

共 8 大題。總分 100 分。

1. [10 points] A market has X different items $\{a[1], a[2], \dots, a[X]\}$. How many ways can we buy Y items from this market?
2. [15 points] As above. Write an algorithm to generate all these ways.
3. [10 points] Sets $A=\{\}$ and $B=\{A, 0\}$. What is $C=\{\text{the subsets of } B\}$?
4. [10 points] Does there exist an integer X, Y, Z such that $30X + 18Y + 6Z = 214$? Prove or show it.
5. [15 points] How can we measure exactly one ounce by two containers with capacities 42 ounces and 55 ounces respectively.
6. [15 points] How many "X" will be printed by the following procedure: for (A=1; A<5; A++) for (B=A; B<9; B++) for (C=A; C<B+1; C++) printf("X");
7. [15 points] Find a logic formula (using the connectives \wedge, \vee, \neg) that is equivalent to "if $(A \wedge B)$ then {if C then $\neg D$; } else E ;".
8. [10 points] As above. Prove that "if $[(p \rightarrow q) \wedge \neg p] \rightarrow \neg q$ is valid".

試題隨卷繳回