

科目	基礎科技英文	適用系所	資訊電機工程碩士在職專班(中科產業組)	時間	100分鐘
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※請務必在答案卷作答區內作答。

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一. Read the paragraphs and translate underlined sentences into Chinese. (4% each)

Microwave Engineering, David M. Pozar.

- (1) Microwave signals travel by line of sight and are not bent by the ionosphere as are lower frequency signals. Satellite and terrestrial communication links with very high capacities are thus possible, with frequency reuse at minimally distant locations.
- (2) The effective reflection area (radar cross section) of a radar target is usually proportional to the target's electrical size. This fact, coupled with the frequency characteristics of antenna gain, generally makes microwave frequencies preferred for radar systems.
- (3) Various molecular, atomic, and nuclear resonances occur at microwave frequencies, creating a variety of unique applications in the areas of basic science, remote sensing, medical diagnostics and treatment, and heating methods.
- (4) Wireless Local Area Networks (WLANs) provide high-speed networking between computers over short distances, and the demand for this capability is growing very fast.
- (5) The newest wireless communications technology is Ultra Wide Band (UWB) radio, where the broadcast signal occupies a very wide frequency band but with a very low power level to avoid interference with other systems.

President Ma's Inaugural Address

- (6) Earlier this year on March 22, through the presidential election of the Republic of China, the people changed the course of their future. Today we are here not to celebrate the victory of a particular party or individual, but to witness Taiwan pass a historic milestone.
- (7) Taiwan's labor force must learn to adapt to rapid technological changes and industrial restructuring. Our youth must develop character, a sense of civic duty, global perspectives and lifelong learning capabilities.

二. Read the paragraphs and translate them into Chinese.

- (1) A **smartphone** is a mobile phone offering advanced capabilities, often with PC-like functionality. There is no industry standard definition of a smartphone. For some, a smartphone is a phone that runs complete operating system software providing a standardized interface and platform for application developers. For others, a smartphone is simply a phone with advanced features like e-mail, Internet and e-book reader capabilities, and/or a built-in full keyboard or external USB keyboard and VGA connector. In other words, it is a miniature computer that has phone capability. (10%) (@Wikipedia)

- (2) An **embedded system** is a special-purpose computer system designed to perform one or a few dedicated functions, often with real-time computing constraints. It is usually *embedded* as part of a complete device including hardware and mechanical parts. In contrast, a general-purpose computer, such as a personal computer, can do many different tasks depending on programming. Embedded systems control many of the common devices in use today.

Since the embedded system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product, or increasing the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale. Physically, embedded systems range from portable devices such as digital watches and MP4 players, to large stationary installations like traffic lights, factory controllers, or the systems controlling nuclear power plants. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure. (15%) (@Wikipedia)

三. Read the paragraphs and translate underlined sentences into English. (4% each)

- (1) 將電能從一點傳到另一點，電力傳輸線是既有效又方便的方式，因為其損耗低、成本廉、路線轉接容易。
- (2) 美國第 35 任總統甘迺迪(John F. Kennedy)，在他 1961 年 1 月 20 日的就職演說中，就有這麼一句鏗鏘有力、跨越黨派的名言：我們今天慶祝的不是一個黨派的勝利，而是一個自由的盛典——這場盛典既象徵著結束，也同時象徵著開始——意味著更新，也意味著改造。
- (3) 美國第 44 任總統巴拉克·奧巴馬(Barack Obama)於 2009 年 1 月 20 日之就職演說：……我們將建造道路和橋樑，架設電網，鋪設承載我們的商務和把我們緊密相連的電子通訊網絡。我們將恢復尊重科學的傳統，利用高新技術的超常潛力提高醫療保健品質並降低成本。我們將利用太陽能、風力和地熱為車輛和工廠提供能源。

四. Read the paragraphs and translate them into English.

- (1) 網路連接技術是用戶與網際網路間連接方式和結構的總稱。任何需要使用網際網路的計算機必須通過某種方式與網際網路進行連接。網際網路接入技術的發展非常迅速：頻寬由最初的 14.4Kbps 發展到目前的 10Mbps 甚至 100Mbps 頻寬；接入方式也由過去單一的電話撥號方式，發展成現在多樣的有線和無線接入方式；接入終端也開始朝向移動設備發展。並且更新更快的接入方式仍在繼續地被研究和開發。(10%) (@Wikipedia)
- (2) 把系統所有的功能方塊，如中央處理器、記憶體、數位信號處理器、快閃記憶體、邏輯電路、輸出入功能方塊等整合在一個晶片裡，就叫作系統晶片(SoC)。我們知道，近年來市場上產品翻新的速度相當快，也被要求須輕薄短小、功能多樣化。而積體電路製程技術在經過近半個世紀之後，已從幾個微米的技術進入奈米尺度。尺寸的縮小使晶片內電晶體的容量每年成長約 58%。因此對現有特定應用積體電路設計(ASIC)廠商而言，他們已可把很多功能方塊都放到單晶片內。但如果系統晶片只是把很多功能方塊放到晶片裡，那系統晶片就像是因製程進步必然產生的結果。事實並非如此，因為現有的設計技術趕不上製程技術，設計與製程之間其實有一個相當大的斷層。簡單地說，系統晶片設計就是要在極短時間內，把一個功能繁複的應用系統放到一顆晶片裡的技術。(15%)

五. Write an autobiography in English. (Please write at least five English sentences.)
(10%)