

國立臺灣科技大學

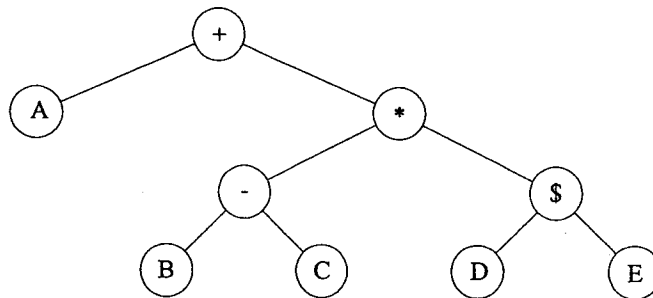
九十四學年度博士在職專班招生考試試題

系所組別：電機工程系博士在職專班丙組

科目：計算機概論

※ 總分為100分

1. Use the simplest statement to differentiate the nature of DRAM (dynamic random access memory) and flash memory. There are two types of flash memory, NAND flash and NOR flash, that are conventionally used for different purposes. State the major differences in nature of these two types of flash memory. (20%)
2. Briefly state the concept of instruction pipelining and explain why it can improve CPU performance. Use diagram to explain if possible. (15%)
3. A DMA module is transferring characters to memory using cycle stealing, from a device transmitting at 800,000 bps. The CPU is fetching instructions at the rate of 10 million instructions per second (10 MIPS). By how much will the processor be slowed down due to DMA module? Assume that the width of the data bus is 32 bits and each instruction is 32-bit long. (15%)
4. For the following binary tree, give its related *infix*, *prefix* and *postfix* by using *traversal*; (15%)



5. Find a *Binary Search Tree* by reading a serial of numbers in sequence that the numbers are 78, 48, 39, 11, 91, 51, 63, 18, 25, and 13. (15%)
6. Please construct a minimum cost spanning tree for the undirected connected graph with the cost beside each link shown below by
 - (a) Kruskal's algorithm without any constrain. (10%)
 - (b) Kruskal's algorithm with the constrain that a branch contains at most two links. (10%)
 (Note that mark the sequence number beside each link)

