班級：機械四甲 學號：99401049 姓名：林建宏 *注意本試卷有兩頁

一、句型配合：試根據句子之句型填入「句型配合選項」之代號(14%)

(b)1.The growth of semiconductor market is amazing.
(f)2.Carbon dioxide poses a significant threat to our environment.
(a)3.The revenue of flat panel display declines.
(g)4.Automation offers industries a more exact, efficient and reliable competitiveness and production.
(c)5.The revenue of flat panel display declines in 2001.
(e)6.Technology innovation will promise us a better future.
(d)7.Robots perform many sophisticated actions.

句型配合選項：
(a)主詞(名詞或代名詞)+動詞；(b)主詞+聯綴動詞+主詞補語(名詞/形容詞)；(c)主詞+動詞+副詞或副詞片語；(d)主詞+動詞+受詞(名詞或代名詞)；(e)主詞+動詞+間接受詞(人)+直接受詞(物)；(f)主詞+動詞+直接受詞+介詞+間接受詞；(g)主詞+動詞+受詞+受詞補語(名詞或形容詞)。

二、單字 (32%)

(1) 技術：technology　(2)動能：kinetic energy　(3)二氧化碳：Carbon Dioxide　(4) 電流：electric current
(5) 位能：potential energy　(6)尖峰：peak-load　(7) 再生能源：Renewable Energy　(8)太陽能電池：solar cell
(9)十年：decade　(10)Laser：雷射　(11)except：除了　(12)is related to：有關
(13)in practice：實際上　(14)many thousands of：數以千計　(15)such as：如同　(16)atom：原子

三、簡答題：試依各題所附之英文回答問題，並請於所附之英文中，將與問題相關之內容標示出(劃線)

1.問題：水力發電的原理為何？有何優缺點？(5%)
Sunlight, wind, rivers, tides and geothermal heat can all be used as renewable energy, but only one, hydro-electric generation has been significantly utilized so far.
Hydro-electric power, using the potential energy of rivers, now supplies 19% of world electricity. Apart from a few countries with an abundance of it, hydro capacity is normally applied to peak-load demand, because it is so readily stopped and started.
答：

2.問題：風力發電受到的限制為何？(5%)
Wind turbines have been used for electricity generation in conjunction with battery storage over many decades in remote areas such as offshore and high altitude sites.
Wind turbines have been used for household electricity generation in conjunction with battery storage over many decades in remote areas. The power output is related to the wind speed. For example, a turbine under a wind in the range 3 to 25 metres/second (11-90km/hr)can generate 1 MWe.
However, in practice relatively few areas have significant prevailing winds. Prevailing winds. There are now many thousands of wind turbines operating in various parts of the world, with a total capacity of over 20,000MWe, and more than 10% of electricity comes from wind in Denmark.
答：

3.問題：說明潮汐發電的原理。(5%)

Harnessing the tide could be achieved in certain other areas where there is a large tidal range. Then, the steam will be tapped and brought to the surface for electricity generation. The sea water trapped in a bay or estuary at high tide can be released down to turn turbines for electricity generation. This technology, harnessed in France and Russia since 1966 appears to have little potential, largely due to environment consideration.

答：

4.問題：地熱發電的原理為何？目前那些國家擁有地熱發電？全球地熱發量為何？(5%)

In certain parts of the world such as New Zealand, USA, Philippines and Italy, underground water can be pumped to very hot regions of the earth's crust and heated to produce steam. Then, the steam will be tapped and brought to the surface for electricity generation. Some 6,000MWe of capacity is generated by geothermail sources.

答：

5.問題：在太陽電池中，光能如何轉換成電能？(5%)

Sunlight is composed of photons and other particles. On striking the semiconductor layers of a solar cell, some photons are absorbed and transfer their energy to an electron in an atom of the semiconductor.

This mechanism to convert light energy into electricity is called the photovoltaic effect and was first described by a French physicist Edmond Becquerel in 1839.

答：

6.問題：太陽能電池之優點為何？(5%)

There are several advantages to using solar cells: high reliability, low operating cost, environmental benefits, low construction costs.

So, the advanced technology used in semiconductor transistors has also contributed to the development of solar cells

The three major parts of a solar cell are the semiconductor layers where the electron current is created, a top electrical contact to collect electrons from the semiconductor and transfer them to the external load, and a back contact layer to complete the electrical circuit.

答：

四、翻譯：試將以下段文字譯成中文(30%)

1.It is not a major option for the future in the developed countries for most sites with potential have either been exploited already or are unavailable for other reasons such as environmental considerations.(15%)

答：大部份的潛能具開發，或基於環境考量等其他理由無法利用，水力發電並非已開發國未來的主要選擇。

由於大部分具潛能的場點業已開發，或是因環境考量等其他理由無法被利用，水力發電在已開發國家中，並非是因應未來發展的主要選擇。

2. In this modern time, there is resurgence of interests regarding VAWTs as numerous universities and research institutions have carried out extensive research activities and developed numerous designs based on several aerodynamic computational models.(15%)

答：現代，許多大學和研究機構基於以空氣動力的模型計算，廣泛的研究和發展許多設計，對於垂直軸風力發電機的興趣有捲土而來的情形。