

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一、英翻中（把握文意，無須逐字翻譯；括號內文字無須翻譯）

1. （12 分）

Worldwide, forested ecosystems have been severely depleted as a consequence of deforestation (largely for agricultural expansion) and degradation (e.g., through selective logging). Indirect anthropogenic disturbance has occurred because of increased fire activity (e.g., in selectively logged areas) and changes in climate, including more intense drought and flooding. On the coastal fringe, significant areas of mangrove forest have been destroyed for various uses (e.g., aquaculture), but also because of natural events, including cyclones and tsunamis. Mangroves are also responding to fluctuating sea levels as a consequence of climatic change. The extent and condition of forests have therefore been reduced substantially and this trend is continuing, particularly in the tropical and subtropical regions. (adapted from Hyperspectral Remote Sensing of Tropical and Sub-tropical Forests, 2008, by Margaret Kalacska and G. Arturo Sanchez-Azofeifa)

2. （12 分）

The atmosphere is the engine that drives the Earth's climate system, and the Sun provides the energy that allows the engine to work. Some of the solar radiation that reaches the atmosphere is reflected off clouds and dust and bounces back into space. Of the radiation that reaches the planet's surfaces, some is absorbed by the land and oceans, and some is reflected into space by water, snow, ices, and other highly reflective surfaces. This visible reflected solar radiation has a short wavelength. The Earth also emits long-wave, infrared radiation. However, a portion of the outgoing long-wave radiation encounters gases in the atmosphere which have chemical properties that prevent this energy from escaping. Instead, the energy is retained in the lower atmosphere, causing the temperature at the Earth's surface to rise. We refer to this phenomenon as the greenhouse effect. (adapted from The Dynamic Earth, 2000, by Brian Skinner and Stephen Porter)

3. （12 分）

In 2008, the UK government was seeking to nurture the use of the Web for social, economic, and educational purposes. Over the next four years rapid developments occurred under two different administrations. The Open Data concept was elaborated and around 20,000 datasets have been made available. These included many sets of geographical information. They also included large numbers of statistical datasets and administrative ones designed to support keeping a watch on how national and local governments were spending taxpayers' money. All these were made available for free under a new and simple Open Government License. (adapted from Geographic Information Science and Systems, 2015, by Paul Longley, Michael Goodchild, David Maguire, and David Rhind)

4. (12 分)

Geomatics is a relatively new term that is now commonly being applied to encompass the areas of practice formerly identified as surveying. The name has gained widespread acceptance in the United States, as well as in other English-speaking countries of the world, especially in Canada, the United Kingdom, and Australia. The principal reason cited for making the name change is that the manner and scope of practice in surveying have changed dramatically in recent years. This has occurred in part because of recent technological developments that have provided surveyors with new tools for measuring and/or collecting information, for computing, and for displaying and disseminating information. It has also been driven by increasing concerns about the environment, locally, regionally, and globally, which have greatly exacerbated efforts in monitoring, managing, and regulating the use of our land, water, air, and other natural resources. (adapted from *Elementary Surveying: An Introduction to Geomatics*, 2008, by Charles Ghilani and Paul Wolf)

5. (12 分)

The shape of landscape features is an important part of the pattern recognition techniques used in images processing. Shape properties are sometimes recorded for natural phenomena for scientific purposes, especially through an approach that relates form to function, as for different types of glacial deposit or classification of coastal barrier islands. Shapes of land cover of different kinds can be quite important for wildlife, for agricultural practices or for the layout of recreational and parkland areas. For example, long thin strips of open space can assist the movement of animal spaces through otherwise inhospitable terrain. (adapted from *Fundamentals of Spatial Information Systems*, 1994, by Robert Laurini and Derek Thompson)

二、短文寫作 (40 分)

We are witnessing the significant advancement of gathering, storing, managing, processing, and utilizing massive quantity of geo-spatial data in recent years. The data can be gathered from the sensors onboard satellite, airborne, or mobile platform, even wearable units. Please write a 200 - 400 words essay describing the most inspiring aspect of this advancement, based on your knowledge, in support of the general public interests. Please also clearly identify the targeted public interest(s) in the essay.