

系所組別：太空天文與電漿科學研究所

考試科目：科學英文

考試日期：0307，節次：1

※ 考生請注意：本試題 可 不可 使用計算機**Part I: Synonyms Test (30%)**

- He is indignant at her words.
(a) wretched (b) lazy (c) annoyed (d) proud
- I can tell by your bleak face that the news is bad.
(a) cheerful (b) gloomy (c) high (d) cruel
- Such a theory seems very plausible.
(a) believable (b) unbelievable (c) problematic (d) costly
- Mary only seems standoffish; once you get to know her, she is nice.
(a) untidy (b) clean (c) poor (d) aloof
- I passed the examination by learning everything by rote.
(a) learn through a routine (b) learn through understanding
(c) learning to spell (d) learning to read and write
- We had to scrap our plans.
(a) to give something away (b) to take in new ideas
(c) to take on new employees (d) to give something up
- Fetal monitoring has long been controversial in medicine.
(a) causing damage (b) causing improvement
(c) causing misery (d) causing disagreement
- The aggressors committed appalling atrocities.
(a) large town (b) good looking (c) cruelty (d) waste away
- He was an ardent disciple of Gandhi.
(a) slow and steady (b) keen and enthusiastic
(c) wise and knowledgeable (d) stiff and formal
- He used to be prone to anger.
(a) tendency to be affected by something (b) difficulty in solving something
(c) tendency to be aggressive (d) difficulty in understanding new ideas
- It is normal to have various obstacles during one's life and people should have a positive and optimistic attitude towards them
(a) hopeful (b) reliable (c) religious (d) sanctimonious
- His cheeks were ruddy.
(a) repugnant (b) colorless (c) reddish in color (d) wrinkled
- Amy's pitiless step-mother refused to look after her when she was seriously ill.
(a) sympathetic (b) cruel (c) without humor (d) show kindness
- My mother admonished me against arrogance.
(a) spoke sternly (b) praised (c) encouraged (d) disliked
- He worked hard, and yet success evaded him.
(a) conquered (b) explored (c) profited (d) avoided

(背面仍有題目,請繼續作答)

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By Michael D. Lemonick (TIME, Jan. 06, 2010)

If you're looking for Earthlike planets around other stars — places about the size and temperature of our own planet, where life could in theory be found — it might seem like a letdown to stumble instead on a world bigger than Jupiter, hotter than molten iron and, with a density like that of Styrofoam, the most insubstantial planet ever seen. But when NASA astronomer Bill Borucki stood before a packed audience at this week's meeting of the American Astronomical Society in Washington to announce the discovery of Styrofoam World, along with four other huge, hot planets, he didn't seem even slightly disappointed.

Borucki heads the Kepler Mission, a space-based planet-hunting telescope that went into solar orbit last spring to search for distant worlds like our own. While the first five worlds detected are nothing like Earth, nobody expected them to be. What's important, Borucki declared, was that "these five new exoplanets come from the first six weeks of data." An additional eight months of Kepler observations are already in the can and awaiting analysis, meaning many more planets are undoubtedly lurking on hard drives at the NASA Ames Research Center in California, where Kepler is headquartered. "We're going home to lots of presents still unopened," says Natalie Batalha, a San Jose State University astronomer on the Kepler team.

Still, even these planetary finds are unlikely to be exact copies of Earth, and for a very simple reason. Kepler spots faraway planets by watching them transit, or pass in front of, their stars, blocking out a little bit of light and making the star slightly dimmer. The five planets just announced orbit very close to their suns, which is the reason they're so ridiculously hot. That proximity also means they move very fast, completing three or even more transits in the first round of observations — which is just the kind of data stream the Kepler team prefers. "We want to see at least three transits to be absolutely sure," says Borucki.

The dimming caused by an Earth-size planet would be easy enough for Kepler to notice too, and such smaller planets most likely exist. But to be in an orbit where the temperature is balmy enough to support life, the planet has to be about as far from its star as Earth is from the sun, making its orbit about a year long; and that, by definition, requires at least two years after the initial detection. "Have patience," said Jon Morse, director of NASA's astronomy and physics division, to the assembled crowd.

For many scientists, just watching the data come in is a pleasure all by itself. "Kepler is working so amazingly well," says Berkeley's Geoff Marcy, a champion planet hunter in his own right and a

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member of the Kepler science team, "that the light curves [that is, the dips in light caused by transiting planets] look like they come from a textbook, not a real instrument."

It's that precision, plus the fact that Kepler is staring, unblinking and unceasingly, at 150,000 mostly sunlike stars in the Milky Way, that makes astronomers confident that Earths are in Kepler's future. As for any signs of life on those Earths, their detection will undoubtedly have to wait for future telescopes that can image the planets directly, probing their atmospheres for gases that hint at biological activity.

Still, Kepler has had some tantalizing news on the biology front too. While looking for planets, the probe has been taking note of the behavior of the stars themselves. Our sun is remarkably steady, without dramatic changes in warmth and brightness that might have prevented the emergence and evolution of life — and Kepler now reports that two-thirds of the sunlike stars it's monitoring are no more active than the sun at its most turbulent. Lots of stable suns could mean at least a handful of promising Earths — and those, in turn, could mean living company for our own still lonely world.

After you have read the previous article, please answer the following questions in simple words in English:

16. If we are going to seek an exoplanet where the life could exist, what conditions that you have to take into account? (5%)
17. Please briefly describe the principle of the Kepler Telescope's exoplanet hunting. (5%)
18. How long is it since Kepler Telescope's first scientific observation when this article is written? (2%)
19. If these scientists have to absolutely confirm the existence of a distant sun-earth system identical to ours, how long does it take? Why? (5%)
20. Write down the name and affiliation of the scientist who have discovered the most exoplanets up to now? (3%)
21. Please write down your comments and thoughts to the facts/ideas reported in this article. (no longer than 120 words) (20%)

Part III: Please translate the following sentences into English (30%)

22. 電漿是物質的第四態，由中性粒子、帶負電的電子與帶正電的離子所組成，目前不只在軍事與工業上有重要的價值，也開始廣泛的應用於日常生活中。(10%)
23. 日食是一種天文現象，只在月球運行至太陽與地球之間時發生。這時，對地球上的部分地區來說，月球位於太陽前方，因此來自太陽的部分或全部光線被擋住，因此看起來好像是太陽的一部分或全部消失了。(10%)
24. 台灣在過去 10 年中陸續的發射了三次衛星，共計有八個衛星成功的被放置於地球軌道上。透過衛星任務的執行，成功的提升台灣的太空科技。(10%)