

國立交通大學 95 學年度碩士班入學考試試題

科目名稱：資料結構與網際網路概論 (5092) 考試日期：95 年 3 月 12 日 第 3 節

系所班別：資訊管理研究所 組別：資管所甲組 第 1 頁, 共 3 頁

*作答前, 請先核對試題、答案卷 (試卷) 與准考證上之所組別與考試科目是否相符!!

1. 選擇題 (單選, 每題兩分) (14%)

1(a). Dell Computers allows its customers to design computers which meet specific needs. This is an example of the _____ EC business model.

- a. find the best price
- b. group purchasing
- c. affiliate marketing
- d. product and service customization

1(b). All of the following are technological limitations to EC except :

- a. system security is still evolving.
- b. bandwidth is insufficient in many areas.
- c. many legal issues are unresolved.
- d. compatibility issues between some hardware and software remain.

1(c). The idea that almost any device can be imbedded with computer chips and connected to a network of other devices is called:

- a. permission internet.
- b. localization.
- c. pervasive computing.
- d. Web translation.

1(d). Because customers are expensive to acquire online, site content is important in improving:

- a. stickiness.
- b. localization.
- c. rotation.
- d. impression spacing.

1(e). A market maker evaluates an exchange between a buyer in the United States and a seller in Spain to ensure that import laws for the U.S. are followed. This is an example of the market maker:

- a. facilitating an exchange.
- b. interfering in an exchange.
- c. matching a buyer and seller.
- d. maintaining exchange policies and infrastructure.

國立交通大學 95 學年度碩士班入學考試試題

科目名稱：資料結構與網際網路概論 (5092) 考試日期：95 年 3 月 12 日 第 3 節

系所班別：資訊管理研究所 組別：資管所甲組 第 2 頁, 共 3 頁

*作答前, 請先核對試題、答案卷 (試卷) 與准考證上之所組別與考試科目是否相符!!

1(f). The exchange model in which a third party sets up the exchange and promises to run it efficiently and without bias is called:

- a. the industry giant model.
- b. the co-op model.
- c. the consortia model.
- d. the neutral entrepreneur model.

1(g). The use of Web technologies to manage warehousing and transportation processes is called:

- a. e-logistics.
- b. e-replenishment.
- c. downstream processing.
- d. collaborative planning.

2.-9. 為申論題:

- 2. Does Skype provide the last mile service? How could you use Skype to call your friend's cellular phone?(10%)
- 3. What is "Google Earth"? How could it be applied for the car GPS gadget? (10%)
- 4. (5%) Draw the expression tree of the infix expression $a/b - c^d \times e^f \wedge g + (h+i)/j$.
- 5. (6%) Computer operating systems need priority queues for scheduling processes. What data structure is most suitable for implementing priority queues? Why?
- 6. (10%) Let a_1, a_2, \dots, a_n be a sequence of integers. The problem is to find the maximum $\sum_{k=i}^j a_k, 1 \leq i \leq j \leq n$, i.e. a contiguous sub-sequence whose sum is maximum. If all integers in the sequence are negative, the solution is defined as zero. Design a divide-and-conquer algorithm and analyze its time complexity.
- 7. Given a directed weighted graph $G(V, E)$ with $|V| = n$:
 - (a) (5%) Write a polynomial-time algorithm in pseudo codes to find the shortest paths from source node s to all other nodes. Also, analyze the algorithm's time complexity.
 - (b) (5%) Assume we instead want to find the shortest path from source s to a specific destination node t . Can you design an algorithm that has a time complexity lower than that of the algorithm developed in (a)? If affirmative, give the algorithm; otherwise, give your reasoning.
 - (c) (5%) Can you design a polynomial-time algorithm for finding the longest path in the graph? If affirmative, give the algorithm; otherwise, give your reasoning.

國立交通大學 95 學年度碩士班入學考試試題

科目名稱：資料結構與網際網路概論 (5092) 考試日期：95 年 3 月 12 日 第 3 節

系所班別：資訊管理研究所 組別：資管所甲組 第 3 頁, 共 3 頁

*作答前, 請先核對試題、答案卷 (試卷) 與准考證上之所組別與考試科目是否相符!!

8. 在設計高速網路時, 提出了一個 Traffic Shaping 的觀念, 請問什麼是 Traffic Shaping? Leaky bucket 是一種 Traffic Shaping 的機制, 請詳述其運作方式及優缺點。(10%)

9. 名詞解釋(20%) :

- a) Trap-Directed Polling
- b) Out-of-band Signaling
- c) Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA)
- d) Public Key Infrastructure (PKI)