

104 年度第 1 次研究生入學能力考試試題

科 目：英文

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第 1 頁，共 4 頁

本試題包含二大部份：閱讀測驗題與翻譯題，共 100 分

第一部份：閱讀測驗題(單選題)(有三篇短文，共 10 題，每題 6 分，共 60 分)[請依據短文之內容答題]

第一篇短文：

Heat transfer contains three different mechanisms, i.e., conduction, convection and radiation. Conduction occurs when a substance is heated, particles will gain more energy, and vibrate more. These molecules then bump into nearby particles and transfer some of their energy to them. This then continues and passes the energy from the hot end down to the colder end of the substance.

Convection occurs when warmer areas of a liquid or gas rise to cooler areas in the liquid or gas. Cooler liquid or gas then takes the place of the warmer areas which have risen higher. This results in a continuous circulation pattern. A good example of convection is in the atmosphere. The earth's surface is warmed by the sun, the warm air rises and cool air moves in.

Radiation is a method of heat transfer that does not rely upon any contact between the heat source and the heated object. Heat can be transmitted though empty space by thermal radiation.

1. When two objects in process of heat convection, which statement is correct?
 - (1) The transfer of heat between fish and frying pan,
 - (2) Use of electromagnetic wave in molecule scale,
 - (3) Boiling the water.
 - (4) None of above is correct
2. When there is no mass exchanged and no medium is required in the heat transfer, it is process of
 - (1) Conduction,
 - (2) Convection,
 - (3) Radiation
 - (4) All above are correct.
3. When a boy is in a swimming pool, the temperature of boy body is changed due the process of
 - (1) Conduction,
 - (2) Convection,
 - (3) Radiation.
 - (4) All above are correct

第二篇短文：

The mechanical properties are those that indicate how the material is expected to behave when subjected to varying conditions of load and environment. These characteristics are determined by standardized destructive and non-destructive test methods.

An elastic material returns to its original dimensions on removal of applied loads. This elastic property is called elasticity. Usually the elastic range includes a region throughout which stress and strain have a linear relationship. The elastic portion ends a point called the proportional limit. Such materials are linearly elastic. In a viscoelastic solid, the state of stress is function not only of the strain but the time rate of change of stress and strain as well. A plastically deformed member does not return to its initial size and shape when the load is removed.

1. The purpose of the destructive and non-destructive test method is applied to what?
 - (1) Study the material property when environment temperature changes,
 - (2) Study the material length changes when the electrical field changes,
 - (3) The length of plastic material is not changed when the load is released,
 - (4) The stress in elastic material is unchanged when time changes.
2. When the stress of an elastic material does not exceed its proportional limit, what is expected to happen?
 - (1) The strain does not exceed the elasticity,
 - (2) The length change of the material does not exceed its strain limit,
 - (3) The size of the material does not change when the load is released,
 - (4) The elastic portion exceeds the proportional limit.
3. Compare the elastically deformed material and plastically deformed material?
 - (1) The stress changes linearly with the strain changes in elastic material,
 - (2) The stress and strain have a non-linear relationship in elastic material,
 - (3) The length of plastic material is not changed when the load is released,
 - (4) The stress in elastic material changes when time changes.
4. In a viscoelastic solid, what is expected to happen?
 - (1) The strain does exceed the proportional point,
 - (2) The stress changes when strain is not a linear relationship with stress,
 - (3) The elastic of the material changes when the load is viscous,
 - (4) The strain and time rate of change of strain both affect the stress.

第三篇短文：

Just over several years ago, it seemed that whole world was excited by the election of US President Obama. However, the announcement involving him was met with a more muted response. That was when he was named the winner of the 2009 Nobel Peace Prize.

The Peace Prize is one of the five awards set up by famous chemist Alfred Nobel in his will in 1895. The Peace Prize is meant for the person who, in the previous year, has done the most to promote good relations between nations, with previous winners including the founder of the Red Cross and the Dalai Lama. However, when Obama's win was announced, many baffled members of the public media and celebrity circles asked, "Why?" In his first year in office has he really done anything truly noteworthy? Especially since the deadline for prize nominations was just weeks after he was sworn in as president.

The Nobel authorities have defended the decision, saying that rarely has a person "captured the world's attention and given its people hope for a better future" in the same way. So, has Obama been awarded the prize for what the world hopes he'll do? Perhaps he now has even more to live up to.

1. What event of 2009 is the article mainly about?

- (1) The election of the new president of the US,
- (2) The announcement of the Nobel Prize winner,
- (3) The founding of an award for peace,
- (4) The anniversary of Alfred Nobel's death.

2. The Nobel Peace Prize was awarded to?

- (1) A person improved good relationship between enemy countries,
- (2) Dalai Lama,
- (3) US president Obama,
- (4) All above are correct.

3. What reason has the Nobel committee given for its decision concerning Obama?

- (1) He has captured men who were against world peace,
- (2) He is a rare person who will definitely do great things,
- (3) He has made great changes to the world this year,
- (4) He has grabbed people's attention and offered them hope.

**第二部份：翻譯題(英翻中試題), 請翻譯英文為中文
(共 2 題, 每題 20 分, 共 40 分)**

1. Engineering Mathematics is the art of applying mathematics to complex real-world problems. It combines mathematical theory, practical engineering and scientific computing to address today's technological challenges. It is a creative and exciting discipline, spanning traditional boundaries. Engineering mathematicians can be found in an extraordinarily wide range of careers, from designing next generation Formula One cars to working at the cutting edge of robotics, from running their own business creating new energy saving vehicles to developing innovative indices for leading financial institutions.
2. Theoretical and experimental methods are two approaches to study the fluid motion. Due to the increase of computer power, computational fluid dynamics, or called CFD, becomes the third method. Most of what can be done theoretically has already been done, and experimental method is generally not easy and expensive. Therefore CFD has been popular in analysis of fluid flow. Any engineer working in the fluid dynamics must have an understanding of the basic practices of CFD. But to understand the use of CFD, one must have a fundamental understanding of fluid dynamics, both theoretical and experimental.