

系所組別： 電機工程學系在職專班丙組

考試科目： 計算機概論（專班）

考試日期： 0306，節次： 3

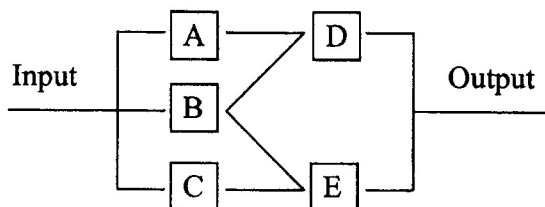
※ 考生請注意：本試題 可 不可 使用計算機

Total 100 points

1. (10%) Transfer a hexadecimal (十六進位) number, (5D9B7.1A), to an octal (八進位) number.
2. (10%) What is direct recursion? What is indirect recursion? Please give each an example.
3. (10%) What is a cross-compiler?
4. (10%) Name four necessary conditions for deadlocks.
5. (10%) What data structure will you use for representing binary trees? Array or linked list? Which one is better? Why?
6. (10%) Compare three hub devices that can connect networks. Passive hub, active hub, and switched hub.
7. (10%) Transfer an infix expression to a prefix expression. Note: ^ 代表指數.

$$8 * 6 / (5 + 4) - 7 * (8 ^ 3 ^ 4 + 1) / 2$$

8. (15%) Consider the reliability block diagram of the system shown below. The system functions correctly if there is a path from input to output that goes through A, B, or C and also through D or E. Note: paths A→E and C→D are not valid. Given independent probabilities of failure of each of the units, what is the probability that the system works correctly (probabilities of failure: P_A, P_B, P_C, P_D, P_E)?



9. (15%) Write an algorithm to compute all prime numbers (質數) less than 1000.