TEAS Science Practice Test

Presented by

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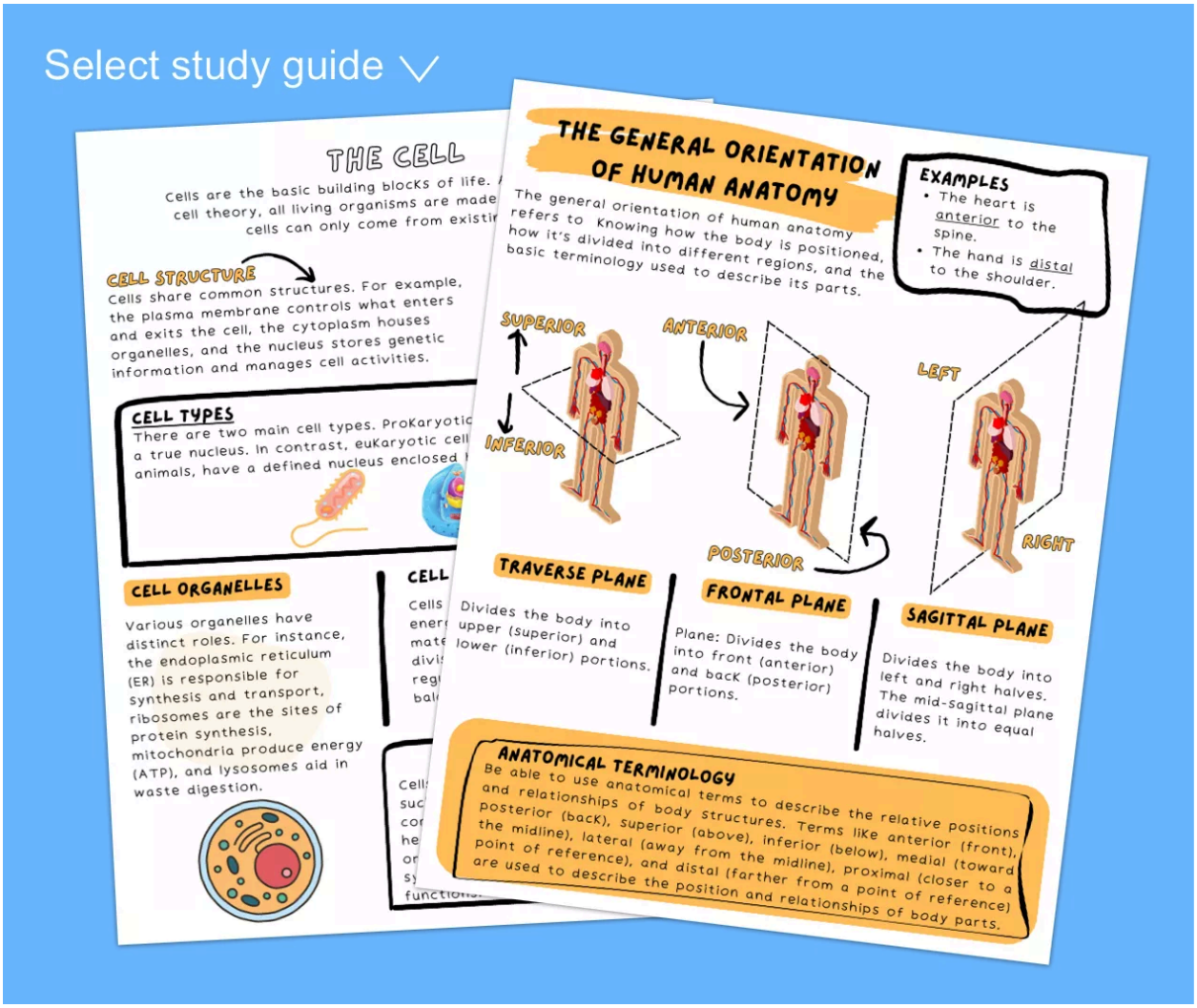
Short summary notes, not mountains of text, on the most important parts of every topic. You just need to pass this test, not become an expert in it.



Science Module

20 questions

1. Which hormone is responsible for regulating blood glucose levels?

A. Insulin
B. Glucagon
C. Thyroxine
D. Epinephrine

2. Which factor is least likely to affect the rate of a chemical reaction?

A. Temperature
B. Color of reactants
C. Concentration of reactants
D. Presence of a catalyst

3. Which hormone is responsible for regulating calcium levels in the body?

A. Insulin
B. Glucagon
C. Thyroid hormone
D. Parathyroid hormone

4. Which accessory organ of the digestive system produces bile?

A. Liver
B. Pancreas
C. Gallbladder
D. Appendix

5. Which of the following statements about adaptive immunity is true?

A. Adaptive immunity provides immediate protection against pathogens upon first exposure.
B. Adaptive immunity is non-specific and responds identically to all pathogens.
C. Adaptive immunity has memory, allowing for a faster and more potent response upon subsequent exposures to the same pathogen.
D. Adaptive immunity is primarily mediated by physical barriers like skin and mucous membranes.

6. Within a eukaryotic cell, there is an organelle that is often referred to as the "powerhouse" due to its role in producing ATP. However, this organelle also plays a crucial role in the programmed cell death process known as apoptosis. Which of the following statements about this organelle is FALSE?

A. It contains its own DNA, separate from the cell's nuclear DNA.
B. It is believed to have originated from an ancient symbiotic relationship between a primitive eukaryote and a prokaryote.
C. It has a double membrane structure.
D. It plays a role in the calcium signaling pathway..

7. What is the primary source of energy for muscle contraction?

A. Adenosine monophosphate (AMP)
B. Adenosine diphosphate (ADP)
C. Adenosine triphosphate (ATP)
D. Glycogen

8. During inhalation in the respiratory process, which of the following events occurs to facilitate the entry of air into the lungs?

A. The diaphragm contracts and moves upward.
B. The volume of the thoracic cavity decreases.
C. The intercostal muscles relax and pull the ribs inward.
D. The diaphragm contracts and flattens, increasing the volume of the thoracic cavity.

9. Which of the following statements is true about chemical reactions?

A. Chemical reactions always release energy.
B. In a chemical reaction, the total mass of the reactants is always greater than the total mass of the products.
C. Chemical reactions involve the rearrangement of atoms to form new substances.
D. Chemical reactions occur only in the presence of heat.

10. Which of the following is true about a saturated solution?

A. It contains less solute than the maximum amount it can dissolve.
B. It can dissolve more solute at the current temperature.
C. It contains the maximum amount of solute that can be dissolved at the current temperature.
D. It is always a solid.

11. In which part of the female reproductive system does fertilization of an egg typically occur?

A. Uterus
B. Ovaries
C. Fallopian Tubes
D. Vagina

12. Which of the following is responsible for producing bile, which emulsifies fats for digestion in the small intestine?

A. The pancreas
B. The gallbladder
C. The liver
D. The stomach

13. Select all that apply. Which of the following compounds are ionic?

A. NH_3
B. NCl_3
C. KCl
D. $MgCl_2$

14. Which of the following units would you most likely use to measure the mass of baking soda as part of a scientific lab experiment?

A. kg
B. g
C. cm^3
D. mL

15. Which structure produces and stores sperm in the male reproductive system?

A. Testes
B. Epididymis
C. Vas deferens
D. Seminal vesicles

16. Which of the following substances commonly undergoes sublimation?

A. Water
B. Dry ice
C. Iron
D. Gold

17. Select all that apply. Which of the following is one of the functions of the human endocrine system?

A. Homeostasis
B. Inter-glad communication
C. Growth and development
D. Vitamin D production

18. Which type of muscle is under involuntary control and is found in the walls of internal organs?

A. Skeletal muscle
B. Cardiac muscle
C. Smooth muscle
D. Striated muscle

19.What is the function of antibodies in the immune system?

A. To engulf and digest foreign substances
B. To activate T cells
C. To neutralize or destroy pathogens
D. To produce cytokines that recruit immune cells

20. Which of the following structures is responsible for transporting urine from the kidney to the bladder?

A. Urethra
B. Bladder
C. Kidney
D. Ureter

SCIENCE QUESTION #	ANSWER(S)
1.	A
2.	B
3.	D
4.	A
5.	C
6.	D
7.	C
8.	D
9.	C
10.	C
11.	C
12.	C
13.	B, C
14.	B
15.	A
16.	B
17.	A & B & C
18.	C
19.	C
20.	D

1. Which hormone is responsible for regulating blood glucose levels?

Insulin is produced by the beta cells of the pancreas and is responsible for lowering blood glucose levels by promoting glucose uptake into cells. Glucagon, on the other hand, is produced by the alpha cells of the pancreas and raises blood glucose levels by promoting glycogenolysis and gluconeogenesis

2. Which factor is least likely to affect the rate of a chemical reaction?

a) Incorrect - Temperature affects the rate of a chemical reaction by providing kinetic energy to the reactant molecules. An increase in temperature typically increases the reaction rate as molecules move faster and collide more frequently and with greater energy.

b) Correct - The color of reactants does not affect the rate of a chemical reaction, as it is not related to the reaction kinetics or the nature of the substances involved.

c) Incorrect - Concentration of reactants affects the rate of a chemical reaction, as a higher concentration usually results in more frequent collisions between reactant molecules, increasing the reaction rate.

d) Incorrect - The presence of a catalyst can significantly affect the rate of a chemical reaction by providing an alternative reaction pathway with a lower activation energy, increasing the rate of the reaction without being consumed in the process.

3. Which hormone is responsible for regulating calcium levels in the body?

Parathyroid hormone (PTH) is produced by the parathyroid glands and is responsible for regulating calcium levels in the body. It acts to increase calcium levels in the blood by promoting the breakdown of bone tissue and increasing the absorption of calcium from the intestines and kidneys. Insulin and glucagon are hormones produced by the pancreas that regulate blood glucose levels, while thyroid hormone regulates metabolic rate and growth.

4. Which accessory organ of the digestive system produces bile?

a) The liver produces bile, which is essential for the digestion and absorption of fats in the small intestine.

b) The pancreas produces digestive enzymes and hormones, such as insulin and glucagon, but it does not produce bile.

c) The gallbladder stores and concentrates bile produced by the liver, but it does not produce bile itself.

d) The appendix is a small, finger-like pouch that is connected to the large intestine, but its function is not well understood and it does not produce bile.

5. Which of the following statements about adaptive immunity is true?

A) False. Adaptive immunity does not provide immediate protection upon first exposure to a pathogen. Instead, it takes time to develop a specific response. Innate immunity provides the immediate, non-specific defense.

B) False. Adaptive immunity is highly specific. It tailors its response to specific pathogens, distinguishing between different invaders.

C) True. One of the hallmarks of adaptive immunity is its ability to remember previous exposures to pathogens. This memory allows the immune system to respond more rapidly and effectively upon subsequent exposures to the same pathogen.

D) False. Physical barriers like skin and mucous membranes are part of the innate immune system, not the adaptive immune system. Adaptive immunity is primarily mediated by specialized cells like T cells and B cells and the antibodies they produce.

6. Within a eukaryotic cell, there is an organelle that is often referred to as the "powerhouse" due to its role in producing ATP. However, this organelle also plays a crucial role in the programmed cell death process known as apoptosis. Which of the following statements about this organelle is FALSE?

The organelle mentioned in the question header is the mitochondrion.

Mitochondria are involved in ATP production, apoptosis, contain their own DNA, have a double membrane, and are believed to have originated from an ancient symbiotic relationship with a prokaryote. While mitochondria can buffer calcium levels, the primary organelle for calcium signaling is the endoplasmic reticulum, not the mitochondria.

7. What is the primary source of energy for muscle contraction?

a) Adenosine monophosphate (AMP) is not the primary source of energy for muscle contraction. It is a product of the breakdown of ATP and can be converted back into ATP.

b) Adenosine diphosphate (ADP) is also not the primary energy source for muscle contraction. It is an intermediate product when ATP is broken down to release energy.

c) Adenosine triphosphate (ATP) is the primary source of energy for muscle contraction. ATP is broken down into ADP and inorganic phosphate (Pi) to release energy, which powers muscle contraction.

d) Glycogen is a storage form of glucose in muscles and the liver. It can be broken down into glucose, which is then used to produce ATP, but it is not the direct source of energy for muscle contraction.

8. During inhalation in the respiratory process, which of the following events occurs to facilitate the entry of air into the lungs?

A) This statement is incorrect. During inhalation, the diaphragm contracts and moves downward (or flattens), not upward.

B) This statement is the opposite of what happens. Inhalation increases the volume of the thoracic cavity, creating a negative pressure that draws air into the lungs.

C) This statement is also incorrect. During inhalation, the external intercostal muscles contract, lifting the ribs outward and upward, further increasing the volume of the thoracic cavity.

D) This statement is correct. The contraction and flattening of the diaphragm play a pivotal role in increasing the thoracic cavity's volume, facilitating the entry of air into the lungs.

9. Which of the following statements is true about chemical reactions?

a) Incorrect - Chemical reactions can either release energy (exothermic) or absorb energy (endothermic).

b) Incorrect - According to the law of conservation of mass, the total mass of reactants is equal to the total mass of products in a chemical reaction.

c) Correct - Chemical reactions involve the rearrangement of atoms to form new substances, by breaking existing chemical bonds and forming new ones.

d) Incorrect - Chemical reactions can occur under various conditions, not only in the presence of heat.

10. Which of the following is true about a saturated solution?

a) Incorrect - An unsaturated solution contains less solute than the maximum amount it can dissolve.

b) Incorrect - A saturated solution cannot dissolve more solute at the current temperature, as it already contains the maximum amount of solute that can be dissolved.

c) Correct - A saturated solution contains the maximum amount of solute that can be dissolved at the current temperature, reaching a state of equilibrium between the dissolved solute and any undissolved solute.

d) Incorrect - A saturated solution is not always a solid. It can be a liquid, where the solvent has dissolved the maximum amount of solute possible at a given temperature.

11. In which part of the female reproductive system does fertilization of an egg typically occur?

Fertilization, which is the fusion of sperm and egg, typically occurs in the fallopian tubes. The fallopian tubes connect the ovaries to the uterus. If an egg is fertilized, it moves to the uterus where it can implant in the uterine wall and develop throughout pregnancy.

12. Which of the following is responsible for producing bile, which emulsifies fats for digestion in the small intestine?

The digestive system is responsible for breaking down food into nutrients that can be absorbed and utilized by the body. The digestive system includes organs such as the mouth, esophagus, stomach, small intestine, and large intestine, as well as accessory organs such as the liver, pancreas, and gallbladder.

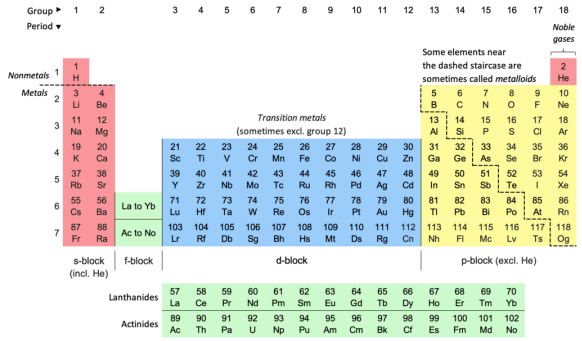
The liver is the largest glandular organ in the body and is located in the upper right side of the abdomen. One of the functions of the liver is to produce bile, which is a greenish-yellow fluid that is essential for the digestion and absorption of fats. Bile contains bile salts, which emulsify fats into smaller droplets, making them more accessible to enzymes that break them down into fatty acids and glycerol.

The bile produced by the liver is stored and concentrated in the gallbladder before being released into the small intestine through the common bile duct. The pancreas also secretes pancreatic enzymes into the small intestine to further break down the fats, proteins, and carbohydrates.

Option A is incorrect because the pancreas secretes enzymes that aid in the digestion of carbohydrates, proteins, and fats, but it does not produce bile. Option B is incorrect because the

gallbladder stores and releases bile, but it does not produce bile. Option D is incorrect because the stomach secretes gastric juice that contains hydrochloric acid and enzymes that begin the breakdown of proteins, but it does not produce or store bile.

13. Which of the following compounds are ionic?



An ionic compound is made of positively and negatively charged ions held together by electrostatic attraction, usually formed between a metal and a nonmetal (e.g., NaCl).

NH_3 – Covalent: Nonmetal + nonmetal (nitrogen and hydrogen) share electrons.

NCl_3 – Covalent: Nonmetal + nonmetal (nitrogen and chlorine) share electrons.

KCl – Ionic: Metal (potassium) transfers electrons to nonmetal (chlorine).

$MgCl_2$ – Ionic: Metal (magnesium) transfers electrons to nonmetal (chlorine).

14. Which of the following units would you most likely use to measure the mass of baking soda as part of a scientific lab experiment?

To measure the mass of something, we can use kilograms (kg) or grams (g). However, kilograms is more appropriate to be used when measuring the mass of a large object like a human or an animal. Grams are more appropriate when measuring the mass of very small objects like a pinch of baking soda or a pinch of sugar when cooking a recipe.

cm^3 and mL are units for volume. Volume refers to the 3D space an object takes. For example, when we say "I bought a gallon of milk" (gallon is another volume unit), a gallon refers to how much 3D space that milk is taking. It is not referring to how much a milk weighs.

15. Which structure produces and stores sperm in the male reproductive system?

a) The testes produce sperm, but they do not store them. Sperm production occurs in the seminiferous tubules within the testes.

b) The epididymis is responsible for storing and maturing sperm. Sperm travels from the testes to the epididymis, where they mature and are stored until ejaculation.

c) The vas deferens is a muscular tube that transports mature sperm from the epididymis to the ejaculatory duct during ejaculation.

d) The seminal vesicles produce a significant portion of the seminal fluid that nourishes and protects sperm during ejaculation, but they do not produce or store sperm.

16. Which of the following substances commonly undergoes sublimation?

Sublimation is a process where a solid turns into a gas without first becoming a liquid. It is the opposite of deposition, where a gas turns directly into a solid without first becoming a liquid.

Water: Incorrect. While water can undergo sublimation under specific conditions, it is more commonly associated with melting and boiling.Iron: Incorrect.

Iron typically transitions from solid to liquid at its melting point and from liquid to gas at its boiling point. It does not commonly undergo sublimation.

Dry Ice (solid carbon dioxide): Correct. Dry ice sublimates, meaning it transitions directly from a solid to a gas without passing through the liquid phase.Gold: Incorrect.

Gold melts and boils but does not commonly undergo sublimation.

17. Select all that apply. Which of the following is one of the functions of the human endocrine system?

Homeostasis is the process by which the body maintains a consistent internal environment despite external fluctuations. In the endocrine system, homeostasis uses hormones to regulate various physiological parameters within set limits.

Example: The hormone insulin, produced by the pancreas, regulates blood glucose levels. When blood sugar rises after a meal, the pancreas releases insulin, which facilitates the uptake of glucose by cells, thereby lowering blood sugar to maintain it within a tight range.

Inter-gland communication refers to the coordinated interaction between different endocrine glands to achieve a specific physiological response. Some glands release hormones that act on other glands, stimulating or inhibiting their hormone production.

Example: The hypothalamus produces corticotropin-releasing hormone (CRH), which stimulates the pituitary gland to release adrenocorticotropic hormone (ACTH). ACTH then prompts the adrenal cortex to produce cortisol. This is an example of a hormone cascade.

The endocrine system oversees various growth and developmental milestones using specific hormones.

Example: During puberty, the pituitary gland releases increased amounts of luteinizing hormone (LH) and follicle-stimulating hormone (FSH). These hormones act on the gonads (ovaries in females and testes in males) to produce sex hormones (like estrogen and testosterone), which facilitate the development of secondary sexual characteristics such as breast development or facial hair growth.

Vitamin D production is part of the integumentary system, not the endocrine system.

18. Which type of muscle is under involuntary control and is found in the walls of internal organs?

A) Skeletal muscle is under voluntary control and is responsible for body movement, posture, and maintaining body position.

B) Cardiac muscle is also under involuntary control but is found exclusively in the heart.

C) Smooth muscle is under involuntary control and is found in the walls of internal organs such as the digestive tract, blood vessels, and the uterus.

D) Striated muscle refers to both skeletal and cardiac muscle, which have a striped appearance under the microscope. This answer choice is not specific enough.

19. .What is the function of antibodies in the immune system?

Antibodies, also known as immunoglobulins, are proteins produced by B cells in response to exposure to foreign substances such as bacteria or viruses. They work by binding to the surface of the pathogen and marking it for destruction by other immune cells, or by neutralizing the pathogen's ability to infect host cells. While macrophages are responsible for phagocytosis, T cells are involved in activating immune responses and producing cytokines that recruit immune cells.

20. Which of the following structures is responsible for transporting urine from the kidney to the bladder?

The ureter is a muscular tube that connects the kidney to the bladder and is responsible for transporting urine from the renal pelvis to the bladder for storage and elimination. The urethra is the tube that carries urine out of the body, while the bladder is a muscular sac that stores urine until it is eliminated.

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