

Name.....Pnr.....

Programme (circle the appropriate):
DV F MN Fristående Distance

Exam, Computer Architecture

Courses 1DT157, 1DT631, 1DT720, 1TT441
Saturday 25/09/2004 at 9:00 am – 11:00 am

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Important information about this exam:

Don't forget to circle the educational programme you are following. That will make it easier for us to report the results.

Answer every question with at most two sentences of normal length. Most questions can have even shorter answers, and some can be answered in a single word. Too long answers will mean a reduced score since what is being tested here is also the ability to discern relevant information.

Write your answer in the space immediately below each question. Do not use a separate sheet for answers.

Answers to open questions (of type "what is..." or "explain how...") must demonstrate an understanding beyond spelling out acronyms. For example, if the question is "What is DMA" the answer "Direct Memory Access" gets 0 points.

You may answer in English or in Swedish.

Note that there are questions on both sides of the sheets and that the exam begins on the other side of this sheet.

Each question can give at most 1 point. There are 30 questions in all. A pass requires 20 points, and an extra credit towards a higher grade requires 25 points.

Good luck!

1. Name three distinguishing features of a **RISC** architecture.
2. What is -3 in 16 bit **two's complement**?
3. Name one advantage of **DRAM** over SRAM.
4. What is a **PCI** bus ?
5. What is the difference between an **interrupt handler** and an **interrupt controller**?
6. Explain how an operand is found if the addressing method used is **register indirect addressing**.
7. Why is it not possible to have an **underflow** in integer arithmetic?
8. What does the **assembler** do?
9. The **difference engine** was built by whom and in what century?.
10. What can cause a **pipeline stall**?

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11. What is the difference between an **opcode** and an assembler instruction?
12. What is an **array processor**?
13. What is **CYMK**?
14. A **multiplexer** with 4 control signals has how many different outputs?
15. Name one strategy for avoiding **RAW** dependencies.
16. The **program counter** is really not a counter but a pointer . To what does it point?
17. Give the **truth table** of a one-bit comparator.
18. Explain why **spatial locality** is important for cache memories.
19. Give one example of a strategy for **dynamic branch prediction**.
20. What is meant by the **head** in a hard disk?

21. Explain the **daisy chaining** mechanism to achieve bus arbitration.

22. What is an **UART**?

23. Fill in the right word: Some **latches** are level triggered, other latches are _____ triggered.

24. How do you express $A+(B-C)$ in **reverse Polish notation**?

25. One way to do input is for the processor to engage in **busy waiting**. Name a better way that allows more efficient use of the CPU.

26. What is the difference between **L1** and **L2 cache**?

27. Name two things that normally occur in the **data path** of a CPU.

28. Explain what is meant by **circuit equivalence**.

29. What is a **unified cache**?

30. In what way is a **half adder** different from a full adder?