

【P1】 【A】 It is thought that the facial pits or pit organs on the head of some snakes are specialized infrared (heat) receptors. 【B】 When a rattlesnake strikes, the direction of the strike seems to be guided by the infrared radiation from its prey. 【C】 A rattlesnake strikes only at warm-blooded prey, and when the prey is dead and at room temperature, the snake will not strike. 【D】 However, a blindfolded snake strikes correctly at a dead rat that is pulled across the cage, provided the rat is warmer than the surroundings. Blindfolded, the snake cannot be guided by vision; nor is it guided by the sense of smell, for it will strike correctly even at a moving, cloth-wrapped electric bulb. The pit organs are evidently involved in sensing the location of warm objects. All snakes that have pit organs feed preferentially on warm-blooded prey, and this further supports the view that these organs are infrared sensors. In the rattlesnake the pit organs are located, one on each side, between the nostril and the eye: they are connected to many nerves, and this in itself suggests a sensory role for the organ.

【P2】 The sensitivity of the facial pit has been examined by recording the activity in the nerve leading from the organ. A variety of stimuli, such as sound, vibration, or light of moderate intensity (with the infrared part of the spectrum filtered out), has no detectable effect on the activity in the nerve. However, if objects of a temperature different from the surroundings are brought into the receptive field around the head, there is a striking change in nerve activity, regardless of the temperature of the intervening air.

【P3】 How is the infrared radiation sensed? The pit is covered by a thin transparent membrane, and it has been suggested that a rise in temperature in the pit behind the membrane could cause an expansion of the gas with a consequent deformation of the membrane. This in turn could be sensed by a suitable receptor. This hypothesis is highly improbable, for a cut in the membrane that opens the pit to the outside air causes no loss in responsiveness, a result that is incompatible with the hypothesis that a pressure change is sensed.

【P4】 We are left with two other possibilities to consider: Either the effect is photochemical, which means that the infrared radiation is absorbed by a specific compound, analogous to the light-sensitive pigments in the eye, or the pit organs are sensitive to the slight temperature rise caused when infrared radiation reaches it. The infrared radiation emitted from a mammalian body has low quantum energy, which makes any photochemical effect on a pigment extremely unlikely. Pure infrared radiation can be produced by a laser, and experiments with such radiation of known wavelength provide strong evidence that the mode of reception in the facial pit organ is entirely thermal.

【P5】 Can the pit organs be used for perception of the infrared source in the way our two eyes are used for stereoscopic vision? This seems likely, not only from observations of the precision with which a snake can strike, but also from studies of its brain activity. When infrared radiation falls on the facial pit organ, electric activity can be recorded from the optic tectum, the part of the brain with which the optic nerve is connected. This in itself is suggestive; although the nerves from the pit organ are completely separate from the optic nerves, the same part of the brain seems to handle visual information, which is known to be stereoscopic, and infrared information. The optic tectum has left and right parts, located on either side of the brain. Each part receives input from each eye via the optic chiasma, the point at which the optic nerves from the left and right eye meet. Many of the neurons in the tectum respond to stimulation of the pit organ on the opposite side of the head. This is reminiscent of the way information from the eyes is handled; the crossover of the optic nerve in the optic chiasma is essential for stereoscopic vision and interpretation of distance. Information from the two pit organs is apparently coordinated and interpreted in a similar way, a conclusion in agreement with recorded changes in the neural activity in the tectum when the infrared source is in a position to irradiate both pits at once. It therefore appears that the facial pits indeed provide stereoscopic perception and substantially aid in the precision of estimating the location of prey.

TPO65 阅读P1

相关课程: TPO65 Reading P1

1. (单选题) According to paragraph 1, a rattlesnake will only strike at prey when
 - ☐ A. the snake is able to see the prey
 - ☐ B. the prey emits chemical odors
 - ☐ C. the prey is moving
 - ☐ D. the prey is warmer than its surroundings

2. (单选题) Why does the author mention a “cloth-wrapped electric bulb ” in the passage?
 - ☐ A. To illustrate the size of prey usually attacked by snakes
 - ☐ B. To prove that blindfolded snakes will strike more often at a dead rat than an electric bulb
 - ☐ C. To eliminate the possibility that snakes locate prey by using a sense of smell
 - ☐ D. To explain how scientists were able to trick blindfolded snakes

3. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage?
Incorrect choices change the meaning in important ways or leave out essential information
 - ☐ A. However, if objects in the surrounding area experience a temperature change, nerve activity causes a change in temperature in the receptive field around the snake's head
 - ☐ B. When objects that differ in temperature from the surroundings enter the receptive field around the head, the result is a dramatic change in nerve activity
 - ☐ C. Nerve activity changes when new objects are introduced into the area around a snake's head, regardless of how their temperature compares to that of the surrounding air
 - ☐ D. The temperature of the air in the receptive field around the snake's head has an effect on the nerve activity of the snake if the objects in the field are at a different temperature

4. (单选题) The word “consequent ” in the passage is closest in meaning to
 - ☐ A. resultant
 - ☐ B. eventual
 - ☐ C. premature
 - ☐ D. visible

5. (单选题) Which of the following can be inferred from the discussion about infrared sensation and pit organs in paragraph 3?
 - ☐ A. Rattlesnakes have special receptors that detect pressure changes in the pit organ membrane.
 - ☐ B. Damaged pit organ membranes do not prevent a rattlesnake from detecting a warm animal nearby
 - ☐ C. The experiments on pit organ membranes were conducted in a chamber with air at outside temperatures
 - ☐ D. The idea that pit organs help snakes to locate prey by radiation has been disproved

6. (单选题) According to paragraph 4, which of the following tends to exclude a photochemical explanation for the sensory function of snake pit organs?

- ☐ A. Only lasers can produce the exact wavelengths of radiation that have an effect on pit organs.
- ☐ B. Light-sensitive pigments are located in the eyes but not in the pit organs of snakes.
- ☐ C. Compounds sensitive to infrared radiation have not yet been identified in snake pit organs
- ☐ D. The infrared radiation from a snake's prey has too little energy to affect the snake's pigments

7. (单选题) The word "substantially" in the passage is closest in meaning to

- ☐ A. reliably
- ☐ B. undoubtedly
- ☐ C. frequently
- ☐ D. significantly

8. (单选题) According to paragraph 5, all of the following support the idea that a snake uses its pit organs for stereoscopic perception EXCEPT the fact that

- ☐ A. stimulation of a pit organ has an effect on the tectum on the opposite side of the brain
- ☐ B. the same Part of the brain that deals with stereoscopic vision is activated by infrared stimulation of the pit organs
- ☐ C. the nerves of the right eye and the right pit organ are completely separate from the nerves of the left eye and the left pit organ
- ☐ D. a snake is able to strike its prey with precision

9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage. "Infrared radiation can be perceived directly by a few animals that have specialized sense organs that respond to this type of radiation." Where would the sentence best fit? Click on a square 【】 to add the sentence to the passage.

- ☐ A. A
- ☐ B. B
- ☐ C. C
- ☐ D. D

10. (多选题) Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage This question is worth 2 points. "Studies indicate that the facial pit organs of certain snakes are infrared sensors."

Answer Choices

- ☐ A. Some snakes seem to be able to locate and strike at warm-blooded prey solely through the use of pit organs.
- ☐ B. The pit organs of snakes seem to be sensitive to a variety of stimuli, including sound, vibration, and light, as well as heat
- ☐ C. The precision with which snakes are able to locate prey can be accounted for by the intersection of the optic nerves and nerves from the pit organs
- ☐ D. Snakes with pit organs will strike at dead rats at room temperature only when the rats are dragged across a cage.
- ☐ E. Experiments provide strong evidence that snake pit organs are sensitive to temperature changes caused by infrared radiation.
- ☐ F. Studies of brain activity suggest that the two facial pits provide snakes with stereoscopic perception for the exact location of prey

1. (单选题) According to paragraph 1, a rattlesnake will only strike at prey when

- ☐ A. the snake is able to see the prey
- ☐ B. the prey emits chemical odors
- ☐ C. the prey is moving
- ☐ D. the prey is warmer than its surroundings

回答错误

答案: **D**

解析: 暂无解析

2. (单选题) Why does the author mention a "cloth-wrapped electric bulb " in the passage?

- ☐ A. To illustrate the size of prey usually attacked by snakes
- ☐ B. To prove that blindfolded snakes will strike more often at a dead rat than an electric bulb
- ☐ C. To eliminate the possibility that snakes locate prey by using a sense of smell
- ☐ D. To explain how scientists were able to trick blindfolded snakes

回答错误

答案: **C**

解析: 暂无解析

3. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage?
Incorrect choices change the meaning in important ways or leave out essential information

- ☐ A. However, if objects in the surrounding area experience a temperature change, nerve activity causes a change in temperature in the receptive field around the snake's head
- ☐ B. When objects that differ in temperature from the surroundings enter the receptive field around the head, the result is a dramatic change in nerve activity
- ☐ C. Nerve activity changes when new objects are introduced into the area around a snake's head, regardless of how their temperature compares to that of the surrounding air
- ☐ D. The temperature of the air in the receptive field around the snake's head has an effect on the nerve activity of the snake if the objects in the field are at a different temperature

回答错误

答案: **B**

解析: 暂无解析

4. (单选题) The word "consequent " in the passage is closest in meaning to

- ☐ A. resultant
- ☐ B. eventual
- ☐ C. premature
- ☐ D. visible

回答错误

答案: **A**

解析: 暂无解析

5. (单选题) Which of the following can be inferred from the discussion about infrared sensation and pit organs in paragraph 3?

- ☒ A. Rattlesnakes have special receptors that detect pressure changes in the pit organ membrane.
- ☐ B. Damaged pit organ membranes do not prevent a rattlesnake from detecting a warm animal nearby
- ☐ C. The experiments on pit organ membranes were conducted in a chamber with air at outside temperatures
- ☐ D. The idea that pit organs help snakes to locate prey by radiation has been disproved

回答错误

答案: B

解析: 暂无解析

6. (单选题) According to paragraph 4, which of the following tends to exclude a photochemical explanation for the sensory function of snake pit organs?

- ☐ A. Only lasers can produce the exact wavelengths of radiation that have an effect on pit organs.
- ☐ B. Light-sensitive pigments are located in the eyes but not in the pit organs of snakes.
- ☐ C. Compounds sensitive to infrared radiation have not yet been identified in snake pit organs
- ☐ D. The infrared radiation from a snake's prey has too little energy to affect the snake's pigments

回答错误

答案: D

解析: 暂无解析

7. (单选题) The word "substantially" in the passage is closest in meaning to

- ☐ A. reliably
- ☐ B. undoubtedly
- ☐ C. frequently
- ☐ D. significantly

回答错误

答案: D

解析: 暂无解析

8. (单选题) According to paragraph 5, all of the following support the idea that a snake uses its pit organs for stereoscopic perception EXCEPT the fact that

- ☐ A. stimulation of a pit organ has an effect on the tectum on the opposite side of the brain
- ☐ B. the same Part of the brain that deals with stereoscopic vision is activated by infrared stimulation of the pit organs
- ☐ C. the nerves of the right eye and the right pit organ are completely separate from the nerves of the left eye and the left pit organ
- ☐ D. a snake is able to strike its prey with precision

回答错误

答案: C

解析: 暂无解析

9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage. "Infrared radiation can be perceived directly by a few animals that have specialized sense organs that respond to this type of radiation." Where would

the sentence best fit? Click on a square **【】** to add the sentence to the passage.

- ☐ A. A
- ☐ B. B
- ☐ C. C
- ☐ D. D

回答错误

答案: **A**

解析: 暂无解析

10. **(多选题)** Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage This question is worth 2 points. “Studies indicate that the facial pit organs of certain snakes are infrared sensors.”

Answer Choices

- ☐ A. Some snakes seem to be able to locate and strike at warm-blooded prey solely through the use of pit organs.
- ☐ B. The pit organs of snakes seem to be sensitive to a variety of stimuli, including sound, vibration, and light, as well as heat
- ☐ C. The precision with which snakes are able to locate prey can be accounted for by the intersection of the optic nerves and nerve s from the pit organs
- ☐ D. Snakes with pit organs will strike at dead rats at room temperature only when the rats are dragged across a cage.
- ☐ E. Experiments provide strong evidence that snake pit organs are sensitive to temperature changes caused by infrared radiation.
- ☐ F. Studies of brain activity suggest that the two facial pits provide snakes with stereoscopic perception for the exact location of prey

回答错误

答案: **A, E, F**

解析: 暂无解析

【P1】 In the field of chemistry, the understanding of the word “air” has undergone radical change. Air for John Mayow, a seventeenth-century chemist, was essentially a receptacle for airborne particles, and through them manifested a variety of chemical properties. 【A】 But although Mayow and a few other chemists did detect specific chemical properties in what we call gases (including our carbon dioxide), most chemists left them unaccounted for until the beginning of the eighteenth century. 【B】 As chemists became aware that the atmosphere itself (and not just particles within it) had a role to play in combustion, respiration, and other reactions, they did not attribute this to the chemical properties of air but rather to substances that air could absorb and release according to circumstances. 【C】 Thus, air provided a physical environment in which some reactions took place.

【P2】 【D】 In the early 1700s, the air was widely seen as just such an environment, and “air” and “the air” were one and the same thing. Chemists were not in the habit of regarding airs or gases as having different chemical properties. There was simply air. One obvious reason for this was practical. Chemists could examine solids and liquids, exposing them to a variety of tests and seeing how they contributed to assorted reactions. Chemists had, however, no comparable way of examining air; and they came to view chemistry as the sum total of the reactions of solids and liquids, excluding gases. Chemists stressed chemical qualities over physical properties like weight and let physicists deal with air. Chemists generally did not examine air, and they did not try to weigh it. That does not mean that chemists did not weigh substances. They did a lot of weighing, and pharmacists and metallurgists did more. But weighing gases was outside their brief. In the *Encyclopedia of Diderot and d'Alembert*, published between 1751 and 1775, readers were told that “the incoercibility of gases will remove them from our researches for a long time to come.”

【P3】 By the time of the *Encyclopedia*, however, this had begun to change. One of the first and key sources of change was the invention by the Reverend Stephen Hales of a new instrument, the pneumatic trough. This instrument is important for what it made possible in the handling of air. The history of its invention and early use illustrates the difference there may be between the motives for inventing a device and the ways in which that device is used.

【P4】 Hales was a botanist and chemist as well as a physiologist. He wrote a book in 1727 investigating mechanical subjects like the pressure of sap in plants. But Hales went further, addressing chemical as well as physiological questions. He urged chemists to consider air chemically. He described an instrument for washing the air produced in the course of a chemical reaction. He wanted to get rid of impurities in the air by letting it pass through water. Air passed from a reaction vessel through water in a trough (or tube) and then into a second vessel that was partly filled with water and that could capture air.

【P5】 In devising this apparatus, Hales had coincidentally furnished an instrument for catching and holding air, which could then be subjected to various tests. Used in this way the apparatus became known as the pneumatic trough. Half a century after its invention, it became a staple of the chemical laboratory. It also became one of the key instruments in the reform of chemistry that we know as the chemical revolution because it was essential to incorporating a whole new state of matter, the gaseous state, into chemistry, alongside the already studied solid and liquid states. Once that step had been taken, it was possible to speculate and then to demonstrate that the gaseous state, like the solid and liquid states, could contain a variety of chemical substances. This was an enormous step, and it did not happen overnight. Hales had shown that air could be contained, washed, and purified, and tested chemically as well as physically. This, however, did not lead him to think that there was more than one kind of air. Air for him remained air, not one of a number of airs. Other chemists would take that essential step.

TPO65 阅读P2

相关课程: TPO65 Reading P2

1. (单选题) According to paragraph 1, John Mayow believed which of the following about air?
 - ☐ A. Air was not involved in chemical reactions such as combustion and respiration
 - ☐ B. The absorption and release of substances in the air depended on the gases in the atmosphere.
 - ☐ C. Carbon dioxide was the most important component of air and allowed chemical reactions to take place
 - ☐ D. The air had no chemical properties but contained particles that did.
2. (单选题) What is the main point of paragraph 2?
 - ☐ A. Diderot and d'Alembert were the first to recognize that gases were a third state of matter
 - ☐ B. Advances in pharmacy and metallurgy led to a better understanding of gases
 - ☐ C. Early chemists had no tools for investigating the chemical properties of gases
 - ☐ D. By performing various tests on solids and liquids, chemists were able to better understand gases.
3. (单选题) The word "comparable" in the passage is closest in meaning to
 - ☐ A. Effective
 - ☐ B. equivalent
 - ☐ C. reliable
 - ☐ D. easy
4. (单选题) The author includes the quotation from the Encyclopedia of Diderot and d' Alembert" in order to
 - ☐ A. support the argument that pharmacists and metallurgists were better at studying gases than chemists were
 - ☐ B. emphasize that chemists did not consider gases to be a subject for their study
 - ☐ C. suggest that physicists were no more concerned with gases than chemists were
 - ☐ D. argue that Diderot and d' Alembert deliberately limited the amount of research done on gases
5. (单选题) According to paragraph 4, Hales made an important contribution to chemistry by proposing that chemists do which of the following?
 - ☐ A. Consider mechanical subjects as well as chemical ones
 - ☐ B. Use cleaner air in their experiments
 - ☐ C. Provide detailed descriptions of the devices they used
 - ☐ D. Think about air in chemical terms.
6. (单选题) The word "staple" in the passage is closest in meaning to
 - ☐ A. regular feature
 - ☐ B. effective tool
 - ☐ C. new device

☐ D. distinct advantage

7. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information

- ☐ A. Because of Hales' apparatus, the study of the gaseous state of matter played just as important a role in the chemical revolution as the study of the solid and liquid states did
- ☐ B. was essential for chemists to devise new instruments such as Hales' apparatus in order to study different states of matter alongside one another.
- ☐ C. Hales' apparatus helped revolutionize the field of chemistry by making it possible for chemists to study a third state of matter—the gaseous state
- ☐ D. Hales' apparatus was a key development in the chemical revolution because it allowed scientists to transform gaseous matter into different states of matter

8. (单选题) According to paragraph 5, Hales did not understand that air can

- ☐ A. take various chemical forms
- ☐ B. be washed and purified
- ☐ C. be tested chemically as well as physically
- ☐ D. be contained for experimentation purposes

9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage.

"Like Robert Boyle, another prominent chemist of the time, he conducted experiments that focused on the role of air and air particles in combustion and respiration." Where would the sentence best fit? Click on a square 【】 to add the sentence to the passage.

- ☐ A. A
- ☐ B. B
- ☐ C. C
- ☐ D. D

10. (多选题) Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points. "Chemists' understanding of what air is has changed considerably since the seventeenth century. "

- ☐ A. Early chemists thought of air as an environment in which reactions took place rather than as a substance with its own chemical properties.
- ☐ B. Physicists were more likely to study air than early chemists were because physicists had more advanced methods for calculating weights
- ☐ C. The invention of the pneumatic trough made it possible to catch, hold, and study air, which in turn led to the possibility of studying gases chemically.
- ☐ D. As they had no good way of examining the role of air in reactions and were not interested in weighing it, early chemists failed to realize that there were different kinds of air.
- ☐ E. Chemists were proficient at purifying the air as well as the solids and liquids they used in their experiments long before the invention of the pneumatic trough
- ☐ F. Stephen Hales helped to reform the field of chemistry by demonstrating that the air is made up of different gases

1. (单选题) According to paragraph 1, John Mayow believed which of the following about air?

- ☒ A. Air was not involved in chemical reactions such as combustion and respiration
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- ☐ C. Carbon dioxide was the most important component of air and allowed chemical reactions to take place
- ☐ D. The air had no chemical properties but contained particles that did.

回答错误

答案: D

解析: 暂无解析

2. (单选题) What is the main point of paragraph 2?

- ☐ A. Diderot and d'Alembert were the first to recognize that gases were a third state of matter
- ☐ B. Advances in pharmacy and metallurgy led to a better understanding of gases
- ☐ C. Early chemists had no tools for investigating the chemical properties of gases
- ☐ D. By performing various tests on solids and liquids, chemists were able to better understand gases.

回答错误

答案: C

解析: 暂无解析

3. (单选题) The word "comparable" in the passage is closest in meaning to

- ☐ A. Effective
- ☐ B. equivalent
- ☐ C. reliable
- ☐ D. easy

回答错误

答案: B

解析: 暂无解析

4. (单选题) The author includes the quotation from the Encyclopedia of Diderot and d' Alembert" in order to

- ☐ A. support the argument that pharmacists and metallurgists were better at studying gases than chemists were
- ☐ B. emphasize that chemists did not consider gases to be a subject for their study
- ☐ C. suggest that physicists were no more concerned with gases than chemists were
- ☐ D. argue that Diderot and d' Alembert deliberately limited the amount of research done on gases

回答错误

答案: B

解析: 暂无解析

5. (单选题) According to paragraph 4, Hales made an important contribution to chemistry by proposing that chemists do which of the following?

- ☐ A. Consider mechanical subjects as well as chemical ones
- ☐ B. Use cleaner air in their experiments

- ☐ C. Provide detailed descriptions of the devices they used
- ☐ D. Think about air in chemical term.

回答错误

答案: **D**

解析: 暂无解析

6. (单选题) The word “staple” in the passage is closest in meaning to

- ☐ A. regular feature
- ☐ B. effective tool
- ☐ C. new device
- ☐ D. distinct advantage

回答错误

答案: **A**

解析: 暂无解析

7. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information

- ☐ A. Because of Hales’ apparatus, the study of the gaseous state of matter played just as important a role in the chemical revolution as the study of the solid and liquid states did
- ☐ B. was essential for chemists to devise new instruments such as Hales' apparatus in order to study different states of matter alongside one another.
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- ☐ D. Hales' apparatus was a key development in the chemical revolution because it allowed scientists to transform gaseous matter into different states of matter

回答错误

答案: **C**

解析: 暂无解析

8. (单选题) According to paragraph 5, Hales did not understand that air can

- ☐ A. take various chemical forms
- ☐ B. be washed and purified
- ☐ C. be tested chemically as well as physically
- ☐ D. be contained for experimentation purposes

回答错误

答案: **A**

解析: 暂无解析

9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage.

“Like Robert Boyle, another prominent chemist of the time, he conducted experiments that focused on the role of air and air particles in combustion and respiration.” Where would the sentence best fit? Click on a square 【】 to add the sentence to the passage.

- ☐ A. A

- ☐ B. B

- ☐ B. B
- ☐ C. C
- ☐ D. D

回答错误

答案: **A**

解析: 暂无解析

10. **(多选题)** Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. This question is worth 2 points. "Chemists' understanding of what air is has changed considerably since the seventeenth century. "

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- ☐ C. The invention of the pneumatic trough made it possible to catch, hold, and study air, which in turn led to the possibility of studying gases chemically.
- ☐ D. As they had no good way of examining the role of air in reactions and were not interested in weighing it, early chemists failed to realize that there were different kinds of air.
- ☐ E. Chemists were proficient at purifying the air as well as the solids and liquids they used in their experiments long before the invention of the pneumatic trough.
- ☐ F. Stephen Hales helped to reform the field of chemistry by demonstrating that the air is made up of different gases.

回答错误

答案: **A, C, D**

解析: 暂无解析

TPO65 Passage 3 Pastoralism and Agriculture in Iran

【P1】 Geographical constraints have had important consequences for the economy and society of Iran. Where rainfall is adequate, there are fertile valleys and grasslands suitable for grazing animals. However, since the natural vegetation tends to be sparse, it is difficult for such animals to remain in one place for any length of time. Thus nomadic pastoralism—keeping livestock (such as sheep and goats) by wandering from place to place—was one of the first and most persistent human economic activities to flourish in this area. This nomadic movement was often of the vertical variety, with people and animals moving from lowlands in wintertime to highlands in summer. The animals raised by the pastoralists provided not only food but also material for crafts such as the making of carpets, thick felt cloth, and tents. The pastoralists were typically organized into large tribal confederations capable of controlling the vast territories needed for maintaining their herds.

【P2】 The tribes were a powerful social and political factor throughout Iranian history. The skills necessary for herding animals, hunting and chasing off predators, directing migrations, disciplining tribesmen, and protecting lands and animals from rivals could be easily adapted and directed toward military purposes as well. It was typically the tribes that produced the soldiers and rulers of the country and provided the power base for most of its dynasties. Once established, governments needed to cultivate the support of friendly tribal groups and tried to control hostile tribes by combat, deportation, or forcible settlement. At the beginning of the twentieth century, approximately one-fourth of the population were tribal peoples, and they were a potent force in Iranian affairs. With the advent of mechanized armies in the 1930s, however, there were systematic efforts to break the power of the tribes and to coerce the tribal population into a sedentary way of life. These efforts have been largely successful, and the tribes are no longer so significant a force in either the Iranian economy or society. Less than 5 percent of the population now consists of nomadic pastoralists.

【P3】 The aridity of the Iranian plateau retarded its agricultural development in comparison to adjacent regions such as Mesopotamia, which had great rivers to draw upon for a supply of water. Eventually, at some uncertain date probably about 26 centuries ago, there was a technological **breakthrough** that made it possible to farm crops outside the few oases, streams, and other places with sufficient rainfall for agriculture. This was the development of underground canals known as qanats. The qanat system took advantage of the natural slope (inclination) of the plateau basins. A well would be dug in the foothills to reach a water source, usually water from melting snow that had seeped underground. Then a sequence of wells and shafts connected by underground canals would be constructed to transport the water to an area suitable for cultivation where it could support the needs of one or more villages. The slope of the underground canals had to be controlled carefully to prevent erosion, and the interior surface of wells and shafts needed to be kept under constant maintenance to prevent them from collapsing.

【P4】 【A】 Since the canals were underground, loss from evaporation was minimized. 【B】 Gravity provided the means of moving the water, so no mechanical energy was required to operate the system. 【C】 The numerous wells and shafts kept the length of the tricky underground canal short and facilitated repairs of each segment.

【D】 Built up over the centuries, the system eventually became immense. **It has been estimated that the total length of the qanat system today, counting wells, shafts, and canals, is in excess of 300,000 kilometers (almost the distance from Earth to the Moon!), which gives some idea of the tremendous investment in money and labor power it represents.** Yet the type of agriculture that developed around the qanat system gave modest yields and required hard work from the peasant farmers, who received only a small share of the agricultural produce.

TPO65 阅读P3

相关课程: TPO65 Reading P3

1. (单选题) According to paragraph 1, pastoralists in Iran needed to move their animals for which of the following reasons?
 - ☐ A. Their herds were constantly growing in size
 - ☐ B. Much of the land was too steep to be used by all the grazing animals at once.
 - ☐ C. In any given place, the animals soon ran out of food
 - ☐ D. Many fertile valleys and grasslands could be reached only at certain times of the year

2. (单选题) According to paragraph 2, nomadic pastoralists were important in Iranian history for all of the following reasons EXCEPT:
 - ☐ A. They produced rulers for Iran
 - ☐ B. They formed a significant proportion of the Iranian population.
 - ☐ C. They used the skills developed for nomadic pastoralism to support ruling dynasties
 - ☐ D. They helped make the transition in Iran from traditional to mechanized armies

3. (单选题) Which of the following can be inferred from paragraph 2 about the relationship between Iranian governments and the nomadic tribes?
 - ☐ A. Governments used soldiers from friendly tribes to combat tribes opposed to the government
 - ☐ B. Governments tried to increase the military power of the tribes.
 - ☐ C. Governments used the pastoral skills of tribesmen to benefit the governments' economic interests
 - ☐ D. Governments encouraged fighting amongst the tribes in order to limit tribal power.

4. (单选题) The word "breakthrough" in the passage is closest in meaning to
 - ☐ A. experiment
 - ☐ B. opportunity
 - ☐ C. advance
 - ☐ D. method

5. (单选题) According to paragraph 3, why was it necessary to regularly inspect the qanat system?
 - ☐ A. Erosion might cause the canals to slope
 - ☐ B. Runoff from melting snow could sometimes cause flooding
 - ☐ C. Wells and shafts might collapse if not kept in good repair
 - ☐ D. Water from the system was not always distributed fairly among villages.

6. (单选题) According to paragraph 4, why was the qanat system built with numerous wells and shafts?
 - ☐ A. To minimize water loss
 - ☐ B. To keep individual segments of the qanat canals short for easy maintenance
 - ☐ C. To avoid the need to supply energy to transport water through the qanat canals

- ☐ D. To provide sufficient means for removing the water for irrigation
7. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.
- ☐ A. The qanat system today is thought to be in excess of 300,000 kilometers, which is almost as great as the distance between Earth and the Moon.
- ☐ B. Counting all of the wells, shafts, and canals would be both difficult and expensive, so the total length of the qanat system has been estimated rather than measured
- ☐ C. The effort and expense required to build the qanat system is apparent from its estimated length of more than 300 000 kilometers.
- ☐ D. The investment of money and labor needed to construct the qanat system was probably almost as great as that required to travel from Earth to the Moon
8. (单选题) In paragraph 3, why does the author compare the agricultural development of the Iranian plateau with that of adjacent regions?
- ☐ A. To explain how rivers affect agricultural development
- ☐ B. To explain why adjacent regions did not develop a qanat system
- ☐ C. To provide the motivation for the development of the qanat system in Iran
- ☐ D. To imply that in both the Iranian plateau and Mesopotamia, agriculture depended on irrigation
9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage. "The design of the system was ingenious in several respects." Where would the sentence best fit? Click on a square 【】 to add the sentence to the passage.
- ☐ A. A
- ☐ B. B
- ☐ C. C
- ☐ D. D
10. (多选题) Directions: An introductory sentence for a brief summary of the passage is provided below Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage This question is worth 2 points. "The scarcity of water has had a major effect on the economic and social development of Iran."
- ☐ A. For centuries, people raised livestock for food and wool, moving the animals from the lowlands in wintertime to the highlands in summertime.
- ☐ B. Until the 1930s, nomadic tribes were a significant force in the country's economic and political structure.
- ☐ C. Historically, the governments of Iran depended on the support of the tribal groups to defend the water supplies of cities and other settlements.
- ☐ D. During the twentieth century, nomadic people of Iran successfully resisted the attempts of centralized governments to settle them in towns and cities
- ☐ E. A complex system of wells, shafts, and underground canals changed agriculture in Iran by increasing the amount of land that could be farmed
- ☐ F. The natural slope from highlands to lowlands required the construction of irrigation canals that linked agricultural areas

1. (单选题) According to paragraph 1, pastoralists in Iran needed to move their animals for which of the following reasons?

- ☒ A. Their herds were constantly growing in size
- ☐ B. Much of the land was too steep to be used by all the grazing animals at once.
- ☐ C. In any given place, the animals soon ran out of food
- ☐ D. Many fertile valleys and grasslands could be reached only at certain times of the year

回答错误

答案: C

解析: 暂无解析

2. (单选题) According to paragraph 2, nomadic pastoralists were important in Iranian history for all of the following reasons EXCEPT:

- ☐ A. They produced rulers for Iran
- ☐ B. They formed a significant proportion of the Iranian population.
- ☐ C. They used the skills developed for nomadic pastoralism to support ruling dynasties
- ☐ D. They helped make the transition in Iran from traditional to mechanized armies

回答错误

答案: D

解析: 暂无解析

3. (单选题) Which of the following can be inferred from paragraph 2 about the relationship between Iranian governments and the nomadic tribes?

- ☐ A. Governments used soldiers from friendly tribes to combat tribes opposed to the government
- ☐ B. Governments tried to increase the military power of the tribes.
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- ☐ D. Governments encouraged fighting amongst the tribes in order to limit tribal power.

回答错误

答案: A

解析: 暂无解析

4. (单选题) The word "breakthrough" in the passage is closest in meaning to

- ☐ A. experiment
- ☐ B. opportunity
- ☐ C. advance
- ☐ D. method

回答错误

答案: C

解析: 暂无解析

5. (单选题) According to paragraph 3, why was it necessary to regularly inspect the qanat system?

- ☐ A. Erosion might cause the canals to slope
- ☐ B. Runoff from melting snow could sometimes cause flooding

- ☐ C. Wells and shafts might collapse if not kept in good repair
- ☐ D. Water from the system was not always distributed fairly among villages.

回答错误

答案: C

解析: 暂无解析

6. (单选题) According to paragraph 4, why was the qanat system built with numerous wells and shafts?

- ☐ A. To minimize water loss
- ☐ B. To keep individual segments of the qanat canals short for easy maintenance
- ☐ C. To avoid the need to supply energy to transport water through the qanat canals
- ☐ D. To provide sufficient means for removing the water for irrigation

回答错误

答案: B

解析: 暂无解析

7. (单选题) Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect choices change the meaning in important ways or leave out essential information.

- ☐ A. The qanat system today is thought to be in excess of 300,000 kilometers, which is almost as great as the distance between Earth and the Moon.
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回答错误

答案: C

解析: 暂无解析

8. (单选题) In paragraph 3, why does the author compare the agricultural development of the Iranian plateau with that of adjacent regions?

- ☐ A. To explain how rivers affect agricultural development
- ☐ B. To explain why adjacent regions did not develop a qanat system
- ☐ C. To provide the motivation for the development of the qanat system in Iran
- ☐ D. To imply that in both the Iranian plateau and Mesopotamia, agriculture depended on irrigation

回答错误

答案: C

解析: 暂无解析

9. (单选题) Look at the four squares 【】 that indicate where the following sentence could be added to the passage. "The design of the system was ingenious in several respects." Where would the sentence best fit? Click on a square 【】 to add the sentence to the passage.

- ☐ A. A

- ☐ B. B
- ☐ C. C
- ☐ D. D

回答错误

答案: **A**

解析: 暂无解析

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- ☐ E. A complex system of wells, shafts, and underground canals changed agriculture in Iran by increasing the amount of land that could be farmed
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回答错误

答案: **A, B, E**

解析: 暂无解析