

南華大學九十四學年度 碩士班 招生考試試題卷

系所別：資訊管理學系碩士班

科目編號：A1-19-1

科目：計算機概論

試題紙第 1 頁共

1. If $(130)_x = (28)_{10}$, find the value of x . (x is a positive number) (8%)
2. Which of the following Boolean expression is incorrect? (+ disjunction, * conjunction). (8%)
 - (a) $(a+b)(a+\bar{b}) = a$
 - (b) $ab + \bar{a}c + bc = ab + \bar{a}c$
 - (c) $\overline{(a+b)} = \bar{a} * \bar{b}$
 - (d) $a + \bar{a} * b = \bar{a} + b$
 - (e) none of the above.
3. What is the difference of internal fragmentation and external fragmentation? (10%)
4. What is deadlock in database transaction processing? Give an example to explain it. (15%)
5. (a) In computer networking, what are the seven protocol layers in the OSI reference model? (15%)
 - (b) Which protocol layer is defined to handle routing? (3%)
 - (c) Which protocol layer is defined to deal with how signals (bits) are transmitted? (3%)
6. Given the following list: 14, 15, 5, 9, 8, 19, 2, 6, 16, 4, 20, 17, 10, 13, 7
 - (a) Please construct a binary search tree. (10%)
 - (b) Please traverse this tree in postorder. (10%)
 - (c) How many leaf nodes in this tree? (3%)
 - (d) What is the level of this tree? (3%)
 - (e) Please give an appropriate node representation for this binary search tree in C language. (4%)

7. Let m and n be two positive integers. Consider the following function *MAZE*.

```

void MAZE(int m, int n) {
    int temp, result;
    temp = m;
    result = 0;
    while (n != 0) {
        if ((n % 2) == 1) result = result + temp;
        temp = temp + temp;
        n = n / 2;
    }
    printf("%d", result);
}
    
```

- (a) What will be outputted if we perform *MAZE*(12, 11)? (5%)
- (b) What's the purpose of the above procedure? (3%)