

高苑科技大學 99 年度綠色技術與材料產業研發碩士專班春季班入學考試試題卷

考試科目：化學

注意事項：1.請作答於另附之空白答案紙上，否則不予計分，並註明題號。

一. 簡答題：(60%)

1. 何謂同位素？試舉例。(10%)
2. 何謂泡立不相容原理？(10%)
3. 質譜儀可以測定那些粒子之質量？(10%)
4. 何謂電子之基態與激發態？當電子由激發態降至基態時以何種方式釋放能量？(10%)
5. 電子軌域中之 s、p、d 與 f 軌域之電子容量各有多少個？s、p、d 與 f 軌域能量大小為何？(10%)
6. 請寫出 ${}_{24}\text{Cr}$ 之電子組態與其對應的軌域圖？並說明為何以此組態存在？(10%)

二. 計算題：(40%)

1. 試求 1 莫爾 CO_2 之重量？1 個 CO_2 分子之質量？(20%)
2. 自然界中存在硼 19.9% 為 ${}^5_{10}\text{B}$ ，80.1% 為 ${}^5_{11}\text{B}$ ，試求硼之平均原子量？(20%)

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考試科目：生物技術

注意事項：1.請作答於另附之空白答案紙上，否則不予計分，並註明題號。

1. 現代生物技術的應用可以分成五項？(20%)
2. 試說行政院目前推動的六大新興產業發展？(20%)
3. 請舉例說明特用化學品及食品生物技術產業(25%)
4. 生物技術應用於廢棄物產生與汙染防制兩大方面，有下列三大方向？(15%)
5. 請說明幹細胞的定義(20%)

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考試科目：英文

注意事項：1.請作答於另附之空白答案紙上，否則不予計分，並註明題號。

一、 Choice (30%)

1. () How is the shell of a hen's egg formed? The eggshell is _____ composed of calcite, which is a crystalline form of calcium carbonate (CaCO₃).
(A) large (B) enlarge (C) enlarges (D) largely
2. () An average eggshell weighs about 5g and is 40 percent calcium. Most of the calcium in an eggshell is _____ down within a 16-hour period.
(A) lie (B) lay (C) lain (D) laid
3. () Utilities programs automate common tasks and _____ maintenance functions on the hardware.
(A) perform (B) performance (C) performed (D) performing
4. () Computer software, also _____ a program, is a series of instructions that control computer hardware. (A) call (B) calls (C) calling (D) called
5. () When the food supply is constantly low in calcium, egg production _____ stops.
(A) event (B) eventual (C) eventually (D) events
6. () In the blood, free Ca^{2+} ions are in equilibrium _____ calcium
(A) in (B) on (C) at (D) with
7. () But scientists have yet to figure out how to mine it without _____ an environmental disaster. (A) cause (B) caused (C) causes (D) causing
8. () Oil companies have known about methane hydrate since the 1930S, when they began _____ high-pressure pipelines to transport natural gas in cold climates.
(A) use (B) used (C) uses (D) using
9. () The person _____ the order is automatically shown the correct list of options and prices for a given pizza. (A) takes (B) take (C) taken (D) taking
10. () Domino's Chief Information Officer, Tim Monteith, explains, "The inventory is _____ adjusted.
(A) dynamite (B) dynamical (C) dynamic (D) dynamically