

## 國立臺灣科技大學

## 九十三年學年度碩士在職專班招生考試試題

系所組別：機械工程系

科目：機械工程實務

總分 100 分，每題 10 分，共有兩頁

將 1 到 5 題短文翻譯成中文

1. A hovercraft travels on a cushion of air. This explains its other name of air-cushion vehicle, or ACV for short. The air is blown down underneath the craft by fans, and kept in place by a flexible skirt. The hovercraft's main engines drive propellers which can be turned to propel the craft forwards, backwards or sideways. Because they do not actually touch the surface, hovercraft can travel across land or water. (10%)
2. David Bushnell's Turtle was the first submarine to attack a warship. In 1776 the tiny one-man craft tried to blow up a British ship during the American Revolution. It was propelled by a hand-cranked screw. The attack failed, but the Turtle survived.(10%)
3. Underground trains, or subways, carry passengers beneath busy cities. The trains run through tunnels dug beneath the city streets. The first underground railway was opened in London in 1863. The system used steam trains, which filled the tunnels with fumes. Electric trains were introduced in the 1890s, and today all underground railways use electric trains. The trains run at between 18 and 80 kilometers per hour. They have drivers, but there are also computerized signal systems for safety. Moscow has the most impressive underground stations, with marble walls and golden decorations.(10%)
4. Watching the fire and thunder that accompany a rocket launch, it is easy to forget that pyrotechnics have little to do with moving spaceships. It is all about mass. Or, as Sir Isaac Newton's Third Law of Motion so aptly puts it: For every action there is an equal and opposite reaction. A rocket is a reaction engine--it moves forward when mass is thrown backward. Air has mass, which is why a party balloon that slips from your fingers loops across the room. Lifting more substantial payloads into space requires ejecting tons of mass per second. One very efficient way to release a large amount of mass quickly is to turn it into a high-pressure gas--hence, the fireball that engulfs the launchpad when the countdown reaches zero. (10%)
5. Fiber-reinforced composites submitted to ballistic impact show large, and sometimes irregular, areas of delamination. The evaluation of these damaged areas is important to assess the effects of the laminate microstructure on the response of the material to the imposed loading. In this paper bulletproof laminates were

