

佛光人文社會學院九十學年度碩士班招生考試試題卷

系所別：資訊學研究所

科目：資訊概論

用紙 第 1 頁共 2 頁

一、選擇題

(每題兩分，共 30 分)

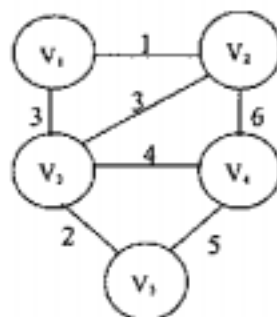
1. 二進位數 $(10101110)_2$ 它所對應之十六進位數為：① $(AE)_{16}$ ，② $(EA)_{16}$ ，③ $(174)_{16}$ ，④ $(147)_{16}$ ，⑤以上皆非。
2. 能夠執行通訊協定轉換的網路設備是：①橋接路由器，②閘道，③路由器，④橋接器，⑤以上皆是。
3. 二進位中 10011011 之 2 補數為：①11100100，②01100100，③10011100，④01100011，⑤以上皆非。
4. 下列何者為「傳輸協定」？①IP，②IPX，③NetBEUI，④SNMP，⑤以上皆是。
5. 在 OSI 參考模式的網路分層架構中，用來建立傳送者與接受者間路徑的是：①網路層，②實體層，③傳輸層，④會談層，⑤以上皆非。
6. 1GB (gigabyte) = ① 2^{10} ，② 2^{16} ，③ 2^{20} ，④ 2^{30} ，⑤ 2^{32} Bytes。
7. The difference between software agents and true intelligent agents is that the latter: ①require parallel processing; ②can learn; ③reside on a special hardware; ④reside on a special software; ⑤all of the above。
8. Prototyping is most useful for determining information system requirements when: ①tools and data are not readily available to rapidly build systems; ②there is a tendency to avoid creating formal documentation; ③multiple stakeholders are involved in the system; ④user requirements are not well understood; ⑤all of the above。
9. Which of the following is **NOT** involved in knowledge? ①Learning, ②Understanding, ③Practical experience, ④Cognizance, ⑤Organized strings of data。
10. Which of the following is an accurate rule for data flow diagramming? ①A join in a data flow means that exactly the same data go from a common location to two or more different processes, data stores, or sources/sinks; ②A data flow has a verb phrase label; ③A fork in data flow means that exactly the same data come from any of two or more different processes, data stores, or sources/sinks to a common location; ④Data must be moved by a process if the data are of any concern to our system; ⑤All of the above are accurate data flow diagramming rules。
11. What is indicated by database lock granularity? ①How smoothly a particular lock type functions; ②Probability of lock failure; ③The type of lock needed; ④The level of lock use; ⑤None of the above。
12. In which technique does the DBMS periodically tests the database for deadlocks and if a deadlock is found, the "victim" is aborted and the other transaction continues? ①Deadlock avoidance; ②Deadlock detection; ③Two-phase deadlock protocol; ④ Deadlock prevention; ⑤all of the above。
13. The term _____ expresses the specific number of entity occurrences associated with one occurrence of the related entity. ①cardinality, ②relationship, ③connectivity, ④affiliation。
14. The Data Warehouse is said to be _____ when data that enters the Data Warehouse are never removed. ①integrated, ②subject-oriented, ③time-variant, ④non-volatile。
15. Which of the following is **NOT** an advantage of the conceptual model? ①It operates at the lowest

level of abstraction; ②It provides relatively easily understood macrolevel view of data environment; ③It is hardware independent; ④It is software independent; ⑤None of the above.

二、簡答題

(每題五分，共 20 分)

1. 請簡明扼要的說明何為 HTML 及 XML？並比較兩者之異同。
2. 網路拓撲中有那四種常見的網路架構？如果某公司考慮將數台極為重要的伺服器架構成網路，以提供該公司一個高度的容錯系統，於此你會建議這家公司採用那一種網路架構？為什麼？
3. All transactions must display atomicity, durability, serializability, and isolation. Briefly explain each of these properties.
4. Using the Kruskal's algorithm to determine a minimum spanning tree of the following graph.



三、申論及計算題

(共 50 分)

1. Define the Internet, intranet, and extranet. How do the architectures of the Internet, intranet, and extranet differ from one another? (估分 10 分)
2. 請依機器週期 (machine cycle) 簡述中央處理器(CPU)、主記憶體和各種暫存器如何共同合作來執行指令的基本步驟。 (估分 10 分)
3. Suppose we have three items: item 1 with profit \$50, weight 5 pounds; item 2 with profit \$60, weight 10 pounds, and item 3 with profit \$140, weight 20 pounds; the capacity of the knapsack is 30 pounds. Using greedy approach to solve the 0-1 Knapsack problem based on different strategies. (估分 15 分)
4. Sort the given data set [179, 208, 306, 93, 859, 984, 55, 9, 271, 33] by the following five algorithms. (1) heap sort, (2) quick sort, (3) radix sort, (4) merge sort, and (5) bubble sort. (估分 15 分)