國立臺北科技大學 101 學年度碩士班招生考試

系所組別：2210 電腦與通訊研究所甲組

第二節 計算機結構 試題

注意事項：

1. 本試題共四題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. There are many different ways to evaluate the performance of a computer.
(1) Please explain the difference between Response Time and Throughput. (10 points)
(2) Please give an example and explain the relations between Response Time and Throughput. (10 points)

2. The IEEE 754 standard deals with the representation of floating point numbers in computers.
(1) Please describe the IEEE 754 single and double precision binary floating-point format. (10 points)
(2) Please explain why the biased notation is used in IEEE 754 standard. (10 points)
(3) Please show the IEEE 754 binary representation for the decimal floating point number -0.1875 in double precision. (10 points)

3. There are two basic write policies when writing to the cache: write-back and write-through.
(1) Please explain the advantages and disadvantages between a write-through policy and a write-back policy. (10 points)
(2) Please explain which policy cannot be used in a virtual memory system. (10 points)

4. Hazards are serious problems with the instruction pipeline in computer architectures that potentially result in incorrect computation. Please describe and give examples of three types of hazards.
(1) Data hazard (10 points)
(2) Structure hazard (10 points)
(3) Control hazard (10 points)