9. Identify the structures or processes described below:

   a) Main actors in chemical digestion and are contained in digestive juices *Enzymes*

   b) Simple molecules produced by the chemical digestion of proteins *Amino acids*

   c) Chemical secretions produced by the pancreas *Pancreatic juices*

   d) Contractions of the digestive tract allowing food to advance *Peristalsis*

   e) Secretion that acts mechanically on fats *Bile*

   f) They aid in the chemical digestion of proteins in the stomach *Gastric juices*

   g) Passage of nutrients from the digestive tract to the blood or lymph *Absorption*

   h) Simple molecules obtained from the chemical digestion of carbohydrates *Glucose*

10. Indicate in which digestive organ(s) each of the following phenomena occurs. Explain whether it is a mechanical or chemical transformation.

   a) Peristalsis *Esophagus, small intestine and colon*
   Mechanical transformation

   b) Chewing *Mouth*
   Mechanical transformation

   c) Action of gastric juices
   Stomach
   Chemical transformation

   d) Action of bile *Small intestine*
   Chemical transformation

   e) Churning *Stomach, small intestine, colon*
   Mechanical transformation

   f) Action of salivary amylase
   Mouth
   Chemical transformation

11. In which organ does the chemical digestion of the following types of nutrients occur? In which organ does it end?

   a) Carbohydrates *Begins in the mouth and ends in the small intestine*

   b) Proteins *Begins in the stomach and ends in the small intestine*

   c) Fats *Occurs entirely in the small intestine*

12. In which organs are the following nutrients absorbed in the greatest quantities?

   a) Water *Large intestine*

   b) Glucose *Small intestine*

   c) Minerals *Large intestine*

   d) Glycerol *Small intestine*

   e) Vitamins *Large intestine*

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The Dual Role of the Respiratory System (pages 89 and 90)

1. Which gas, referred to as an oxidizing agent, makes the combustion of nutrients possible? *Oxygen (O_2)*

2. Is there more carbon dioxide in the air we inhale or in the air we exhale? Where does it come from? *The air we exhale has more carbon dioxide. It is a by-product of cellular respiration.*

3. Compare inhaled air with exhaled air using a comparative table like the one below. Enter the names of the gases.

Inhaled air		**Exhaled air**	
Proportion	Gas	Proportion	Gas
78%	*Nitrogen*	78%	*Nitrogen*
21%	*Oxygen*	16%	*Oxygen*
0.04%	*Carbon dioxide*	5%	*Carbon dioxide*

The Anatomy of the Respiratory System (*pages 90 to 93*)

4. Place the following respiratory structures in the order in which air enters them:

a) Bronchi
b) Trachea
c) Pharynx
d) Nasal cavities
e) Alveoli
f) Bronchioles
g) Larynx

Answer: *d, c, g, b, a, f, e*

5. Identify the respiratory structures described in the following sentences:

a) Both air and food pass through this structure. *Pharynx*

b) This membrane surrounds each lung. *Pleura*

c) The vocal cords are located in this structure. *Larynx*

d) This structure is made up of a group of bronchioles and alveoli. *Lung*

e) This structure warms the air through its blood vessels. *Nasal cavities*

f) It is the smallest division of the bronchi. *Bronchioles*

g) This structure, aside from the bronchi, has cilia that filter the air. *Trachea*

h) This respiratory muscle forms a partition between the lungs and the abdomen. *Diaphragm*

i) They are grouped together in clusters and are surrounded by blood vessels. *Alveoli*

The Physiology of the Respiratory System (*pages 94 and 95*)

6. Which muscles contract during inhalation? *Diaphragm and intercostal muscles*

7. During inhalation, in which direction does the diaphragm move? *It moves downward.*

8. Oxygen and carbon dioxide diffuse. Explain the principle of diffusion. *The gases move from an area of higher concentration (higher pressure) to an area of lower concentration (lower pressure).*

9. Are the following statements true or false?

a) The volume of the rib cage increases during exhalation. *False*

b) Air pressure in the lungs decreases during inhalation. *True*

10. Identify the gases involved in the gas exchanges that occur in the alveoli and blood vessels.

a) Gas A: *Oxygen (O_2)*

b) Gas B: *Carbon dioxide (CO_2)*