

Groundwater

Most of the world's potable water-freshwater suitable for drinking is accounted for by groundwater, which is stored in the pores and fractures in rocks. There is more than 50 times as much freshwater stored underground than in all the freshwater rivers and lakes at the surface. Nearly 50 percent of all groundwater is stored in the upper 1,000 meters of Earth. At greater depths within Earth, the pressure of the overlying rock causes pores and cracks to close, reducing the space that pore water can occupy, and almost complete closure occurs at a depth of about 10 kilometers. The greatest water storage, therefore, lies near the surface.

世界上绝大部分饮用水---可以饮用的淡水---都是地下水，它们储藏在岩石孔隙和裂缝中。储藏于地下的淡水是地表淡水河流和湖泊中总水量的 50 倍。大约 50% 的地下水存在于地下深 1000m 以内的地层中。随深度增加，上覆岩层压力使岩石孔隙和裂缝闭合，减少了水的储存空间，而超过 10 公里深的地下孔隙几乎全部闭合。因此绝大部分水储存于接近地表的层中。

Aquifers, Porosity and Permeability

水层，孔隙度和渗透率

【2】Groundwater is stored in a variety of rock types. A groundwater reservoir from which water can be extracted is called an aquifer. We can effectively think of an aquifer as a deposit of water. Extraction of water depends on two properties of the aquifer: porosity and permeability. Between sediment grains are spaces that can be filled with water. This pore space is known as porosity and is expressed as a percentage of the total rock volume. Porosity is important for water—storage capacity, but for water to flow through rocks, the pore spaces must be connected. The ability of water, or other fluids, to flow through the interconnected pore spaces in rocks is termed permeability. In the intergranular spaces of rocks, however, fluid must flow around and between grains in a tortuous path; this winding path causes a resistance to flow. The rate at which the flowing water overcomes this resistance is related to the permeability of rock.

地层水储存在多种岩石中。可以取出的地下水的聚集层叫做水层。我们可以认为水层即水的聚集地层。从地层中取水取决于水层的两个因素：孔隙度和渗透率。沉积颗粒之间的空间可以储存水，这种孔隙空间由孔隙度表征。孔隙度是岩石孔隙体积与总体积的百分比。孔

隙度对地层储水能力尤为重要，但欲使水从岩石中流出，孔隙之间必须相互连通。水或其它流体从相互连通的孔隙中流动的能力即为渗透率。在粒间孔发育的岩石中，流体必须在颗粒周围的曲折通道中流动；这种曲折通道会对流动产生阻力。水克服阻力流动的速率与岩石渗透率相关。

【3】 Sediment sorting and compaction influence permeability and porosity. The more poorly sorted or the more tightly compacted a sediment is, the lower its porosity and permeability. Sedimentary rocks—the most common rock type near the surface—are also the most common reservoirs for water because they contain the most space that can be filled with water. Sandstones generally make good aquifers, while finer-grained mudstones are typically impermeable. Impermeable rocks are referred to as aquicludes. Igneous and metamorphic rocks are more compact, commonly crystalline, and rarely contain spaces between grains. However, even igneous and metamorphic rocks may act as groundwater reservoirs if extensive fracturing occurs in such rocks and if the fracture system is interconnected.

沉积物的分选性和压实程度影响其渗透率和孔隙度。岩石分选越差或压实越紧则其孔隙度和渗透率越低。沉积岩——地表最常见的岩石——也是最常见的水储集层，因为它们常带有最多的可以储水的孔隙空间。砂岩一般是最好的储水层，但小颗粒的泥岩则通常不可渗透。不渗透岩层都称为隔水层。火成岩和变质岩压实更紧，通常有结晶，并几乎没有粒间孔隙。但是即便是火成岩和变质岩也可因裂缝大量发育并相互连接而成为储水层。

The Water Table

地下水位

【4】 The water table is the underground boundary below which all the cracks and pores are filled with water. In some cases, the water table reaches Earth's surface, where it is expressed as rivers, lakes and marshes. Typically, though, the water table may be tens or hundreds of meters below the surface. The water table is not flat but usually follows the contours of the topography. Above the water table is the vadose zone, through which rainwater percolates. Water in the vadose zone drains down to the water table, leaving behind a thin coating of water on mineral grains. The vadose zone supplies plant roots near the surface with water.

地下水位指地层岩石裂缝和孔隙充满水的边界。某些情况下，地下水位可能到达地表，在那里它以河流、湖泊或沼泽地的形式存在。但通常情况下地下水位位于地面数十或数百米

以下。地下水位不是水平的，而是通常沿着地势起伏。地下水位以上称为包气带，在这里降水得以过滤。包气带中的水会沉降到地下水位，只在矿物颗粒表面留下一层水膜。包气带为地表附近植物根部提供水分。

【5】 Because the surface of the water table is not flat but instead rises and falls with topography, groundwater is affected by gravity in the same fashion as surface water. Groundwater flows downhill to topographic lows. If the water table intersects the land surface, groundwater will flow out onto the surface at springs, where to be collected there or to subsequently flow farther along a drainage. Groundwater commonly collects in stream drainages but may remain entirely beneath the surface of dry stream-beds in arid regions. In particularly wet years, short stretches of an otherwise dry stream-bed may have flowing water because the water table rises to intersect the land surface.

因为地下水位表面并非水平，而是沿着地势起伏，地下水和地表水受到重力影响的模式相同。地下水沿着下倾地层流向地势低洼处。如果地下水位与地表相交，地下水将以喷泉的形式流出地面，要么就地聚集，要么沿排水通道流向更远的地方。地下水通常在小溪中聚集，但在干旱地区也可能全部停留在干涸河床下。在特定湿润的年月里，一段干涸的河床下游可能有水流动，因为地下水位抬升到了那里的地表以上。

[Glossary]

Sediment: materials (such as sand or small rocks) that are deposited by water, wind, or glacial ice.

Topography: the shape of a surface such as Earth's, including the rise and fall of such features as mountains and valleys.

托福阅读试题

1. In paragraph 1, why does the author mention "the pressure of the overlying rock"?

- A. To show how water can be forced deep under Earth's surface.
- B. To show why groundwater is more plentiful than surface freshwater.
- C. To correct a commonly made error about the location of groundwater.
- D. To explain why most groundwater lies near Earth's surface.

1.在高亮部分的描写之后，本段的最后一句出现了，therefore。这里也是在说 the pressure of the overlying rock 导致的结果，也就是文章提到它的目的。其结果是，大部分的水储都在比较表面的地方。所以其目的就是要解释为什么水都在表面的地方。

2.According to paragraph 1, groundwater differs from the water in rivers and lakes in terms of its

- A.portability.
- B.usefulness.
- C.abundance.
- D.cost.

2.对应原文第二句话，也就是将地下水和江河湖泊水进行比较的那句话。原句说 more than 50 times。就证明是地下水的水量大。这里 A 是饮用性，原文并没有说江水不能喝。B 是有用，同理。D 是代价。这个就更没提到了。所以答案为 C 丰富。

3.The word "extracted" in the passage(paragraph 2)is closest in meaning to

- A.used.
- B.poured.
- C.removed.
- D.kept out.

3.extract 本身是汲取，取出的意思。从原文后面一句话可以推测，因为后面说储水土层可以看作是对一笔水存款，所以前面应该是说可以取出。另外这个词的词缀 ex-本身就有出的意思。那么 A 是使用，B 是泼出，C 是移动，D 是隔离在外。

4.The word "termed" in the passage(paragraph 2)is closest in meaning to

- A.considered.
- B.called.
- C.limited to.
- D.caused by.

4.term 作名词是术语，这个很常用。而这里用了其动词否定形式，那么应该是...被术语为，也就是被命名为。那么 A 是认为，B 是叫做，C 是限制于，D 是由于。所以应该选 B。

5.According to paragraph 2, what does porosity determine?

- A.The rate at which the aquifer's water overcomes resistance to flow.

- B.The amount of water that the aquifer can hold.
- C.The likelihood that fractures and joints will occur in the aquifer.
- D.The depth underground at which the aquifer lies.

5.A 决定于 permeability of rock, 对应本段最后一句。B 正确, 对应本段第七句(porosity is important for water-storage capacity), 这句话只要根据 porosity 定位就很好找。C 和 porosity 没有直接关系。D 原文就没提到。

6.According to paragraph 2, what is the relationship between permeability and porosity?

- A.The more pores a rock has, the higher its porosity but the lower its permeability.
- B.Rocks with many internal spaces that are not connected with each other will have high porosity but low permeability.

C.If water flows through a rock easily, it has high permeability but low porosity.

D.Rocks that have high permeability have high porosity and vice versa.

6.对应本段第一句和第二句, 即 sorting 和 compaction 会共同影响 permeability, 结合上一段的最后一句理解, 多孔性分为两种情况, 一种是孔多但是互相不联通, 这时 permeability 不高;另一种是孔多并且互相联通, 那么 porosity 高的同时 permeability 也会高。因此选择 B。其他几个选项的叙述都不完整。这两者的关系并不是简单的正比例。

7.The word "compacted" in the passage(paragraph 3)is closest in meaning to

- A.hard.
- B.compressed.
- C.heavy.
- D.deeply buried.

7.compact 是压缩, 紧密的意思。通过后面的 and 的并列内容可以推出其词义, 因为 and 后面说 rarely contain space, 那就是说中间的空间很小。所以选择 B 压缩的。A 是坚硬, C 是重的, D 是深埋的。

8.According to paragraph 3, when can igneous rock serve as an aquifer?

- A.When it has many connected fractures.
- B.When it lies next to metamorphic rock.
- C.When it lies relatively near the surface.
- D.When it is crystalline.

8.对应本段文章最后一句"even igneous rocks may act as groundwater..."后半句给出的就是答案,那么它说的是要有 fractures 并且要 interconnected。所以选 A。

9.The word "coating" in the passage(paragraph 4)is closest in meaning to

A.stream.

B.barrier.

C.amount.

D.layer.

9.Coating 本来是外衣,和涂层的意思。那么 A 是溪流, B 是障碍物, C 是数量, D 是层。所以 D 符合。

10.Paragraph 4 implies which of the following about the roots of plants?

A.They prevent water from reaching the vadose zone.

B.They mark the boundary between the vadose zone and the water table

C.They do not typically get their water from the water table.

D.They help keep the water table from dropping farther.

10.根据 plant roots 定位到本段最后一句。说 vadose zone 给植物根部提供了水。选项 A, B, D 都没提到。而只有 C 没有错误,因为 plant roots 是从 vadose zone 汲取的水份,而不是 water table。所以选 C。

11..Which of the sentences below best expresses the essential information in the highlighted sentence in the passage paragraph 5 ? Incorrect choices change the meaning in important ways or leave out essential information.

A.Groundwater only flows out of the ground if the water table intersects the land surface.

B.If the land surface and the water table intersect, groundwater can flow underground.

C.Groundwater may be drained if springs occur where the water table intersects the land surface.

D.Where the water table meets the land surface, groundwater flows out through surface springs.

11.A 选项缺少了 spring 这个条件;B, C 选项不正确。D 包含了原文所有的主干部分,正确。

12.Paragraph 5 implies which of the following about the level of the water

A.It may rise or fall from year to year, depending on annual rainfall.

B.It does not vary in arid regions.

C.It rarely intersects the land surface of most regions.

D.It is unrelated to the rate at which groundwater flows.

12.根据这段最后两句对于 wet year 的描写可以得出根据降雨量不同，地下水位是有变化的。所以 A 正确。B 不正确，原文明显写到在 arid regions 降雨量多时干燥的溪床会有水。C 也不对，整段都有大篇幅在写和 land surface 的 intersects。D 原文没提到。

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit? This is a consequence of the slow rate of movement of the groundwater, which often prevents the water table from attaining a flat (horizontal) level.

The water table is the underground boundary below which all the cracks and pores are filled with water. In some cases, the water table reaches Earth's surface, where it is expressed as rivers, lakes and marshes. ■ **【A】** Typically, though, the water table may be tens or hundreds of meters below the surface. ■ **【B】** The water table is not flat but usually follows the contours of the topography. ■ **【C】** Above the water table is the vadose zone, through which rainwater percolates. ■ **【D】** Water in the vadose zone drains down to the water table, leaving behind a thin coating of water on mineral grains. The vadose zone supplies plant roots near the surface with water.

13.要插入的句子说 this is a consequence, 那么 this 一定指代什么, 根据后半句可以知道指代的内容应该与地下水位不是平面有关。所以 C 的位置符合, 因为前面一句说地下水位不是平面。

14. 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.

Most of the world's potable water is stored as groundwater in the pores and fractures of underground rock, much of it at depths of less than 1,000 meters.

A. Sedimentary rock may make poor aquifers because of tightly compacted sediment, which reduces porosity and permeability.

B. Porosity is a measure of the empty space within rock while permeability measures the degree to which water can flow freely through rock.

C. In arid regions, the water tables remain at a constant level far below the surface, preventing stream-beds from filling up even during wet years.

D. Groundwater reservoirs are characterized by the porosity and permeability of the rock in which they lie, and these factors vary according to the type of rock.

E. The vadose zone is typically dry because water does not stay in it, but instead percolates down to aquifers below or drains out through springs and streams.

F. Although the water table usually follows the contours of the land surface, its level may vary from year to year and may intersect the surface in places.

14. A 错误，对应文章第三段的第三句有关于 sedimentary rock 的描写。根据原文，sedimentary rock 是很好的 aquifers，B 正确，对应第二段的前四句。C 正确，对应原文第二段。D 错误，vadose zone 中会留下 thin coating 所以还是会湿润。对应原文第四段。E 错误，water table 本非 remain at a constant level，根据倒数第二句，地下水位有时会与地表交叉的。F 正确，对应原文最后一段。

Early Saharan Pastoralists

The Sahara is a highly diverse, albeit dry, region that has undergone major climatic changes since 10,000 B.C. As recently as 6,000 B.C. the southern frontier of the desert was far to the north of where it is now, while semiarid grassland and shallow freshwater lakes covered much of what are now arid plains. This was a landscape where antelope of all kinds abounded—along with *Bos primigenius*, a kind of oxen that has become extinct. The areas that are now desert were, like all arid regions, very susceptible to cycles of higher and lower levels of rainfall, resulting in major, sudden changes in distributions of plants and animals. The people who hunted the sparse desert animals responded to drought by managing the wild resources they hunted and gathered, especially wild oxen, which had to have regular water supplies to survive.

尽管干旱，撒哈拉的物种极其多样，并自公元前 10,000 年前开始已经历了数次重大气候变迁。直到公元前 6,000 年前，沙漠的南部边界比现在的位置要靠北很多，那时半干旱的草原和浅淡水湖泊覆盖了现在干旱的平原。这里曾经是各种羚羊和一种已灭绝的野牛出没的地方。现在的沙漠地区，像所有干旱地区一样，对降雨量的变化周期极为敏感，因而其动植物的分布变化巨大且迅速。依靠捕食稀少的沙漠动物的居民对待干旱的方式是管理他们捕捉和收集到的野生资源，尤其是需要可靠水源维持生命的野牛。

Even before the drought, the Sahara was never well watered. Both humans and animals were constantly on the move, in search of food and reliable water supplies. Under these circumstances, archaeologist Andrew Smith believes, the small herds of *Bos primigenius* in the desert became smaller, more closely knit breeding units as the drought took hold. The beasts were more disciplined, so that it was easier for hunters to predict their habits, and capture animals at will. At the same time, both cattle and humans were more confined in their movements, staying much closer to permanent water supplies for long periods of time. As a result, cattle and humans came into close association.

甚至在干旱之前，撒哈拉地区也从未有充足的水分。人类和野生动物都不停的迁徙，以寻找食物和可靠的水源。在这些情况下，考古学家 Andrew Smith 认为随着干旱的持续，沙漠中野牛群会变成更小，组织更紧密的族群。兽群变得更加自律，因此猎人更容易预测他们的习性并随意抓捕。同时，骆驼和人类的行动范围进一步靠近，在固定水源附近长期更亲近的共处。结果骆驼和人类形成了紧密的联合。

Smith believes that the hunters were well aware of the more disciplined ways in which their prey behaved. Instead of following the cattle on their annual migrations, the hunters began to prevent the herd from moving from one spot to another. At first, they controlled the movement of the herd while ensuring continuance of their meat diet. But soon they also gained genetic control of the animals, which led to rapid physical changes in the herd. South African farmers who maintain herds of wild eland (large African antelopes with short, twisted horns) report that the offspring soon diminish in size, unless wild bulls are introduced constantly from outside. The same effects of inbreeding may have occurred in controlled cattle populations, with some additional, and perhaps unrecognized, advantages. The newly domesticated animals behaved better, were easier to control, and may have enjoyed a higher birth rate, which in turn yielded

greater milk supplies. We know from rock paintings deep in the Sahara that the herders were soon selecting breeding animals to produce offspring with different horn shapes and hide colors.

Smith 相信猎人对猎物更加自律的行为了然于胸。猎人们不再跟随骆驼进行每年一度的迁徙而是开始阻止兽群的迁移。起初他们控制兽群的迁移以获得持续的肉食来源。但很快他们能够在遗传上控制动物，使得兽群的体征迅速变化。南非牧养大羚羊(一种体型较大的非洲羚羊，它们的角短且扭曲)的农民说如果不持续从野外引进公羚羊则其后代体型迅速变小。近亲繁殖的影响同样发生在控制拥有某些额外的可能并未认清的优势的骆驼数量上。最新驯化的动物更易控制，出生率也更高，而反过来也会提供更多奶源。我们从撒哈拉腹地的岩石绘画可知牧民很快就选择一些动物进行繁殖以产生角和颜色不同的后代。

It is still unclear whether domesticated cattle were tamed independently in northern Africa or introduced to the continent from southwest Asia. Whatever the source of the original tamed herds might have been, it seems entirely likely that much the same process of juxtaposition (living side by side) and control occurred in both southwest Asia and northern Africa, and even in Europe, among peoples who had an intimate knowledge of the behavior of wild cattle. The experiments with domestication probably occurred in many places, as people living in ever-drier environments cast around for more predictable food supplies.

我们仍无法知道骆驼是在北非独立驯化的还是从东南亚引入的。不管驯化的兽群起源何处，东南亚和北非，甚至是欧洲的那些对野生骆驼的行为了然于胸的人们都可能经过了同样的和他们要驯化的动物毗邻而居并逐渐控制它们的过程。随着人们居住环境不断干燥和食物供给的可预测性更强，驯化的尝试很可能发生在很多地方。

The cattle herders had only a few possessions: unsophisticated pots and polished adzes. They also hunted with bow and arrow. The Saharan people left a remarkable record of their lives painted on the walls of caves deep in the desert. Their artistic endeavors have been preserved in paintings of wild animals, cattle, goats, humans, and scenes of daily life that extend back perhaps to 5,000 B.C.. The widespread distribution of pastoral sites of this period suggests that the Saharans ranged their herds over widely separated summer and winter grazing grounds.

骆驼牧养人的财产很少：一些并不精致的罐子和磨光的斧子。他们也利用弓箭捕猎。撒哈拉人在撒哈拉腹地洞穴的墙壁上留下了很重要的关于他们生活的记录。他们的艺术创作保存了大量关于野生动物、骆驼、山羊、人类及其日常生活的各种场景的绘画。这些场景可能

追溯到公元前 5,000 年前。这一时期田园画古迹的广泛分布表明撒哈拉人曾在广泛且独立的牧场上放牧。

About 3,500 B.C., climatic conditions again deteriorated. The Sahara slowly became drier and lakes vanished. On the other hand, rainfall increased in the interior of western Africa, and the northern limit of the tsetse fly, an insect fatal to cattle, moved south. So the herders shifted south, following the major river systems into savanna regions. By this time, the Saharan people were probably using domestic crops, experimenting with such summer rainfall crops as sorghum and millet as they move out of areas where they could grow wheat, barley, and other Mediterranean crops.

大约公元前 3,500 年前，气候条件又一次恶化。撒哈拉沙漠渐渐地更加干旱，湖泊相继干涸。另外西非内陆降雨增加，并且舌蝇，一种对骆驼致命的昆虫，的种群的北部边界向南移动。所以骆驼牧民也追随大平原区域的主要河流系统向南迁徙。此时，随着撒哈拉人从原本可以种植小麦、大麦和其它一些地中海农作物的区域中迁出，他们可能依靠当地的农作物，例如像高粱和小米一类的依靠夏季降雨的作物。

[Glossary]

adzes: cutting tools with blades set at right angles to the handle

托福阅读试题

1. According to paragraph 1, what was true of the Sahara region around 6,000 B.C.?

A. Much less of it was desert than is now the case.

B. Most areas that are now grassland were covered by shallow lakes.

C. It had just undergone a major climatic change.

D. Wild oxen and antelopes lived in separate parts of the region. 1. 原文写到"在公元前六千年左右，在沙漠的南边界，远离北边的地方现在是干旱的平

原，当时这里是各种羚羊和原始牛都很丰富的山水画般的地方"那么也就是说那时候那个地方还不是沙漠。所以 A，当时沙漠要比现在少，正确。B 现在没 grassland。C 并没说这个改变是在公元前 6000 年发生的。D 通过"along with"可以知道这两种动物是生活在一起的。

2. The word "albeit" in the passage(paragraph 1) is closest in meaning to

A. usually.

B. almost.

C.though.

D.rather.

2.通过原文 albeit 前后两个词可以推出转折意义，前面是多样性的，后面是干燥的，两者有褒贬对比，所以选 C

3.According to paragraph 1, which of the following is true of all arid regions?

A.They include at least some freshwater lakes.

B.They have similar distributions of plants and animals.

C.They are greatly affected by changes in the amount of rain they receive.

D.They have frequent droughts that make it difficult to manage the wild resources.

3.根据 all arid region 定位(红色标出句)选项 A 错误，原文没说。B，原文虽然提到了 distribution of plants，但是并没说所有的干燥地区这一点都是相似的。C 正确，原文说 very susceptible to higher and lower levels of rainfall。D 错误，最后一句说人们因此而开始 manage resources。

4.Paragraph 2 supports which of the following ideas about wild oxen in the Sahararegion after the drought took hold?

A.They traveled in smaller herds.

B.They were harder for hunters to capture.

C.They tended to be significantly smaller in size.

D.They moved along less predictable routes.

4.对应文章地三句，第四句。根据原文说这种牛群体更小了，繁殖的单位更小，别驯化了，跟容易被预测。所以 B，D 错误，C 原文没提到，只说其群体变小。也就是 A。

5.According to paragraph 2, what was it that brought cattle and humans into close association?

A.The development of smaller breeding units within hers.

B.Cattle and humans staying close to permanent water supplies for long period of time.

C.The development of greater discipline among cattle.

D.Cattle and humans constantly on the move searching for food and reliable water supplies. 5.

根据 close association 定位到最后一句，但这句说 as a result，那么原因就在前面一句。前一句说 cattle and humans 都 staying much closer to permanent water supplies。所以完美的对应了 B。

6. Why does the author mention the "rock paintings deep in the Sahara"?

- A. To help explain why the hunters wanted to control the herds.
 - B. To provide support for the idea that the herders soon gained genetic control of the cattle
 - C. To show that the herders had artistic as well as practical abilities
 - D. To argue that the herders soon began to value their cattle for more than food.
6. 这个例子之前一直在说 herders gained genetic control 和其影响。然后给出这个例子，

后面的内容也在说放牧人是怎样进行基因控制的。所以应该选 B。

7. According to paragraph 3, all of the following statements were true of newly domesticated animals EXCEPT

- A. They were controlled more easily by the farmers.
- B. They produced a larger number of offspring.
- C. They produce more milk.
- D. They were larger in size.

7. 根据 domesticated animals 定位到这一段后半部分，已用红色字标出，加粗字体为 domesticated animals 的描述。D 没提到。所以选 D。

8. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage paragraph 4 ? Incorrect choices change the meaning in important ways or leave out essential information.

- A. Regardless of where the first tamed herds came from, people tried to control them by living in juxtaposition with them.
- B. Regardless of where the first tamed herds came from, they resulted from the same process of juxtaposition and control by people who understood the behavior of wild cattle.
- C. People who had an intimate knowledge of the behavior of wild cattle moved closer together to cooperate in taming the herd, regardless of where they found them.
- D. The process of taming herds was certainly the same in southwest Asia, northern Africa, and Europe because people knew a lot about the behavior of wild cattle, regardless of where they lived.

8. 这里的主干内容是，不管驯化动物从哪起源的，最后在不同的地区得到的都是同样的方法：juxtaposition, control。根据以上信息对选项进行排除。

A: 前半句没问题。后半句和原文关系不符 B: 正确, 包括了所有主干部分。 C: 完全和原文说的不是一回事儿啊。 D: 原文并没有因果关系。

9. According to paragraph 5, each of the following was true about the early Saharan people EXCEPT

- A. They had few possessions apart from cattle.
- B. After about 5,000 B.C., they lived primarily in caves that were located deep in the desert.
- C. Between the summer and winter seasons, they moved their herds over long distances.
- D. They painted animals and scenes of daily life on the walls of caves.

9. A 对应第一句, 除了牛, 他们还有住所和斧头。C 对应最后一句。D 对应第三句。B, 原文虽然说到他们在沙漠深处的洞穴里画画了, 但是没说他们住那。所以不对, 选 B。

10. The word "endeavors" in the passage is closest in meaning to
- A. methods.
 - B. styles.
 - C. scenes.
 - D. efforts.

10. Endeavor 是努力, 尽力的意思。A 是方法; B 风格; C 景象; D 努力。所以 D 最贴切。从文章可以推测。之前在描述他们的生活场景, 财产, 打猎。然后说他们画画。这里问的是记录了什么, 那么应该是他们之前做出的努力。别的单词带入后都解释不通。

11. The word "deteriorated" in the passage is closest in meaning to
- A. became unstable.
 - B. caused hardship.
 - C. changed completely.
 - D. got worse.

11. 通过这个词后面的一句话对撒哈拉的描写可以看出都是负面发展。更干燥, 湖也消失了。A 是不稳定, B 是困苦, C 是完全改变。

12. According to paragraph 6, what allowed the herders to shift south into the savanna regions after about 3,500 B.C.?

A.They could easily grow Mediterranean crops in those regions.

B.They could more easily domesticate sorghum and millet in those regions.

C.The tsetse fly was no longer a problem in those regions.

D.The river systems in those regions provided reliable sources of water in the summer. 12.根

据 move south 和 savanna region 定位到原文字体标注处，这句话开头出现 So，那证明往前一句就是原因。前一句说西部降水变多了，并且 northern limit of the tsetse fly moved south，所以牛群也 movesouth。对应了 C 选项。D 可能是个迷惑选项，但是按原文的意思，river 只是牛迁徙的路径"following"，但并不是原因。

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit? This knowledge enabled the hunters to adopt a different approach to hunting.

Smith believes that the hunters were well aware of the more disciplined ways in which their prey behaved. ■ 【A】 Instead of following the cattle on their annual migrations, the hunters began to prevent the herd from moving from one spot to another. ■ 【B】 At first, they controlled the movement of the herd while ensuring continuance of their meat diet. ■ 【C】 But soon they also gained genetic control of the animals, which led to rapid physical changes in the herd. ■ 【D】 South African farmers who maintain herds of wild eland (large African antelopes with short, twisted horns) report that the offspring soon diminish in size, unless wild bulls are introduced constantly from outside. The same effects of inbreeding may have occurred in controlled cattle populations, with some additional, and perhaps unrecognized, advantages. The newly domesticated animals behaved better, were easier to control, and may have enjoyed a higher birth rate, which in turn yielded greater milk supplies. We know from rock paintings deep in the Sahara that the herders were soon selecting breeding animals to produce offspring with different horn shapes and hide colors.

13.需要插入的句子说"这个知识使得猎人改变了打猎的方法"。那么前面应该说猎人得到了什么知识，后面应该说这个方法怎么改变了。A 选项完美符合了这个逻辑和内容。

14. 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.

As recently as 6,000 B.C., much of the Sahara region was semiarid grassland where humans hunted wild oxen and antelope.

A. There was enough freshwater for Saharan peoples to move freely throughout the region without having to manage the resources they hunted and gathered.

B. Once Saharans controlled the breeding of their cattle, the characteristics of the cattle changed rapidly, increasing their reproductive rate and milk production.

C. Although the Saharan peoples were remarkably sophisticated artists, they had only a few simple possessions, like adzes and the bows and arrows they used for hunting.

D. When the drying climate forced cattle and humans close to each other in areas with water supplies, humans gained control over the cattle and eventually domesticated them.

E. Herders soon began selecting breeding animals to produce offspring with different horn shapes and hide colors, although the advantage of controlled inbreeding was not apparent to them at first.

F. As the drought worsened around 3,500 B.C. and conditions for herders became more favorable to the south, the Saharan people moved into savanna regions, where they grew different crops.

14. A 错误，原文说因为干旱，所以农民开始 manage the resources。对应原文第一段最后一句。B 错误，原文说因为干旱，所以农民开始 manage the resources。对应原文第一段最后一句。C 正确。对应原文第三段。D 前半句正确，但后半句不对，在他们选中种畜之后，已经明确的知道了好处。E 虽然这句内容文章都有提到，但是并没有 although 这样的逻辑变化。所以不选。F 正确。对应文章最后一段。

Buck Rubs and Buck Scrapes

A conspicuous sign indicating the presence of white-tailed deer in a woodlot is a buck rub. A male deer makes a buck rub by striping the bark (outer layer) of a small tree with its antlers. When completed, the buck rub is an obvious visual signal to us and presumable to other deer in the area. A rub is usually located at the shoulder height of a deer (one meter or less above the ground) on a

smooth-barked, small-diameter (16-25 millimeters) tree. The smooth bark of small red maples makes this species ideal for buck rubs in the forests of the mid-eastern United States.

一个表示白尾鹿在小树林中存在的显著标志是雄鹿擦痕。雄鹿利用鹿角剥除小树的树皮以制造雄鹿擦痕。完工后，雄鹿擦痕对我们来说是一道明显的标志，对当地的其它鹿来说也可能如此。擦痕常与鹿肩齐高(距地面一米或不到一米)，并位于树皮光滑、树径较细(16-25cm)的树上。美国中东部森林中的树皮光滑的红色小枫树是雄鹿擦痕的理想物种。

Adult male deer usually produce rubs in late summer or early autumn when the outer velvet layer is being shed from their antlers. Rubs are created about one to two months before the breeding season (the rut). Hence for a long time biologists believed that male deer used buck rubs not only to clean and polish antlers but also to provide practice for the ensuing male-to-male combat during the rut. However, biologists also noted deer sniff and lick an unfamiliar rub, which suggests that this visual mark on a small tree plays an important communication purpose in the social life of deer.

成年雄鹿通常在夏末或秋初当它们的鹿茸上的外皮脱落时制造擦痕。雄鹿差不多在它们交配期(发情期)的前一到两个月制造擦痕。因此长期以来，生物学家们认为雄鹿擦痕不仅可以清除并磨光鹿茸，还可以借此练习发情期时雄鹿之间的角斗。然而，生物学家们也认识到鹿会嗅和舔舐陌生的擦痕，这表明这种小树上的视觉记号在鹿群社会生活中起到重要的交流目的。

Buck rubs also have a scent produced by glands in the foreheads of deer that is transferred to the tree when the rub is made. These odors make buck rubs an important means of olfactory communication between deer. The importance of olfactory communication (using odors to communicate) in the way of life of deer was documented by a study of captive adult male deer a few decades ago, which noted that males rubbed their foreheads on branches and twigs, especially as autumn approached. A decade later another study reported that adult male white-tailed deer exhibited forehead rubbing just before and during the rut. It was found that when a white-tailed buck makes a rub, it moves both antlers and forehead glands along the small tree in a vertical direction. This forehead rubbing behavior coincides with a high level of glandular activity in the modified scent glands found on the foreheads of male deer; the glandular activity causes the

forehead pelage (hairy covering) of adult males to be distinctly darker than in females or younger males.

雄鹿擦痕都有一种由雄鹿前额上的腺体分泌的气味，它在制造擦痕时涂抹到树上。这些气味使得雄鹿擦痕成为鹿与鹿之间重要的嗅觉交流方式。嗅觉交流(利用气味交流)在鹿群生活中的重要性可以通过几十年前一项对圈禁的雄鹿的研究得以印证。研究发现，特别是当秋天将近时，雄鹿就将其前额在树枝上蹭来蹭去。十年后的另一项研究发现成年雄性白尾鹿在其发情期或发情期前会摩擦其前额。当白尾鹿制造擦痕时，它将其鹿茸和前额腺体在小树上垂直磨蹭。这种前额的磨蹭行为和雄鹿前额上散发气味的腺体的异常活跃一致。该腺体活动导致成年雄鹿的前额皮毛比雌鹿或未成年鹿的暗很多。

Forehead rubbing by male deer on buck rubs presumably sends a great deal of information to other members of the same species. First, the chemicals deposited on the rub provide information on the individual identity of an animal; no two mammals produce the same scent. For instance, as we all know, dogs recognize each other via smell. Second, because only male deer rub, the buck rub and its associated chemicals indicate the sex of the deer producing the rub. Third, older, more dominant bucks produce more buck rubs and probably deposit more glandular secretions on a given rub. Thus the presence of many well-marked rubs is indicative of older, higher-status males being in the general vicinity rather than simply being a crude measure of relative deer abundance in a given area. The information conveyed by the olfactory signals on a buck rub make it the social equivalent of some auditory signals in other deer species, such as trumpeting by bull elk.

雄鹿前额在擦痕上的摩擦很可能向同类中的其它成员发出了大量信息。首先擦痕上残留的化学物质提供了一只动物的个体信息。没有两只气味相同的哺乳动物。就如我们熟知的那样，狗就是通过气味区别彼此的。第二，因为只有雄鹿制造擦痕，所以擦痕及其携带的化学物质表示了制造擦痕的鹿的性别信息。第三，年龄更大、更具统治地位的雄鹿制造的擦痕更多，而且其分泌在擦痕上的气味分泌物很可能也更多。因此大量的标记得很好的擦痕的出现表明年龄较大、地位较高的雄鹿就在附近，而不仅仅是粗略的说明了该区域鹿群的相对丰度。雄鹿擦痕上的气味记号所携带的信息使它成为与其它种类鹿群中的某些声音信号，比如雄性麋鹿的叫声，同等重要。

Because both sexes of white-tailed respond to buck rubs by smelling and licking them, rubs may serve a very important additional function. Fresher buck rubs (less than two days old), in

particular, are visited more frequently by adult females than older rubs. In view of this behavior it has been suggested that chemicals present in fresh buck rubs may help physiologically induce and synchronize fertility in females that visit these rubs. This would be an obvious advantage to wide-ranging deer, especially to a socially dominant buck when courting several adult females during the autumn rut. Another visual signal produced by white-tailed deer is termed a buck scrape. Scrapes consist of a clearing (about 0.5 meter in diameter) and shallow depression made by pushing aside the leaves covering the ground; after making the scrape, the deer typically urinates in the depression. Thus, like a buck rub, a scrape is both a visual and an olfactory signal. Buck scrapes are generally created after leaf-fall in autumn, which is just before or during the rut. Scrapes are usually placed in open or conspicuous places, such as along a deer trail. Most are made by older males, although females and younger males (2.5 years old or less) occasionally make scrapes

因为雄性和雌性白尾鹿都会嗅和舔舐雄鹿擦痕，所以这些擦痕还有一个重要的功能。特别的，新鲜擦痕(两天以内制造的)要比更久远的擦痕受到更多关注。这种行为表明新鲜擦痕上的化学物质可能有助于从生理上诱导并让关注这些擦痕的雌鹿同时受孕。这对分布广泛的鹿群显然是一个有利条件，尤其对秋天发情期中一只处于较高社会统治地位的同时向几只成年雌鹿求爱的雄鹿而言。由白尾鹿制造的另一种视觉记号叫做雄鹿窝。雄鹿窝是一个通过将地面上的树叶推开而产生的干净而较浅的低坑(直径约 0.5m)。雄鹿窝制造完成后，鹿通常会在低坑里小便。因此，像雄鹿擦痕一样，雄鹿窝既是视觉上的也是嗅觉上的记号。雄鹿窝通常在秋天树叶落下后，雄鹿发情期或之前出现。雄鹿窝常位于开阔或显眼的位置，比如沿着鹿的行动路线。绝大部分雄鹿窝由年龄更大的雄鹿制造，但有些雌鹿和年轻雄鹿(2.5 年或更年轻)偶尔也制造雄鹿窝。

托福阅读试题

1.The word "conspicuous" in the passage(paragraph 1) is closest in meaning to

A.noticeable.

B.common.

C.strange.

D.particular.

1.这里说一个 XX 的标志可以说明白尾鹿的存在。再往后，第三句有一个同意的句子，说" the buck rub is an obviousvisual signal to us..." 由此可得出 conspicuous 是 obvious 的同义 词。因此选 A. noticeable，引人注意的。B，C，D 分别是常见的;奇怪的;特别的。

2.According to paragraph 1, why are small red maple trees ideal for buckrubs?

A.They have smooth bark.

B.They are found in the mid-eastern United States.

C.They grow very slowly.

D.They tend to grow in open spaces.

2.根据 small red maple tree 定位(红色字标出)，而这句话的主语其是"The smooth bark" 因此知道 they have smooth bark 才是成为理想对象的重要条件。

3.The studies of forehead rubbing by deer described in paragraph 3 showed that

A.forehead rubbing encourages the growth of antlers.

B.mule deer and white-tailed deer behave differently during the rut.

C.the rut can occur at different times of the year.

D.deer convey important information through scent.

3.根据 forehead 定位到这段的第一句。这句说会留下气味，后一句说了气味的作用是 communication。所以 D 符合。

4.The word "exhibited" in the passage(paragraph 3)is closest in meaning to

A.relied on.

B.increased.

C.displayed.

D.preferred.

4.Exhibited 是展现，出现的意思。A 是依靠;B 是增加;C 是展示;D 是宁愿。 因此 C 符合。这句话的含义可以从前文中推断。因为前面几段也都提到了说雄性鹿是在发情期的时候会用角去摩擦树皮。所以这里应该是"出现"的意思。

5.Why does the author mention that "dogs recognize each other via smell"?

A.To point out the similarities between dogs and deer.

B.To argue that animals communicate through scent rather than through vision.

C.To support the claim that the scent of a buck rub serves to identify its maker to otherdeer.

D.To suggest that buck rubs can be detected by other species.

5.这句话是由 for instance 引出的。那么如果要找这个例子的目的，要到前面去找论点。这一段的总论点，就是第一句话，主要是"send information to other members";first 后面是第一个分论点。所以答案应该跟这两句有关。因此选 C 气味可以帮助 identify。

6.The word "crude" in the passage(paragraph 4)is closest in meaning to

A.rough.

B.useful.

C.necessary.

D.obvious.

6.这里说是 simply 被怎样量。如果是简单的量一下的话，应该会比较粗略的，crude 是粗糙的。A 粗糙的;B 有用的;C 必要的;D 明显的。所以应该选 A。

7.What can be inferred from paragraph 4 about the trumpeting of bull elk?

A.Trumpeting by higher-status bull elk signals their presence to other members of their species.

B.Bull elk need to combine trumpeting with olfactory signals to convey information about their identity.

C.Trumpeting alerts white-tailed deer to the presence of bull elk in their vicinity.

D.Trumpeting provides a better measure of deer presence in a given area than buck rubs do. 7.

根据 trumpeting of bull elk 定位到这一段最后一句(红色标出)。这里 trumpeting by bull elk 是个例子，那么要想知道在描述什么，还要往前找。前面一句话说雄鹿摩擦嗅觉传递的信息在社交中与其他鹿的种族的听觉信号起到了同样的作用。但是这种作用又是什么呢?继续往前找。可以看到说 well-marked rub is indicative of older, higher-status male。信息完整之后很容易得到 A 的答案。

8.According to paragraph 4, the buck rubs occurring in a given area reveal all of the following information about deer EXCEPT

A.the individual identity of the deer.

B.the gender of the deer.

C.the likely social status of the deer.

D.the number of deer in the vicinity.

8.对应部分已经分别用红色字体标出。虽然原文有提到 D 中间的词 vicinity 但是和原文不附的是，原文说的是 general vicinity，而不是具体的 number。这个题基本上跟随着 first, second, third 就可以找答案，因为本段的主题就是在描述这个 buck rub 的作用。

9.The word "induce" in the passage(paragraph 5)is closest in meaning to

A.increase.

B.extend.

C.delay.

D.stimulate.

9.Induce 本身是引导，引发。并且这里出现了 and 的并列形式，所以前后词义应该相近，后边是使配合，使同步。前面如果用增加，延伸，延期都不合适。因此选择 D 刺激。

10.According to paragraph 5, which of the following is true about chemicals in buckrubs?

A.They have to be at least two days old for females to be able to detect them.

B.They are more effective in older buck rubs than in fresher ones.

C.They may affect fertility in female deer.

D.They can be more easily detected by young males than adult females.

10.根据 chemical 定位(红色标出)，这句后面说物理上引导并使受精同步……。因此 C 符合。A 原文第二句提到了，但原文说的是要 less than 2 day 和选项相反。B 原文说的是 fresh buck rubs 更受欢迎。D 这段提到的 rub being detected 都是关于 females。

11..The word "termed" in the passage(paragraph 5)is closest in meaning

to A.associated with.

B.visible as.

C.known as.

D.provided by.

11.这个词前面给出了一个描述，后面是一个术语，名词。那么可以由此推断这句话是一个定义。因此应该被叫做，被定义的意思。所以选 C。

12.According to the passage, in what way do buck scrapes differ from buckrubs?

A.Buck scrapes are made by both male and female deer.

B.Buck scrapes are purely visual signals.

C.Buck scrapes are made closer to the breeding season than buck rubs.

D. Buck scrapes can be smelled only by deer.

12. 对应部分由红色字体标出。A 正确，因为根据前文知道 rub 只是由 male 造成的，而 scrapes 是雌雄都可以的。B 和原文不附，对应这段中间的地方，说到了 both visual and olfactory signal。C 这个也没有明显区分，scrapes 和 buck rubs 都是在秋天做的，before or during the rut。

13. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit? This process can take a few hours to several days.

A conspicuous sign indicating the presence of white-tailed deer in a woodlot is a buck rub. ■

■ 【A】 A male deer makes a buck rub by stripping the bark (outer layer) of a small tree with its antlers.

■ 【B】 When completed, the buck rub is an obvious visual signal to us and presumably to other deer in the area. ■ 【C】 A rub is usually located at the shoulder height of a deer (one meter or less above the ground) on a smooth-barked, small-diameter (16-25 millimeters) tree. ■ 【D】 The smooth bark of small red maples makes this species ideal for buck rubs in the forests of the mid-eastern United States.

13.B

14. 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.

Buck rubs and buck scrapes are two types of markings made by white-tailed deer.

A. The observation that deer sniff and lick buck rubs first led scientists to connect buck rubs with combat between adult males during the breeding season.

B. Buck rubs and buck scrapes are visual signals and smells that deer use to communicate a variety of information to other deer.

C. The number of buck rubs and buck scrapes in a given area changes as the density of the population of male deer in the area changes.

D. As they rub the bark from trees, male deer leave behind chemicals produced by the glands in their foreheads, creating a scent that other deer can detect.

E. The height of a buck rub, the type of tree used, and the direction in which the deer apply the rub can give different kinds of information to other deer.

F. Buck rubs are created close to the breeding season of deer and may affect the timing of fertility in the female deer that visit the rubs.

14. A 对应原文第二段两个 scientists 的观点。但两者并没有这样的逻辑关系。因此不选。B 正确，对应原文第四段。说 rubs 可以帮助 identify。C 正确，对应原文最后一段。D 文章中已经对 height, types of tree, direction 有了明确的描写。Information 的区别是由气味传递的。因此此选项不对，不选。E 文章并没有提到相关的内容。F 正确，对应原文第五段，里面出现的 help physiologically induce and synchronize fertility in females。