

关于 2016 上海市中小學生科普英語 趣味實踐活動的補充說明

親愛的同學：

歡迎參加 2016 上海市中小學生科普英語競賽與趣味實踐活動，
體驗拓展科學視野，挑戰英語實踐的樂趣！

競賽/活動囊括了高中科普英語競賽、初中科普英語競賽和小學
科普英語趣味實踐活動，其中高中科普英語競賽已被列為市教委綜合
素質評價內容之一。

一、組別設置：

根據學生的在校年級，競賽/活動分為高中（10-12 年級）、初中
高年級（8-9 年級）、初中低年級（6-7 年級）和小學組（3-5 年級）四
個級別。每個級別均由初賽、復賽和決賽三個部分組成，並按不同級
別評獎。

不同級別的初賽、復賽和決賽時間將提前通知到學校和學生，並
通過區縣和學校把准考證發到學生手中。

二、題型介紹：

為保證競賽/活動內容的創新性和实效性，初賽、復賽題型和分值
每年會有適量變化和調整。

附：1、初赛

2016 中学生科普英语竞赛初赛试题框架一览表

(高中)

| 部分 | 项目 | 题型 | 考点 | 题量 | 分数 | 时间 (分钟) |
|-----|------------|------------|------------|----|-----|------------|
| I | 科普常识 | 单项选择题 | 基本概念 | 25 | 25 | 30 |
| II | 图表理解 | 单项选择题 | 基本概念 | 6 | 6 | |
| III | 文法与修辞 | 完型填空 | 词汇、语法、逻辑 | 9 | 9 | 20 |
| | | 完型填空 | 词汇、语法、逻辑 | 10 | 10 | |
| IV | 阅读理解 (5 篇) | 单项选择题 | 主旨与细节 | 5 | 10 | 50 |
| | | 单项选择题 | 篇章结构 | 5 | 10 | |
| | | 单项选择题 | 写作手法 | 5 | 10 | |
| | | 给段落加小标题 | 主旨、归纳、概括 | 5 | 10 | |
| | | 补充段落中缺失的句子 | 主旨、细节、逻辑推理 | 5 | 10 | |
| 总计 | | | | 75 | 100 | 90 |

(初中高年级)

| 部分 | 项目 | 题型 | 考点 | 题量 | 分数 | 时间 (分钟) |
|----|------|-------|------------|----|----|------------|
| I | 科普常识 | 单项选择题 | 基本概念 | 22 | 22 | 30 |
| II | 概念应用 | 概念配对 | 科普概念、知识的理解 | 5 | 5 | 10 |
| | | 词汇填空 | 语法、逻辑、科普知识 | 6 | 6 | |
| | | 判断正误 | 词汇、语法、逻辑 | 3 | 3 | |

| | | | | | | |
|------------|-----------|------------|------------|----|-----|----|
| III | 完型填空 | 单项选择题 | 科普词汇、语法、逻辑 | 10 | 10 | |
| IV | 阅读理解 (5篇) | 单项选择题 | 主旨与细节 | 5 | 10 | 60 |
| | | 单项选择题 | 篇章结构 | 7 | 14 | |
| | | 单项选择题 | 写作手法 | 5 | 10 | |
| | | 补充段落中缺失的句子 | 主旨、归纳、概括 | 5 | 10 | |
| | | 概况段落大意 | 主旨、细节、逻辑推理 | 5 | 10 | |
| 总计 | | | | 73 | 100 | 90 |

(初中低年级)

| 部分 | 项目 | 题型 | 考点 | 题量 | 分数 | 时间 (分钟) |
|------------|-----------|-------------|-----------------|----|-----|------------|
| I | 科学常识 | 单项选择题 | 基本概念 | 25 | 25 | 20 |
| II | 文法与修辞 | 补全句子 | 词汇、句子结构、固定搭配、语用 | 5 | 5 | 10 |
| | | 篇章完形填空 (2篇) | 词汇、语法、逻辑、固定搭配 | 20 | 20 | 20 |
| III | 阅读理解 (5篇) | 单项选择题 | 主旨与细节 | 5 | 10 | 40 |
| | | 单项选择题 | 篇章结构 | 5 | 10 | |
| | | 单项选择题 | 写作手法 | 5 | 10 | |
| | | 标题匹配 | 主旨、归纳、概括 | 5 | 10 | |
| | | 还原段落中缺失的句子 | 主旨、细节、逻辑推理 | 5 | 10 | |
| 总计 | | | | 75 | 100 | 90 |

2、复赛

中学生科普英语竞赛复赛试题框架一览表

(高中)

| 部分 | 项目 | 题型 | 考点 | 题量 | 分值 | 时间 (分钟) |
|-----|---------------|---------------------------|---------------------------------|----|-----|------------|
| I | 听力理解 | 听力摘要 | 主旨与细节 | 1 | 15 | 35 |
| | | 短文听力理解与 填空(2篇): 填空题 | 信息归纳、科普 词汇认读与拼 写 | 10 | 10 | |
| | | 听力理解与判断 正误 | 主旨与细节、推 断、归纳 | 8 | 10 | |
| II | 文法 与修 辞 | 找出错误选项并 修改 | 词汇、语法 | 5 | 10 | 15 |
| III | 阅读 理解 | 阅读理解: 单项选择题 | 主旨与细节、 归纳与推理 篇章结构 写作手法 | 15 | 30 | 40 |
| | | 任务型阅读: 填空、摘要 | 细节、概括与信 息综合 | 6 | 15 | |
| IV | | 材料作文 | | | 20 | 30 |
| 总计 | | | | 46 | 100 | 120 |

(初中高)

| 部分 | 项目 | 题型 | 考点 | 题量 | 分数 | 时间 (分钟) | |
|----|--------------|-------------|-------------------|-----------------|----|------------|----|
| I | 听力 理解 | 理解短文 | 主旨与细节、 说话者意图 | 6 | 12 | 30 | |
| | | 理解短文 | 单项选择 判断正误 | 主旨及细节、 词汇 | 5 | | 10 |
| | | | 补全短文 提纲 | 主旨与细节、 推断与逻辑 | 8 | | 8 |
| II | 完型填空 (2篇) | 单项选择题 | 文章结构的理 解、语法的运用 | 10 | 5 | 10 | |
| | | 用适当词型 填空 | | 10 | 10 | | |

| | | | | | | |
|-----|--------------|-----------|----------------|----|-----|-----|
| III | 阅读理解 (5篇) | 单项选择题 | 主旨与细节、归纳、逻辑与推断 | 14 | 32 | 50 |
| | | 还原段落缺失的句子 | | 4 | 8 | |
| IV | 材料作文 | | | | 20 | |
| 总计 | | | | | 100 | 120 |

(初中低年级)

| 部分 | 项目 | | 题型 | 考点 | 题量 | 分数 | 时间 (分钟) |
|-----|------|------|-----------|----------------|----|-----|------------|
| I | 听力理解 | 理解短文 | 单项选择题 | 主旨与细节、说话者意图 | 6 | 12 | 30 |
| | | 短文理解 | 填空 | 主旨及细节、词汇 | 5 | 9 | |
| | | 短文理解 | 判断正误 | 主旨与细节、推断与逻辑 | 3 | 6 | |
| II | 完型填空 | | 单项选择题 | 文章结构的理解、语法的运用 | 10 | 10 | 10 |
| III | 阅读理解 | | 单项选择题 | 主旨与细节、归纳、逻辑与推断 | 12 | 24 | 50 |
| | | | 还原段落缺失的句子 | | 4 | 12 | |
| | | | 用单词适当形式填空 | | 12 | 12 | |
| IV | 材料作文 | | | | 20 | | 30 |
| 总计 | | | | | 55 | 100 | 120 |

3、决赛

决赛形式为科普热点辩论。主要考查学生对以英语为媒介的科普语言材料综合分析、深度探索和用英语表述观点、论辩是非的能力。评委会根据选手的团结协作、立论与反驳、以及语言能力当面做出综合评价。

三、2016 年复赛题型变化：材料作文

2016 年初、高中复赛题型的一个重大变化是取消了前两年的科普简答，改为科普材料作文。材料作文模板如下：

Directions: The essay gives you an opportunity to show how effectively you can read and comprehend a passage and write an essay analyzing the passage. In your essay, you should demonstrate that you have read the passage carefully, present a clear and logical analysis, and use language precisely.

You have 30 minutes to read the passage and write an essay in response to the prompt.

As you read the passage below, consider how the author uses

- evidence, such as facts or examples, to support claims
- reasoning to develop ideas and to connect claims and evidence.
- stylistic or persuasive elements, such as word choice or appeals to emotion, to add power to the ideas expressed



Look at these two mice. They should look identical. But the one on the left has a different color coat and faced a higher risk of obesity. What might cause that? Read the passage to find out.

Each creature inherits genes from its parents. These provide blueprints for how its cells will grow and act. Those blueprints usually say how those cells will act from conception until death. But sometimes the environment we live in can tweak those blueprints. It doesn't change the genes themselves — so the change is not *genetic*. Instead, the environment changes certain molecules that act a bit like light switches. They don't illuminate or darken a room. These switches instead turn a gene on or off.

Such changes are described as *epigenetic*. The term means “above the genes.”

The switches are often molecules called *methyl groups*. (This refers to a carbon atom stuck tightly to three hydrogen atoms. Their formula is written CH_3 .)

Around the time a mammal is born, those switches attach to its DNA. They glom onto the DNA next to certain genes. A child's *epigenome*, or full set of switches, tends to match that of his or her parents when they had been born.

But those switches can change throughout life. Certain factors in the environment, such as pollutants or diet, can damage a methyl group or strip it off of the DNA. In some cases, this will alter how a gene performs. The change may stop a gene from working. Or it might make it stay switched on for too long, or not long enough. Depending on when this improper switching occurs and which gene it affects, the change may have little impact on an animal's health — or a lot.

The classic example came out of a 2003 experiment by Randy Jirtle and Dana Dolinoy. Both scientists were working at Duke University in Durham, N.C., at the time. They fed some pregnant mice a diet that affected a gene called *agouti* in their developing pups. This gene controls fur color. Switching it off turned the normally brown mouse pups a golden hue. More importantly, it made them uncontrollably hungry. So they ate and ate and ate. And that made them fatter and fatter and fatter.

The young mice looked and acted different because their mothers' diets had caused epigenomic (EP-ee-jeh-NO-mik) changes to their DNA. Those changes happened while the babies were growing in the womb. But these fat, golden animals would not pass on those changes to their own young. That's because a fetus has a way to erase epigenetic changes from the DNA it inherits. It starts with a clean slate, then puts on some methyl groups, but only where its normal genetic inheritance says they belong.

Or so scientists had thought.

Seven years after the Duke study, Margaret Morris and her team showed that environmental changes to the epigenome also could be inherited. Morris worked at the University of New South Wales in Sydney, Australia. The researchers took healthy male baby mice and raised half on a normal diet. The rest ate high-fat food. They downed an unhealthy number of calories, grew fat, and eventually developed diabetes. It's the same pattern seen in many people.

When these now-fat males mated with slim females, the resulting babies grew into tubby mice. But when the slim males mated with slim females, the babies grew into normal-size mice. This was evidence that the overweight, diabetic dads had epigenetic changes to their DNA, and could pass down those changes to their children.

A few years later, Michael Skinner and his colleagues at Washington State University in Pullman did a similar study with pollutants instead of diet. They showed that when dads were exposed to certain pollutants, they could pass on epigenetic changes — even to their grandchildren.

A pollutant's epigenetic effects shouldn't show up in subsequent generations, John McCarrey told *Science News* at the time. He's an epigeneticist who worked at the University of Texas at San Antonio and was not involved in the study. But in the Skinner study, these changes did

show up in later generations. And that, he said, “is pretty heavy in terms of their potential significance.”

Since then, a host of other studies also have shown that some epigenetic changes may be passed down from a parent to its offspring — and beyond.

Assignment: Write an essay with no less than 150 words in which you explain how the author makes the claims about epigenetics. In your essay, analyze how the author uses one or more of the features listed in the box above (or features of your own choice) to strengthen the logic of his claims.

Your essay should not explain whether you agree with the author’s claims, but rather explain how the author builds an argument.

四、2016 小学生科普英语趣味实践活动形式

小学生科普英语实践活动主要分为三个阶段开展：

一) **初赛时间及内容：2016 年 12 月上旬开展科普常识趣味问答大比拼：**主要以客观题型为主，旨在让学生在学习过程中，增加对科普知识的了解与热爱，并且能够对科普英语词汇进行活学活用。

二) **复赛时间及内容：2017 年 3 月开展科学小探究现场展示活动**

1、科学探究小报告的撰写：学生以“**生命科学**”为主题，开展科学探究并完成一篇科学探究小报告。研究既可以围绕自己的内容进行实验设计并进行操作与成果汇报，也可以是对某一领域开展研究性学习。可运用视频拍摄制作、模型制作、PPT 展示等方式呈现报告中所蕴含的科学知识，直观体现自己的学习、研究成果与观点。

2、科普话题研究成果展示与现场演说：要求学生现场进行

1) 科普小报告话题陈述与展示

2) 现场演说与问答，评委老师将根据选手的表现进行提问，考察选手对所陈述话题的理解程度、理论联系生活的能力与科普知识的积累，以及选手语言沟通、情感态度等方面的英语语言素质。

五、竞赛活动主题及范围：

2016 年，竞赛/活动组委会邀请美国霍顿米夫林出版公司（Houghton Mifflin Harcourt）主持科普英语的试卷与阅读材料的编撰

工作，并以生命科学为重点推荐主题。作为具有 184 年历史的美国最具影响力的教育出版商，HMH 从其最受欢迎的科普教材《Science Fusion》中选取了部分内容作为参考资料，成为我们考纲中的核心精华。每年将把资料中 40%--60%的内容作为各级别科英竞赛的考察范围，其余选自课外科普内容。

内容板块：1.生命与非生命 2.动物 3.植物 4.环境 5.生态 6.人体

学生用书：

小学：《Science Fusion K&Grade 1》

初低：《Science Fusion Grade 2& Grade 3》

初高：《Science Fusion Grade 4& Grade 5》

高中：

《Science Fusion Module A:Cells and Heredity》

《Science Fusion Module B:The Diversity of Living Things》

《Science Fusion Module C:The Human Body》

《Science Fusion Module D:Ecology and the Environment》



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复赛模拟卷（高中）

Grammar Usage & Error Correction

Directions: In this section, you will read several sentences. Within each sentence, there are four parts marked with A, B, C, and D. You should read each part carefully, and consider the correctness and effectiveness of the expression. Identify which ONE part contains an error. First mark the letter and then correct each error. Write the letters and correct forms of expressions on your Answer Sheet.

16. Medical evidence proves that smoking is a health risk. Smokers have a greater chance of developing cancer, A
emphysema, and heart problems. Second-hand smoke, which exposes non-smokers with smokers' fumes, B
also increases the chance for non-smokers of developing serious disease. C D
17. Fortunately, the effects of the storm were negligent, because the town people had been warned well in A B C
advance, and had taken all necessary precautions. D
18. An international team of scientists believes that studying a region of the human brain called the prefrontal A B
cortex, they have found to govern impulse control, will help them to learn more about criminal behavior. C D
19. The data from the study, which were gathered over the course of twenty years, reveals that the radiation from A B
distant stars is actually more varied than was previously thought. C D
20. Once it is established, a stem cell line can be maintained indefinitely, and they can be used for treatment of A B C
diseases or for transplantation. D

- 16 错误选项____ → 修改_____
- 17 错误选项____ → 修改_____
- 18 错误选项____ → 修改_____
- 19 错误选项____ → 修改_____
- 20 错误选项____ → 修改_____

Reading Comprehension.

Section A

Directions: There are three passages in this section. Read each passage carefully and complete each statement with the only right choice given below. Mark the corresponding letter on the ANSWER SHEET.

Passage 1

Section A

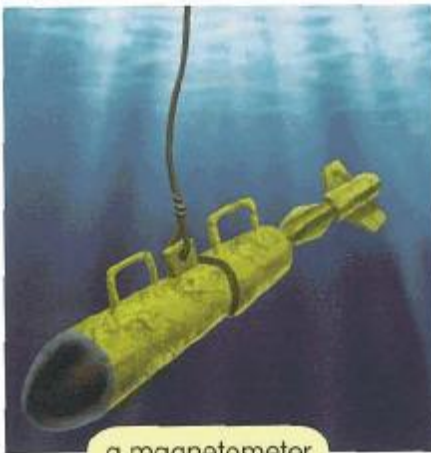
Magnets can be used to locate objects containing iron. Metal detectors are also used in oceans to find and recover things from shipwrecks. This works because many ships are made of iron, or in the past had iron objects in them. The process of finding shipwrecks is like detective work. As in all good detective work, it requires patience, commitment, and attention to detail.

Recovering material from a shipwreck is a team effort. Some people do library research to locate possible shipwrecks and decide the areas to be searched. Others operate boats with special equipment to locate and raise the iron pieces from the ocean floor. Some dive to the wreck and inspect what can be brought out.

At sea, the crew uses a number of high-tech tools to help locate shipwrecks. A sensor called a magnetometer pulled behind the boat measures the Earth's magnetic field. When the sensor passes close to iron objects in a shipwreck, such as cannons or machinery, it registers a change in the magnetic field called an anomaly. The boat pulling the sensor goes over the entire area, looking for clusters of anomalies. These clusters help the crew find the wreckage. The bigger the wreckage and the closer the sensor can come to it, the larger the indication of the presence of magnetic fields. The scuba divers then dive and locate the iron parts of the wreckage and decide what is needed to bring them out.

Huge electromagnets can be used in shallow water to recover metal from shipwrecks. However, sometimes the cost and labor required to raise the metal is more than its value. Often smaller magnets are used to attach huge air-flotation bags to the sides of smaller ships. The bags are then filled with air to help raise the ships.

Experts believe that there may be three million ships lying at the bottom of the world's oceans. There are many causes of shipwrecks: violent weather, striking objects such as rocks, icebergs, or shoals, being hit during war time, or poor construction that made the ship breach.



a magnetometer

Ships that sank were typically loaded with all sorts of everyday objects. These things interest archeologists as they provide information on how people lived in the past: what they ate, wore, and did. Treasure hunters look for precious cargo, such as gold. Many scientists are interested in finding out the causes of shipwrecks. One famous shipwreck was the passenger liner Titanic, which hit an iceberg in 1912.

Section B

As you have learned, Earth acts as if it were a huge magnet. That is why the compass and other natural magnets will orient themselves from north to

south. A magnetic field surrounds Earth. It helps protect Earth from particles from the sun that could be harmful to us.

Earth's magnetic field reacts in response to winds from the sun, and it releases energy in the form of fast-moving particles. When these particles and some particles from the sun crash into Earth's atmosphere, part of their energy is released in the form of lights known as the aurora borealis, also known as the northern polar lights.



The aurora borealis was named after the Roman goddess of dawn, Aurora, and the Greek name for north wind, Boreas. The aurora borealis most often occurs near the fall and spring equinoxes: from September to October and from March to April. It is most visible closer to the poles because of the longer periods of darkness and the strong magnetic fields there.

As the particles enter the Earth's atmosphere, they hit either oxygen or nitrogen atoms at different altitudes. The color of the light produced depends on the kind of atom struck and at what height. At higher altitudes, oxygen is hit and red light dominates. At slightly lower altitudes, oxygen is hit again and green dominates. Next, nitrogen is hit and blue dominates. Finally, at lower heights, nitrogen is hit and purple dominates.

21. The passage is made up of 2 sections. Section A covers the following information EXCEPT _____.
 - A. what the mechanism of magnetometer is
 - B. why magnets could be used in the past to locate sunken ships
 - C. the basic requirements of finding a shipwreck are very demanding
 - D. what precious cargos were loaded on Titanic before it hit the iceberg.
22. Section B does NOT provide information for _____.
 - A. why Earth acts as if it were a huge magnet.
 - B. where aurora borealis got its name
 - C. why the northern polar lights produce light of various colors at different altitudes
 - D. where the aurora borealis is more visible when it occurs.
23. Which of the following cannot be used to support the author's opinion that "Recovering material from a shipwreck is a team effort."?
 - A. People dive to the wreck and inspect what can be brought out.
 - B. The process of finding shipwrecks is like detective work.
 - C. People do library research to decide on the areas to be searched.
 - D. People operate boats with special equipment to raise the iron pieces
24. What is the best title for this passage?
 - A. Aurora borealis and its name's origins.
 - B. How electromagnets work to help recover shipwrecks
 - C. Magnetism in the sea and in the air
 - D. The colors of light produced by oxygen and nitrogen atoms in the atmosphere.

Passage 2

Many otherwise intelligent Americans have a special problem learning to read. They suffer from dyslexia, a neurological learning disability. Dyslexia characterizes by difficulty with word recognition and reading fluency due to a weakness in the part of the brain that possesses language.

Dyslexics have the most difficulty with written language, particularly, reading and spelling. They also have problems processing and understanding what they hear. As a result, they may have difficulty comprehending oral instructions, especially if they are given rapidly.

The most common problem dyslexics encounter is not being able to tell the difference between similar letters or words, a "d" for instance, might look like a "b". Also, they sometimes confuse words that look similar, such as "house" and "horse", and have trouble distinguishing fine differences in words like "watch" and "wash". At other times, their brains can see letters correctly, but do not process them quickly enough.

In addition, dyslexics have trouble recognizing words they have already learned. Because of this problem, dyslexics read slowly. They cannot easily understand what they have read. It is very difficult for them to learn in conventional ways. Without special help, many dyslexics do poorly in school. Some drop out, while others manage to get through high school, but do not go on to college. It is estimated that 93 million of the total US adult population have about 221 million to read at or below the minimum standards for literacy, making them functionally illiterate.

Those who read at this level have trouble understanding bus schedules, using cash machines and filling out

job applications. They struggle to make sense of what they read in books and newspapers. As a result, such people are often unable to survive in normal society. It's been estimated that 3 quarters or more of those in American prison are functionally illiterate.

25. What is this passage mainly about?
- A. What results in dyslexia
 - B. What special help dyslexics need in order to learn
 - C. What common problems that dyslexics often encounter
 - D. What the US population of functionally illiterate is made up of
26. According to the passage, how many of the following is inaccurate? Choose the number.
- I. People who suffer from dyslexia often confuse words which look similar and have trouble distinguishing the fine nuances.
 - II. Dyslexics often have a low reading fluency because they cannot remember what they learned previously.
 - III. 3 quarters or more American inmates who are functionally illiterate are unable to survive in normal society.
 - IV. Dyslexia is a neurological learning disability due to the deficiency in one's brain region that controls language processing.
- A. 0 B. 1 C. 2 D. None of the above is correct
27. According to the passage, what primarily makes it so hard for dyslexics to understand what they have read?
- A. That their reading fluency is very poor.
 - B. That they are not good at spelling out words.
 - C. That they have trouble recognizing previously-learned words.
 - D. That they have neurological defect in memorizing words.
28. Which of the following cannot be used to illustrate "functional illiterate" described by the author in the passage?
- A. Reading at or below the minimum standards for literacy
 - B. Having trouble understanding bus schedules and using cash machines
 - C. Struggling to make sense of what newspaper and books read
 - D. Being kept in prison for a long time

Passage 3

The Ecosystem of a Pond

Paragraph 1

Within nature, there are definable communities within which groups of organisms interact with one another and with the climate and physical surroundings. These communities are referred to as ecosystems. There are many types of ecosystems: some are aquatic, or water-based, and some are terrestrial, or land-based. A well-known type of terrestrial ecosystem is a rain forest.

Paragraph 2

One example of an aquatic ecosystem is a pond. Ponds are bodies of water that do not flow or lead to other bodies of water. Because ponds are isolated, the organisms that inhabit them interact with one another as a closed system, meaning they rely on only one another for survival, recycling nutrients from organism to organism.

Paragraph 3

Nutrient flow within a pond ecosystem is relatively simple. One feature of ponds is that they are shallow enough that water circulates freely at all depths. As a result, photosynthetic algae are abundant in ponds. These algae use the sun's energy to create food, and they produce oxygen as a by-product. They release the oxygen into the pond water, where it is used by other species. Another way that algae benefit a pond ecosystem is by serving as food for other organisms.

Paragraph 4

Other members of a pond ecosystem include rooted plants, insects, and higher-level species such as frogs,

turtles, fish, and birds. Like algae, rooted plants serve as food for animals. Together, algae and rooted plants form the basis of the pond's food web. Energy from the plants is passed through the ecosystem when the plants are eaten by other species and when these species in turn are eaten by birds and fish.

Paragraph 5

Also important to the pond ecosystem are the microorganisms called decomposers. Decomposers, which in a pond consist mainly of bacteria, eat the remains of dead and decaying organisms. Decomposers live mainly at the bottom of a pond. They play a vital role in the ecosystem; were it not for them, dead organisms would accumulate, causing the pond to become so polluted that all its other organisms would die.

Paragraph 6

Although ponds are relatively closed ecosystems, some higher-level species can affect the pond from outside the ecosystem. For example, beavers may build a dam on a stream that feeds the pond. This would cut off a source of water that replenishes some of the pond water lost through evaporation. The result would be a shrinking of the pond and a decline in the population of some organisms.

29. Which of the following is correct about ecosystems described in the passage?
- A. A rainforest is a well-known aquatic ecosystem.
 - B. Groups of organisms interact with one another and with the climate and physical surroundings to form communities also known as ecosystems.
 - C. Ponds are relatively closed ecosystems on which some higher-order species cannot exert an impact.
 - D. Decomposers like bacteria may pollute the ponds if they continue to accumulate.
30. Which paragraphs provide primary information on nutrient flow and food web?
- A. Paragraph 2 and 3
 - B. Paragraph 2 and 4
 - C. Paragraph 4 and 5
 - D. Paragraph 3 and 4
31. According to the passage, which one of the following does not belong to higher-level species?
- A. frogs
 - B. birds
 - C. algae
 - D. turtles
32. The word “them” as in “were it not for them, dead organisms would accumulate, causing the pond to become so polluted that all its other organisms would die.” in Paragraph 5 probably refers to _____.
- A. decaying organisms
 - B. fish and birds
 - C. remains of dead organisms
 - D. bacteria
33. What does the underlined word replenishes probably mean in paragraph 6?
- A. is replete with
 - B. is replaced by
 - C. refills
 - D. replicates
34. Which of the following is a likely cause of BOTH the shrinking of the pond and a decline in its aquatic population?
- A. dam-building beavers
 - B. photosynthetic algae
 - C. insect-eating fish
 - D. decaying organisms

Section B

In this section, you are going to read an excerpt on the Old Brian: wired for Survival. Complete the following tasks. Write all your responses on the answer sheet.

Paragraph 1

If you were someone who understood brain anatomy and were to look at the brain of an animal that you had never seen before, you would nevertheless be able to deduce the likely capacities of the animal because the brains of all animals are much alike in overall form. In each animal the brain is layered, and the basic structures of the brain are similar. The innermost structures of the brain—the parts nearest the spinal cord—are the oldest part of the brain, and these areas carry out the same functions they did for our distant ancestors. The “old brain” regulates basic survival functions, such as breathing, moving, resting, and feeding, and creates our experiences of emotion. Mammals, including humans, have developed further brain layers that provide more advanced functions—for instance, better memory, more sophisticated social interactions, and the ability to experience emotions. Humans

have a large and highly developed outer layer known as the cerebral cortex, which makes us particularly adept at these processes.

Paragraph 2

The brain stem is the oldest and innermost region of the brain. It controls the most basic functions of life, including breathing, attention, and motor responses. The brain stem begins where the spinal cord enters the skull and forms the medulla, the area of the brain stem that controls heart rate and breathing. In many cases, the medulla alone is sufficient to maintain life—animals that have their brains severed above the medulla are still able to eat, breathe, and even move. The spherical shape above the medulla is the pons, a structure in the brain stem that helps control the movements of the body, playing a particularly important role in balance and walking. The pons is also important in sleeping, waking, dreaming and arousal.

Paragraph 3

Running through the medulla and the pons is a long, narrow network of neurons known as the reticular formation. The job of the reticular formation is to filter out some of the stimuli that are coming into the brain from the spinal cord and to relay the remainder of the signals to other areas of the brain. The reticular formation also plays important roles in walking, eating, sexual activity, and sleeping. When electrical stimulation is applied to the reticular formation of an animal, it immediately becomes fully awake, and when the reticular formation is severed from the higher brain regions, the animal falls into a deep coma.

Paragraph 4

Two structures near the brain stem are also vital for basic survival functions. The thalamus is the egg-shaped structure sitting just above the brain stem that applies still more filtering to the sensory information coming from the spinal cord and through the reticular formation, and it relays some of these remaining signals to the higher brain levels. The thalamus also receives some of the higher brain’s replies, forwarding them to the medulla and the cerebellum. The thalamus is also important in sleep because it shuts off incoming signals from the senses, allowing us to rest. The cerebellum (literally, “little brain”) consists of two wrinkled ovals behind the brain stem. It functions to coordinate voluntary movement. People who have damage to the cerebellum have difficulty walking, keeping their balance, and holding their hands steady. Consuming alcohol influences the cerebellum, which is why people who are drunk have difficulty walking in a straight line. Also, the cerebellum contributes to emotional responses, helps us discriminate between different sounds and textures, and is important in learning.

35. The pronoun “these” as underlined in “Humans have a large and highly developed outer layer known as the cerebral cortex, which makes us particularly adept at these processes.” in Paragraph 1, most likely refers to_____.
- A. breathing, moving, and resting.
 - B. the ability of experience emotions and feeding
 - C. more sophisticated social interactions and better memory
 - D. none of the above is correct
36. Which of the following parts does the brain stem include according to the passage? Choose the best answer.
- I. reticular formation
 - II. thalamus
 - III. medulla
 - IV. cerebellum
 - V. pons
- A. I&II&III
 - B. I&II&III&V
 - C. III&IV&V
 - D. I&III&V

| Questions 37-44 | |
|--|--|
| Use the information provided in the passage to complete the following chart. Use NO MORE THAN THREE WORDS for each blank. | |
| Brain structures | Its functions |
| Thalamus | _____ 37 _____ and relays the remaining of these signals to the _____ 38 _____ |
| _____ 39 _____ | controls arousal and attention |

| | |
|------|---|
| Pons | helps control _____ 40 _____; plays an particularly important role in _____ 41 _____. |
|------|---|

42. When John F. Kennedy was shot in 1963, a bullet hit the back of his head and destroyed the part of the brain called the _____ that maintained basic life functions like heart rate and breathing.
43. The part of the brain stem called the _____ has been shown to be related to arousal in lab animals. When this part is stimulated, the animal is awake. When it is severed, the animal goes into a coma.
44. When George stumbles around, losing his balance from too many alcoholic drinks, chances are his _____ has been negatively affected.

附：原版教材科普常识自测题（高中）

I . True or False

- 1. A gymnosperm is a seed plant whose seeds are enclosed by a fruit.
- 2. A stamen is the female reproductive structure in flowers.
- 3. Estivation refers to a period of inactivity and lowered body temperature that some animals experience during hot and dry conditions in the summer.
- 4. A nutrient is a substance in food that provides energy or helps build body cells and tissues.
- 5. Obesity is the condition of having excess stored fat but weighing less than 20% above the recommended weight range.

II. Read and Choose the correct answer

1.What is the name of the process that allows plants to produce their own food?
A. glucose B. chlorophyll C. chloroplasts D. photosynthesis

2.The following table shows characteristics of two major plant groups, labeled A and B. In the above table, what is the correct label for the group described in column B?

| | A | B |
|--------------------------|----------|----------|
| <i>Produces seeds?</i> | Yes | Yes |
| <i>Produces fruit?</i> | No | Yes |
| <i>Produces flowers?</i> | No | Yes |
| <i>Produces cones?</i> | Yes | No |

- A. seed plants B. vascular plants C. angiosperms D. gymnosperms

3.The image below shows one type of plant.What type of plant is shown above, and where would you be most likely to find it living?



- A. fern, tropics B. conifer, forest
C. moss, harsh environments D. liverwort, damp environments

4.The following diagram shows a plant.What structural feature is missing from the above diagram, and what is one of its functions?

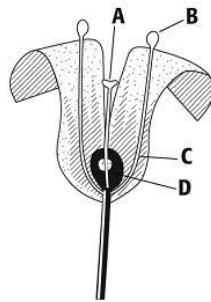


- A. roots; absorb sunlight
- B. roots; supply plants with water
- C. stems; store extra food
- D. stems; hold the plant upright

5.Where would you expect to see a plant that does not have a vascular system?

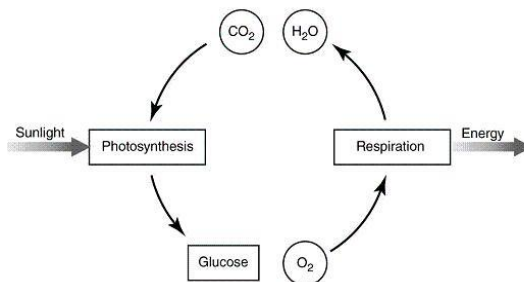
- A. In a botanical museum, because they are all extinct.
- B. Deeply rooted in a forest with a trunk that reaches 20 meters or more.
- C. Low and close to the ground.
- D. Climbing high while circling the branches of another plant.

6.The diagram below shows a flower, with several of its reproductive parts labeled.Which labeled part of the flower produces pollen?



- A. A
- B. B
- C. C
- D. D

7.The diagram below shows a cycle of energy flowing between living organisms.Which of the following could the two sides of the diagram represent?

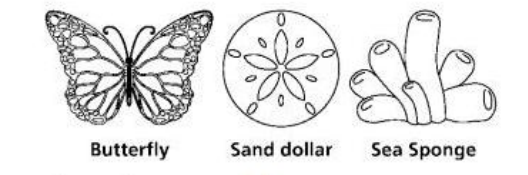


- A. A:The left side represents a producer, and the right side represents a consumer.
- B. B:The left side represents a consumer, and the right side represents a producer.
- C. The left side represents a consumer, and the right side represents a producer.
- D. The left side represents energy created, and the right side represents energy destroyed.

8. A scientist is grouping different types of vertebrates according to characteristics. She has four animals: sparrow, trout, salamander, and iguana. Which of the responses below lists the correct order of the general groups of the above animals?

- A. bird, fish, amphibian, and reptile
- B. reptile, fish, amphibian, and bird
- C. bird, fish, reptile, and amphibian
- D. reptile, amphibian, fish, and bird

9. The following drawings show three different animals: a butterfly, a sand dollar, and a sea sponge. What type of symmetry does the sand dollar illustrate?



- A. radial
- B. bilateral
- C. reflection
- D. asymmetry

10. You are hiking in the woods and come across an animal you can identify. However, you are certain it is a mammal. How are you able to be sure it is a mammal?

- A. It has hair.
- B. It has thumbs.
- C. It climbs into a tree.
- D. It is walking upright.

11. What is social hierarchy?

- A. animals that live together
- B. animals that release pheromones to attract mates
- C. animals that have dominant and submissive roles
- D. animals that hunt together and share food and shelter

12. The following table shows some behaviors of animals. Which of the following is the best title for the above table?

| | | | |
|---------|-------|--------------------------|-------|
| singing | scent | scratching vegetation | urine |
|---------|-------|--------------------------|-------|

- A. seasonal behaviors
- B. methods of defense
- C. courtship behaviors
- D. methods of marking territory

III. Read and answer the following questions

1. Describe why photosynthesis is important for environmental and human health.

2. Many plants grow in the spring and summer and become dormant during the fall and winter. Explain what triggers dormancy in a plant, and explain the benefits of winter dormancy for those plants.

3. How are pheromones related to social behavior in animals?

4. Explain how the vascular systems of plants in the rain forests might have affected animal behavior and the diversity of life in the rain forests.

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