The coordinated wave-like contractions of the smooth muscles in the intestinal wall that propel the chyme through the small intestine. Peristalsis helps move the partially digested food along the length of the small intestine for further digestion and absorption.
- 74) Duodenum: The first segment of the small intestine where the breakdown of biomacromolecules, such as proteins, carbohydrates, and fats, occurs. It receives secretions from the pancreas and liver (bile) to aid in digestion.
- 75) Jejunum: The middle segment of the small intestine where the absorption of simple substances, such as glucose, amino acids, and fatty acids, takes place. It has a large surface area due to numerous folds and villi, which increase the efficiency of nutrient absorption.
- 76) Ileum: The final segment of the small intestine where further absorption of nutrients, particularly vitamin B12 and bile salts, occurs. It connects to the large intestine through the ileocecal valve.

77) Large Intestine: The final part of the digestive tract, consisting of the cecum, colon, rectum, and anus. While no significant digestion occurs here, the large intestine performs important functions, including water absorption, absorption of certain minerals and drugs, and the formation and storage of feces.

78) Ileocecal Valve: A sphincter located between the ileum (small intestine) and the cecum (large intestine). It regulates the flow of undigested and unabsorbed substances from the small intestine into the large intestine and prevents the backflow of fecal matter.



79) Rectum: The terminal part of the large intestine where feces are temporarily stored before elimination through the anus during defecation.

80) Defecation: The process of eliminating feces from the body through the anus.

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- 81) **Neural Control:** The regulation of digestive activities through neural signals. Sensory inputs, such as sight, smell, and the presence of food in the oral cavity, can stimulate the secretion of saliva and activate other digestive processes. Neural mechanisms, both local and through the central nervous system (CNS), also play a role in modulating the muscular activities of different parts of the gastrointestinal tract.
- 82) **Hormonal Control:** The regulation of digestive processes through the action of hormones. Local hormones produced by the gastric and intestinal mucosa play a role in controlling the secretion of digestive juices and coordinating various aspects of digestion and absorption in the gastrointestinal tract.
- 83) **Passive Transport:** A mechanism of absorption where substances move across the intestinal mucosa without the expenditure of energy. Small molecules like monosaccharides (e.g., glucose), amino acids, and some electrolytes (e.g., chloride ions) are generally absorbed by simple diffusion, driven by concentration gradients.
- 84) **Facilitated Transport:** A mechanism of absorption that involves the assistance of carrier proteins to transport certain substances across the intestinal mucosa. For example, fructose and certain amino acids are absorbed with the help of carrier ions like sodium (Na^+), utilizing facilitated transport.
- 85) **Osmosis:** The passive movement of water across a semipermeable membrane, such as the intestinal

mucosa, driven by differences in osmotic pressure. The absorption of water depends on the osmotic gradient established by solute concentrations.

- 86) **Active Transport:** An energy-dependent mechanism of absorption where substances are transported against their concentration gradient. Various nutrients like amino acids, glucose, and electrolytes like sodium (Na^+) are absorbed into the blood through active transport processes.
- 87) **Micelles:** Small droplets formed by the incorporation of insoluble substances like fatty acids and glycerol into bile salts and other components in the small intestine. Micelles enhance the absorption of these substances by increasing their surface area for contact with the intestinal mucosa.
- 88) **Chylomicrons:** Very small fat globules coated with proteins. They are formed in the intestinal mucosa by reassembling fatty acids and glycerol into triglycerides. Chylomicrons are then transported into the lymph vessels (lacteals) found in the villi of the small intestine. Eventually, they are released into the bloodstream.
- 89) **Maximum Absorption:** While absorption occurs in various parts of the alimentary canal, including the mouth, stomach, small intestine, and large intestine, the majority of absorption takes place in the small intestine. The small intestine has a large surface area due to the presence of numerous folds, villi, and

microvilli, allowing for efficient absorption of nutrients.

- 90) Assimilation: The process by which the absorbed substances from the digestive system are taken up and utilized by the body's cells and tissues for their metabolic activities and growth.
- 91) Defecation: The process of eliminating solid waste material (feces) from the body through the anal opening. It is a voluntary process that is initiated by a neural reflex triggered by the presence of feces in the rectum. Defecation involves a mass peristaltic movement, which propels the feces out of the rectum and through the anus.