

所 別： 電子工程技術研究所
學程別：

組別： 計算機組

科目： 計算機組織

1. 解釋名詞 [20pts]
 - (a) Spilling Registers
 - (b) Exception
 - (c) Translation Lookaside Buffer
 - (d) Spatial Locality
2. The IEEE754 floating point standard use 1 bit for sign, 8 bits for exponent and 23 bits for significant. The bias for exponent is 127. What decimal number is represented by this word? 1 1000001 01000000000000000000000. [10pts]
3. It is known that every three years the number of transistors in the most advanced CPU of the times increase 4 times. And the performance of a CPU is proportional to the number of transistors in it and its maximum clock rate. In 1996, x586/200 CPU is introduced with 3 million transistors and a clock rate of 200MHz. If in year 2002 x1486/800 is introduced with a clock rate of 800MHz, how many times faster will it be compared to x586/200? [10pts]
4. A computer has 200 instructions and a micro-program of 800 lines.
 - (a) If we design the control circuits using finite state machine method, estimate the number of states we will have. [8pts]
 - (b) What are the advantages of micro-programming method in general? [12pts]
5. Give one software and one hardware methods to solve data hazard problem in a pipelined datapath. [20pts]
6. What are the steps to handle an instruction cache miss? [20pts]