



臺中健康暨管理學院
九十三年學年度碩士班招生考試試題紙

系所別	組別	考試科目	考試日期	時間	備註
生物資訊研究所碩士班	--	離散數學	93.5.3	13:30-15:10	共一頁

共十題，每題十分，共計一百分

1. Estimate the number of arithmetic operations necessary to evaluate the

following product of matrices $\begin{bmatrix} 1 & -1 & 2 \\ 3 & 1 & 4 \\ 6 & -1 & 5 \end{bmatrix} \begin{bmatrix} 2 & -2 & 8 \\ 5 & 5 & 1 \\ 0 & 6 & 4 \end{bmatrix}$. (10%)

2. Show that K_6 is not planar. (10%)
3. Using mathematical induction, prove that $n! > n^3$ for $n \geq 6$. (10%)
4. How many spanning trees does $K_{2,n}$ have? (10%)
5. What is the value of $\sum_{k=1}^{11} k \cdot 3^k$? (10%)
6. How many positive integer less than 9000 satisfy $\gcd(n, 9000)=1$, where $\gcd(x,y)$ denotes the greatest common divisor of x and y . (10%)
7. What is the last digit in 13^{2004} ? (10%)
8. Write a multiplication table for Z_5 . (10%)
9. Find the general solutions of the recurrence relations of the following:
 $2a_n = 7a_{n-1} - 3a_{n-2} + 2^n$ (10%)
10. For real valued functions f and g , find $(f \circ g)(x)$ and $(g \circ f)(x)$
when $f(x) = \sqrt{x^2 + 2}$ and $g(x) = x^2 + 3$. (10%)

公告用