

臺中健康暨管理學院

九十三學年度大學部轉學招生考試試題紙

學 系 別	考試科目	考試日期	時 間	備 註
資訊科學與應用學系三年級	資料結構	93.8.7	10:20-12:00	

*答題須知：請按照順序回答，並於答案卷上標明題號。答案請簡明扼要！！未按照上述方式答題者，該題不予計分。

- (a) $*\&a=25$; Explain the meaning of the above statement. (5%)

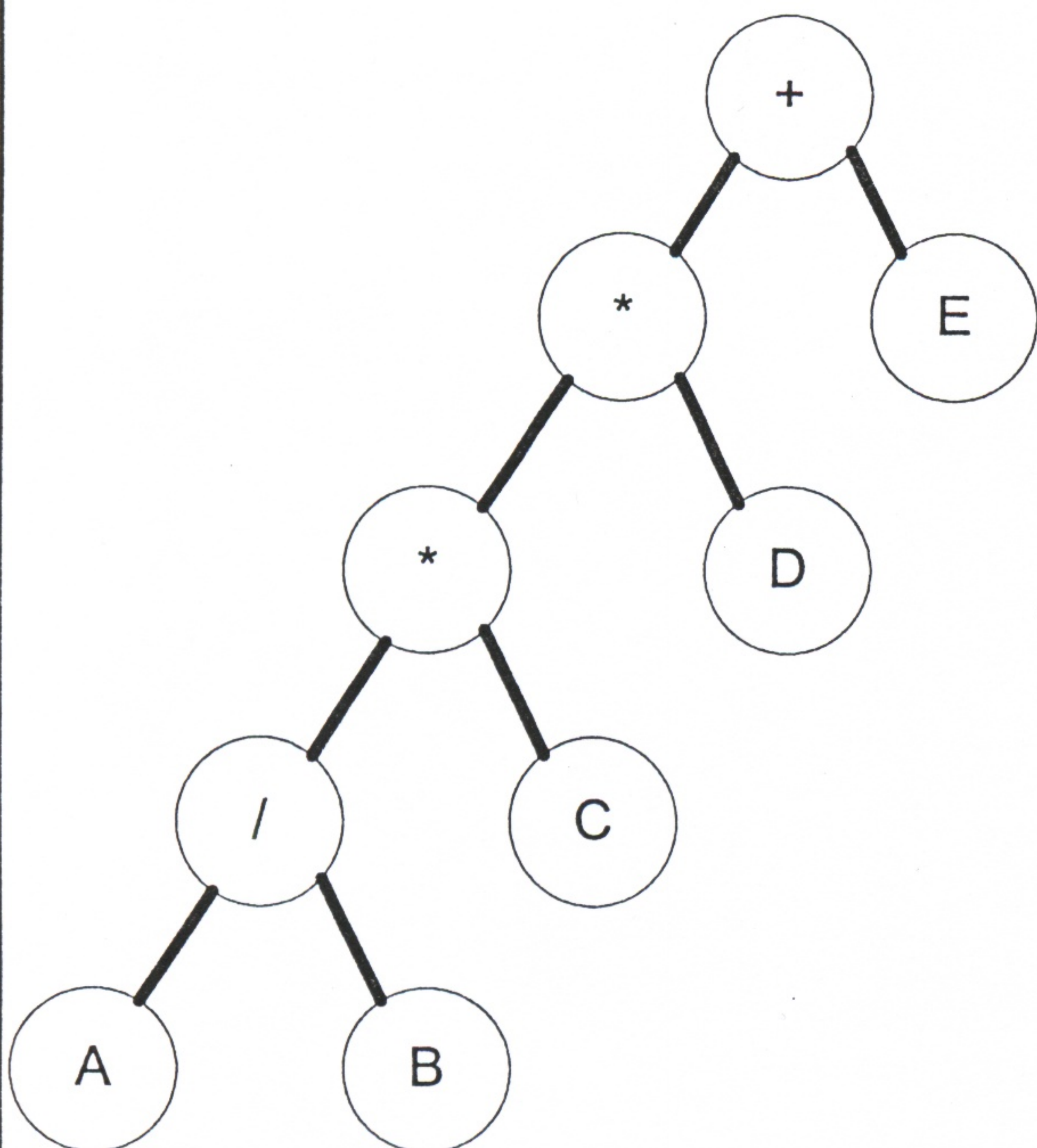
(b) $\text{int } a=12$;
 $\text{int } *b=\&a$;
 $\text{int } **c=\&b$;

What is the meaning of $*c$ and $**c$? (10%)
- Compute the failure function of the following string patterns : abaabaabb. (10%)
- (a) Write the status of the list $F=(12, 2, 16, 30, 8, 28, 4, 10, 20, 6, 18)$ at the end of each phase of **QuickSort** algorithm. (20%)

(b) Use **heap sort** to sort the list $F=(12, 2, 16, 30, 8, 28, 4, 10, 20, 6, 18)$. Write down each phase. (10%)
- Ackermann's function $A(m,n)$ is defined as follows :

$$A(m,n) = \begin{cases} n+1 & , \text{ if } m=0 \\ A(m-1,1) & , \text{ if } n=0 \\ A(m-1, A(m,n-1)) & , \text{ otherwise} \end{cases}$$

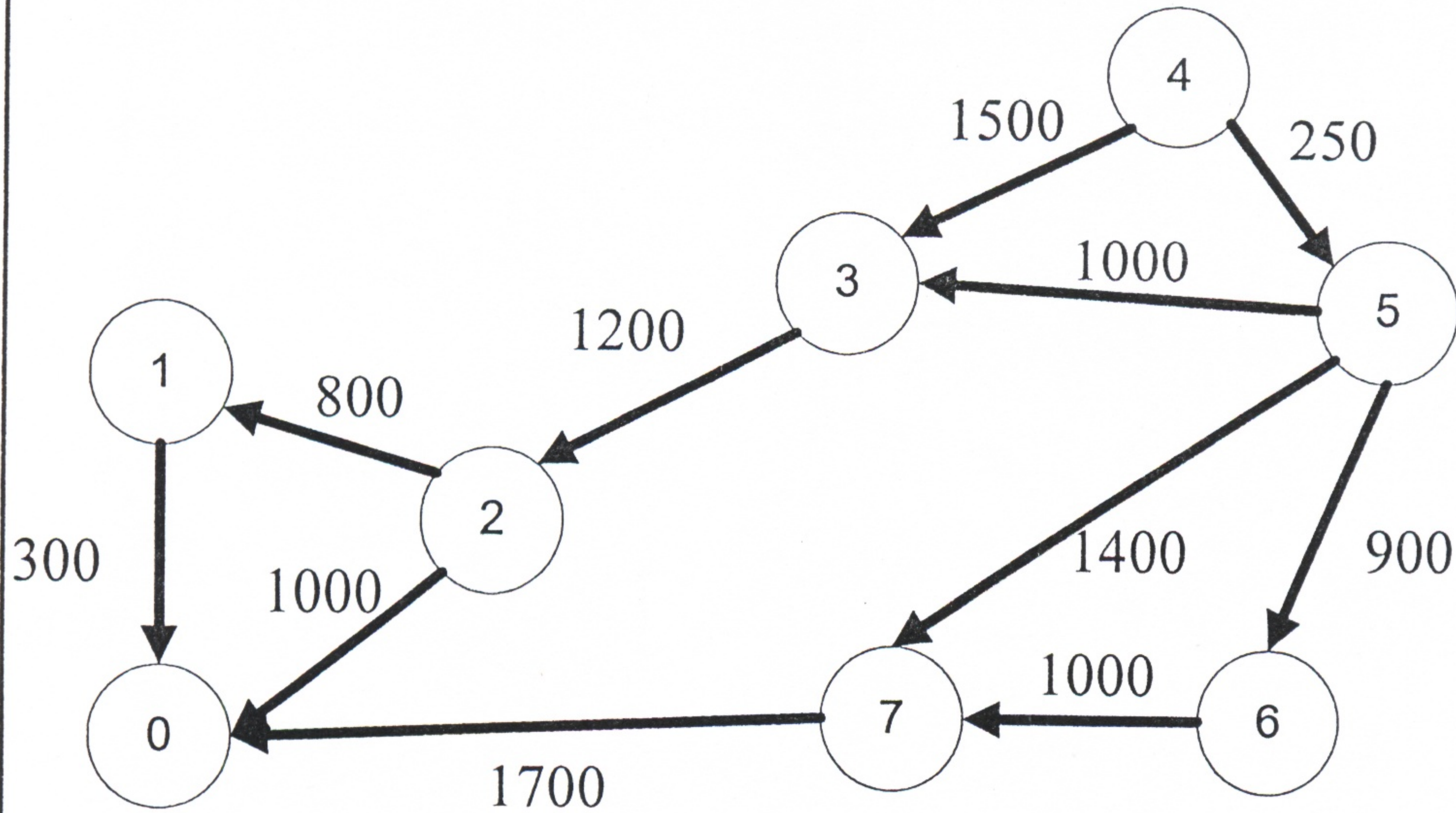
Write a recursive and a non-recursive algorithm to compute the Ackermann's function. (20%)
 Hint: Use stacks to write the non-recursive version.
- What is the number of ancestors of the n th-level nodes in a binary tree? Justify your answer.
 Note that the root's level is 0. (10%)
- What is the output for the **postorder** traversal of the following binary tree? (5%)



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7. Explain step by step how to get the shortest path from the source vertex 4 to the vertex 0 (10%)



公告用