

國立臺灣師範大學 101 學年度碩士班招生考試試題

科目：計算機結構

適用系所：應用電子科技學系

注意：1.本試題共 1 頁，請依序在答案卷上作答，並標明題號，不必抄題。2.答案必須寫在指定作答區內，否則依規定扣分。

1. (15 分) Please design an integer division hardware and explain how it can work.
2. (10 分) Please explain the approaches to dynamic branch prediction for reducing control hazards in a pipeline CPU.
3. (10 分) Please explain how to handle exceptions in a pipeline CPU?.
4. (10 分) Please explain the hardware for processing function calls (or procedures) inside a CPU.
5. (10 分) Please describe the architecture of GPU (Graphic processing unit).
6. (共 10 分, 每小題 5 分) Please explain the following terms related to cache memory.
 - (a) Why the cache memory is usually split into instruction cache and data cache?
 - (b) Why the cache memory may be split into multiple levels?
7. (共 14 分, 每小題 7 分) Please explain the following terms related to virtual memory.
 - (a) Page table
 - (b) Translation look-aside buffer
8. (共 21 分, 每小題 7 分) Please explain the functions of the following modules used in dynamic pipeline scheduling.
 - (a) Reservation station
 - (b) Re-order buffer
 - (c) Commit unit