

107年度全國科學班聯合學科資格考英文科試題卷

—作答注意事項—

考試時間：100 分鐘

題型題數：第壹部分--單選題共56題 第貳部分--非選擇題共二大題

作答方式：

- 選擇題用 2B 鉛筆在「答案卡」上作答；更正時，應以橡皮擦擦拭，切勿使用修正液（帶）。未依規定畫記答案卡，致機器讀卡無法辨識答案，其後果由考生自行承擔。
- 非選擇題用筆尖較粗之黑色墨水的筆在「答案卷」上作答；更正時，可以使用修正液（帶）。
- 答案卷每人一張，不得要求增補。

第壹部分：單選題（占72分）

一、詞彙題（每題1分，共15分）

說明：第1題至第15題，每題有4個選項，其中只有一個是正確或最適當的選項，請畫記在答案卡之「選擇題答案區」。各題答對者，得1分；答錯、未作答或畫記多於一個選項者，該題以零分計算。

1. Thousands of grieving students attended a service to _____ the death of the 17 victims killed in a mass shooting at a local high school in Parkland, Florida.
(A) enroll (B) mourn (C) restrain (D) assess
2. A public elementary school in Japan is facing criticism over its plan to adopt uniforms designed by a luxury brand, which _____ five cases of complaints from parents.
(A) reviewed (B) harnessed (C) triggered (D) harbored
3. It is widely acknowledged that excessive exams and the push for standardized score might _____ students' creativity.
(A) preoccupy (B) decline (C) speculate (D) choke
4. During the Great Depression, banks collapsed because people were driven by fear and swarmed the banks to _____ money.
(A) withdraw (B) neglect (C) interfere (D) attribute
5. In the era of the Internet, new threats _____ on a daily basis in a connected world, on a scale never seen before.

- (A) advance (B) emerge (C) drain (D) splash
6. A report by the UN revealed that the world is still caught in a _____ of inequality regarding health, education, and opportunities for active participation in social, economic and political life.
(A) plight (B) throng (C) tyrant (D) cavity
7. Many consumers tend to buy products that carry the _____ from celebrities, convinced that whatever they advertise is trustworthy and of good quality.
(A) stigma (B) endorsement (C) hurdle (D) anguish
8. LED lighting has the _____ to be more energy efficient than any other known lighting technology.
(A) pressure (B) potential (C) participation (D) passion
9. Russia was banned from the 2018 Winter Olympics over doping; the International Olympic Committee called the widespread institutional doping an “unprecedented attack on the _____ of the Olympic Games and sport.”
(A) alienation (B) prosperity (C) delegation (D) integrity
10. Architects are needed to transform buildings made _____ by the declining birth rate, such as campuses, into buildings serving new public needs.
(A) vulnerable (B) redundant (C) triumphant (D) obligatory
11. Exhausted and hopeless, the refugees are sure to face a _____ threat of harm if they are sent home.
(A) substantial (B) reluctant (C) dispensable (D) cohesive
12. Studies have shown that _____ exercise not only benefits one's physical health, but also boosts one's mental health.
(A) moderate (B) scarce (C) aggressive (D) earnest
13. The award-winning movie *La La Land* ends _____ with two possible scenarios, leaving the audience with a sense of uncertainty and yearning for clarification.
(A) imperceptibly (B) spontaneously (C) ambiguously (D) explicitly
14. I remember the warm, encouraging reception I had from the director of the foundation when I _____ approached him to inquire about the possible support I could obtain.
(A) statistically (B) simultaneously (C) analytically (D) hesitantly
15. To resolve the financial crisis, the board of directors agreed _____ that they should sell off some non-essential assets to raise money.
(A) unanimously (B) symmetrically (C) inconceivably (D) chronically

二、綜合測驗（每題1分，共15分）

說明：第16題至第30題，每題一個空格，請依文意選出最適當的一個選項，請畫記在答案卡之「選擇題答案區」。各題答對者，得1分；答錯、未作答或畫記多於一個選項者，該題以零分計算。

第16至20題為題組

Guy Fawkes Night, also known as Bonfire Night, is a popular British festival celebrated with bonfires and fireworks displays. The tradition stems from conflicts which took place in 1605, when King James I brought a series of severe anti-Catholic laws 16. Many Catholics were killed and their lands were confiscated. Enraged by the religious persecution, a group of dissident Roman Catholics, to which Guy Fawkes belonged, hatched a(n) 17 known as the Gunpowder Plot with the intention of blowing up the House of Parliament. Despite being the namesake of the festival, Guy Fawkes played a fairly 18 role in the plot; a man called Robert Catesby was the real mastermind behind it.

However, an anonymous letter tipped the Parliament off, and King James I ordered a security search 19. On November 5, Guy Fawkes was arrested while guarding thirty-six barrels of explosives in a cellar. His fellow dissidents were tortured and executed. To commemorate King James I's survival of the assassination attempt, people began the practice of building bonfires. There is 20 custom that originates from the Gunpowder plot: at the opening of a new session of Parliament, the Yeoman of the Guard always conducts a traditional searching of the basement.

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|---------------------|-----------------|------------------|----------------|
| 16. (A) into effect | (B) to mind | (C) into contact | (D) to justice |
| 17. (A) immersion | (B) hypothesis | (C) inspection | (D) conspiracy |
| 18. (A) integral | (B) crucial | (C) minor | (D) serene |
| 19. (A) likewise | (B) accordingly | (C) regardless | (D) supposedly |
| 20. (A) the other | (B) yet another | (C) still other | (D) some more |

第21至25題為題組

Loneliness can settle in on our soul stealthily without us even noticing, until the words appear on our tongue one day: "I am lonely." It is a hollow melancholy that wraps itself around our heart, feeding on our insecurities. As much as we may like to think it a symptom of old age, loneliness can touch anyone from any age or demographic, and even exist in the 21 of others. It is astonishing how often it affects healthy, sociable people with plenty of friends. Workplace loneliness is another problem, 22 that is being increasingly

recognized. A recent study suggests that almost half of the people 23 do not have a close friend at work, which in turn has a significant influence on their work performance.

Loneliness is not just suffocating, but also dangerous. According to researchers at Brigham Young University, loneliness can increase the risk of death 24 at least 30 percent. What's more, it ravages our immune system, leaving us more vulnerable to cancer.

To battle loneliness, we must first identify the feeling and say it out loud since loneliness is at its most potent when we 25 it 25 something else, like depression or heartache. We are more likely to conquer it and claim a little control by admitting that we are lonely. Next, to destroy loneliness altogether, we must reconnect with people, find a way to care and be cared for so as to reexamine and improve the way we interact.

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|---------------------|-------------------|-------------------|-----------------------|
| 21. (A) absence | (B) company | (C) existence | (D) assistance |
| 22. (A) all | (B) few | (C) what | (D) one |
| 23. (A) were polled | (B) to poll | (C) polled | (D) having polled |
| 24. (A) by | (B) up | (C) at | (D) to |
| 25. (A) fuse...with | (B) mistake...for | (C) take... after | (D) integrate... into |

第26至30題為題組

For all the pitfalls and problems with the movie industry, it is undoubtedly true that films provide plenty of benefits. A little bit of movie magic is enough to 26 millions of people and sometimes even teach them a thing or two about the way the world works.

27, there are plenty of suggested "facts" that aren't necessarily true. After seeing these types of movie myths several times in countless different films, people began to accept them 28 ever questioning just how truthful they actually are.

The most 29 example is shooting out a lock with a gun. Technically, it is possible for one to shoot out a lock with a gun. However, it has to be a high-powered rifle at close range. A pistol won't do it. Practically, we need to 30 the body armor for the protection against the shrapnel. Otherwise, we will simply end up with a popped lock as well as an injured body.

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|------------------------|-----------------------------|-------------------|-------------------|
| 26. (A) entertain | (B) analyze | (C) declare | (D) transmit |
| 27. (A) Additionally | (B) Consequently | (C) Previously | (D) Unfortunately |
| 28. (A) by | (B) for | (C) without | (D) as to |
| 29. (A) transparent | (B) typical | (C) tragic | (D) theoretical |
| 30. (A) bring to light | (B) take into consideration | (C) correspond to | (D) adapt to |

三、文意選填（每題1分，共10分）

說明：第31題至第40題，每題一個空格，請依文意在文章後所提供的 (A) 到 (J) 選項中分別選出最適當者，並將其英文字母代號畫記在答案卡之「選擇題答案區」。各題答對者，得1分；答錯、未作答或畫記多於一個選項者，該題以零分計算。

第31至40題為題組

Scientist Stephen Hawking was known for his groundbreaking work with black holes and relativity, and was the author of several popular science books including *A Brief History of Time*.

Born on January 8, 1942, Stephen Hawking was a world- 31 British scientist, professor and author whose books helped to make science 32 to everyone. At age 21, while studying cosmology at the University of Cambridge, he was diagnosed with amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease). Part of his life story was 33 in the 2014 film *The Theory of Everything*.

Hawking first began to notice problems with his physical health while he was at Oxford — on occasion he would 34 and fall, or slur his speech — he didn't look into the problem until 1963, during his first year at Cambridge. For the most part, Hawking had kept these 35 to himself. But when his father took 36 of the condition, he took Hawking to see a doctor. For the next two weeks, the 21-year-old college student made his home at a medical clinic, where he underwent a 37 of tests.

Eventually, however, doctors did diagnose Hawking with the early stages of ALS. It was 38 news for him and his family, but a few events prevented him from becoming completely discouraged. The first of these came while Hawking was still in the hospital. There, he shared a room with a boy suffering from leukemia. Relative to what his roommate was going through, Hawking later reflected, his situation seemed more 39. Not long after he was 40 from the hospital, Hawking had a dream that he was going to be executed. He said this dream made him realize that there were still things to do with his life.

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|-----------------|--------------|------------|----------------|--------------|
| (A) devastating | (B) symptoms | (C) notice | (D) tolerable | (E) series |
| (F) accessible | (G) renowned | (H) trip | (I) discharged | (J) depicted |

四、閱讀測驗（每題2分，共32分）

說明：第41題至第56題，每題請分別根據各篇文章之文意選出最適當的一個選項，請畫記在答案卡之「選擇題答案區」。各題答對者，得2分；答錯、未作答或畫記多於一個選項者，該題以零分計算。

第41至44題為題組

Fire fighting refers to techniques and equipment used to extinguish fires and limit the damage caused by them. Fire fighting consists of removing one or more of the three elements essential to combustion—fuel, heat, and oxygen—or of interrupting the combustion chain reaction.

The Roman emperor Augustus is credited with instituting a corps of fire-fighting vigiles (“watchmen”) in 24 BC. Regulations for checking and preventing fires were developed. In the preindustrial era most cities had watchmen who sounded an alarm at signs of fire. The principal piece of fire-fighting equipment in ancient Rome and into early modern times was the bucket, passed from hand to hand to deliver water to the fire.

Another important fire-fighting tool was the ax, used to remove the fuel and prevent the spread of fire as well as to make openings that would allow heat and smoke to escape a burning building. In major fires, long hooks with ropes were used to pull down buildings in the path of an approaching fire to create firebreaks. When explosives were available, **they** would be used for this same purpose.

Following the Great Fire of London in 1666, fire brigades were formed by insurance companies. The government was not involved until 1865, when these brigades became London's Metropolitan Fire Brigade. The first modern standards for the operation of a fire department were not established until 1830, in Edinburgh, Scotland. These standards explained, for the first time, what was expected of a good fire department. After a major fire in Boston in 1631, the first fire regulation in America was established. In 1648 in New Amsterdam (now New York) fire wardens were appointed, thereby establishing the beginnings of the first public fire department in North America.

41. Where is this passage most likely to be found?

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|------------------------------------|------------------------------|
| (A) A travel guide. | (B) A celebrity's biography. |
| (C) A book about city development. | (D) A geographical journal. |

42. Which one of the following is **NOT** a tool used in ancient Rome to fight fires?

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|------------|------------|---------------|---------------|
| (A) An ax. | (B) Ropes. | (C) A bucket. | (D) An alarm. |
|------------|------------|---------------|---------------|

43. What does “**they**” in the third paragraph refer to?
(A) Hooks with ropes. (B) Openings. (C) Explosives. (D) Firebreaks.
44. Which of the following events occurred first?
(A) The Great Fire of London.
(B) The first public fire department in North America.
(C) The establishment of the first modern standards for the operation of a fire department.
(D) The establishment of the first fire regulation in America.

第 45 至 48 題為題組

Mosquitoes bother every creature from birds to humans. They are not just terribly disturbing, but dangerous as well. About 50 species of mosquitoes spread malaria at hazardous levels. This disease claimed the lives of 445,000 people globally in 2016, with more than 90% in sub-Saharan Africa. Artificial intelligence researchers have developed a mosquito early warning system, which uses an app that can run on inexpensive phones, to analyze sounds in the environment and issue a warning if it hears the buzz as a mosquito flies past.

To build the early warning system, a research team from Oxford University recorded mosquitoes in the lab and gathered more audio signatures from the US Centers for Disease Control and Prevention. The researchers then converted the audio signals into frequency features and trained a device to learn the signature pattern created by mosquitoes in flight. Initial tests with inexpensive phones found that the app could detect the presence of mosquitoes from about 10 cm away, depending on background noise. While enhancing the accuracy and sensitiveness of the system, the researchers are also endeavoring to make the system good enough to “tell the differences.” Since features such as the wing size and shape feed into the overall sound the mosquito makes, they believe that the system will be able to identify species of mosquitoes, especially to distinguish malaria-carrying mosquitoes from less dangerous ones.

Ultimately, the research team aims to have the app do more than protect people against malaria-carrying mosquitoes. With the development of the early warning system, researchers will be able to build up real-time maps of mosquito populations, and scientists in the field will identify mosquitoes more easily.

45. Which of the following is one of the purposes of the research described in the passage?
(A) To prove the connection between mosquitoes and malaria.

- (B) To test whether malaria only exists in sub-Saharan Africa.
(C) To find out if different mosquitoes make different sounds.
(D) To develop an app which is able to detect the presence of mosquitoes.
46. What is the second paragraph mainly about?
(A) The methods and results of the research.
(B) The motivation of the experiment.
(C) Some criticisms of the research.
(D) Some limits of building the mosquito warning app.
47. Which of the following is NOT true about the research?
(A) The app can currently only detect the presence of mosquitoes in short distance.
(B) Different species of mosquitoes may produce different sounds.
(C) The app is able to extinguish mosquitoes of different kinds.
(D) The researchers expect the app to work as a tool for mapping mosquito populations.
48. What is the author’s attitude toward the early warning system?
(A) Doubtful. (B) Conservative. (C) Optimistic. (D) Sarcastic.

第 49 至 52 題為題組

A new “Magic Bench” designed by Disney Research lets you interact with endearing animated characters — and no special glasses or headsets are required. It’s a combined augmented and mixed reality experience. The surroundings are instrumented rather than the individual, allowing people to share the magical experience as a group. People seated on the Magic Bench can see themselves in a mirrored image on a large screen in front of them, creating a third person point of view.

How does the illusion work? A color camera and a depth sensor capture images and gather depth information about physical objects — the bench and the seated person (or people) — that algorithms integrate with the 3D animations. Meanwhile, **haptic** sensors built into the bench deliver vibrations that are synchronized to animated actions on the screen, allowing the participant(s) to actually occupy the same 3D space as a computer-generated character or object.

Sitting on the bench triggers the augmented-reality experience, introducing a character into the scene. The user can hear a character coming, see it enter the space, and feel its action. In a video demonstration, for example, a tiny donkey saunters by and kicks the bench, generating a sharp sound and making the user jump in surprise. Another video shows the user

reacting as he "feels" an animated rabbit leap up beside him. When he passes his hand over the rabbit, a shadow moves across its head — as though it were occupying the same physical space as the person next to it.

But the Disney engineers discovered that if the reconstructed 3D scene was viewed at an angle, missing data and a small difference in alignment between the camera and sensor created gaps in the image known as “depth shadows.” To eliminate these depth shadows, designers layered another element into the scene — a 2D background captured by the Kinect's RGB camera, which seamlessly aligned with the 3D scene when viewed head-on. Once the “stage” is set, it’s ready to be shared with animated co-stars — from elephants offering up a glowing orb to a giraffe lending an umbrella during a sudden drizzle. Disney Research technicians presented the Magic Bench in 2017 and its application will surely amaze us.

49. What is the passage mainly about?

- (A) The cartoon characters on the Magic Bench.
- (B) The technology used to create the Magic Bench illusion.
- (C) The reactions of the Magic Bench users.
- (D) The limitations to overcome when designing the Magic Bench.

50. Which of the following words can be used to explain “**haptic**” in the second paragraph?

- (A) Innovative.
- (B) Visual.
- (C) Tactile.
- (D) Auditory.

51. Which of the following statements about “depth shadows” is true?

- (A) They are caused by the arrangement of the camera and the sensor.
- (B) They have not yet been solved when the screen is viewed head-on.
- (C) They make the cartoon figures appear more lifelike.
- (D) They reconstruct a 2D scene of the bench and the user.

52. According to this passage, which statement is true?

- (A) “Magic Bench” is not so much an augmented-reality experience as a virtual reality experiment.
- (B) The camera captures the images of the cartoon figure and the person next to it.
- (C) 3D glasses are essential to the Magic Bench experience.
- (D) The image of the cartoon character appears when one sits on the Magic Bench.

第 53 至 56 題為題組

Now at least 150 firms globally are developing some form of “digital therapeutic”

(“digiceutical” in the lingo). Unlike other sorts of digital health apps, digiceuticals have been tested for efficacy, approved by regulatory agencies and are prescribed by a doctor. Most gather data, either by asking patients for information or by using sensors, and provide guidance. Diabetes apps, for instance, work with connected monitors and use the information to manage symptoms. Apps that help users to stop smoking combine a breath sensor with coaching on how to quit. Apparently, their **foray** into health care has gone beyond simple devices to deliver real-time medical services to patients.

Most apps are developed by startups, many of which are based in and around Boston. One such, Pear Therapeutics, has a pipeline of treatments at various stages of development, much like a conventional pharmaceutical firm. These apps are aimed at treating a range of conditions: opioid addiction, schizophrenia, insomnia and post-traumatic stress disorder. One of Pear’s apps, for instance, which treats disorders involving the misuse of alcohol and other stimulants, is expected to hit the market in early 2018.

Another area of attention is medication for ADHD (attention-deficit hyperactivity disorder), on which Americans spend \$14 billion annually. Akili Interactive, another startup, recently completed a trial showing that a computer game it has developed to treat ADHD can improve attention and inhibitory control in children. If approved, the game would be first digital therapeutic for this disease. As well as competing with existing drugs, it may also appeal to parents who are reluctant to medicate their children for ADHD.

Some digiceuticals will work better alongside conventional drugs, which opens up possibilities for alliances between tech and pharma firms. However, pharma firms and venture capitalists remain cautious. One reason for the reluctance is a lack of rules for prescribing and paying for these apps. Cultural hurdles have to be overcome, too. Many patients will find it hard to believe that software can be as effective as a pill. Once accepted, however, digiceuticals should take off because barriers to entry for startups are lower than for drugmakers, which need access to costly laboratories and manufacturing facilities. So many apps will compete to treat the same disease, which should spark very rapid innovation—a rare phenomenon in medicine—and perhaps even to lower prices, a rarer one still.

53. What is the passage mainly about?

- (A) The upsides of using digiceutical apps in place of conventional drugs.
- (B) The difficulties tech firms encounter when promoting digiceutical apps.
- (C) The recent development and promising prospect of digiceutical apps.

(D) The potential collaboration between tech and pharma firms to dominate the medicine market.

54. According to the passage, which of the following is true?

- (A) Most existing drugs for ADHD are pricey and prove ineffective.
- (B) Specific details of using digiceutical apps have not yet been formulated.
- (C) Most digiceutical apps are developed by traditional pharmaceutical firms.
- (D) Compared with regulated health apps, drug research and development can generate more innovative ideas.

55. Which of the following is **LEAST** likely to benefit from the above-mentioned health apps?

- (A) A teenager who has difficulty sleeping.
- (B) An expectant mother with HIV.
- (C) A patient who has diabetes.
- (D) An individual who abuses substance.

56. Which of the following can best replace the word “foray” in the first paragraph?

- (A) Attempt.
- (B) Recognition.
- (C) Interference.
- (D) Commitment.

第貳部分：非選擇題（占 28 分）

說明：本部分共有二題，請依各題指示作答，答案必須寫在「答案卷」上，並標明大題號（一、二）。作答務必使用筆尖較粗之黑色墨水的筆書寫，且不得使用鉛筆。

一、中譯英（每題 4 分，共 8 分）

說明：1.請將以下中文句子譯成正確、通順、達意的英文，並將答案寫在「答案卷」上。
2.請依序作答，並標明子題號。每題4分，共8分。

1. 隨著智慧型手機與平板電腦的普及，愈來愈多青少年沉迷於這些電子裝置，使用社群媒體或玩手機遊戲。
2. 專家指出這個現象不但已造成青少年健康問題，例如近視、肥胖等，也導致他們上課缺乏專注力。

二、英文作文（每題 20 分，共 20 分）

說明：1.依提示在「答案卷」上寫一篇英文作文。

2.文長至少120個單詞（words）。

提示：為了減輕塑膠對環境的危害，政府於今年陸續實行一系列的限塑政策以減少人民對塑膠製品的使用並達成減塑願景。請就這個主題，寫一篇英文作文，文長至少 120 個單詞。文分兩段，第一段依據你的了解，說明塑膠製品會對人類與環境造成什麼影響，第二段說明你平常使用塑膠製品的習慣，及未來因應政府政策，你會有什麼樣的具體調整。

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