

Revision Sheet

A-Level Computer Science · Unit 15 Hardware and Virtual Machines

12 vocabulary items · 23 marks of exam questions (4 questions)

Part 1 · Vocabulary review (12 items). The terms this unit is examined on most. Mark it yourself from the answer key.

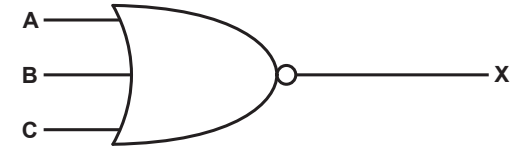
Section A · Chinese to English

Write the English word.

1. _____ [1]
2. _____ [1]
3. _____ [1]
4. _____ [1]
5. _____ [1]
6. _____ [1]
7. _____ [1]
8. _____ [1]
9. _____ [1]
10. _____ [1]
11. SR _____ [1]
12. JK _____ [1]

Part 2 · Exam questions (23 marks, 4 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

13 (a) This logic circuit represents the Boolean expression: $X = \overline{A + B + C}$



Complete this truth table for the given logic circuit.

A	B	C	X
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

[1]

(b) Apply De Morgan's laws to the expression: $X = \overline{A + B + C}$

$X =$ [1]

(c) Simplify the following expression using Boolean algebra.

Show all the stages in your simplification.

$$T = X.Y.Z + X.\overline{Y}.Z + \overline{X}$$

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..... [3]

14 There are four basic categories of computer architecture. Single Instruction Single Data (SISD) is one architecture.

Identify the **three other** categories of computer architecture.

Describe each category that you identify.

Architecture 1

Description

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Architecture 2

Description

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Architecture 3

Description

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[6]

15 Reduced Instruction Set Computers (RISC) and Complex Instruction Set Computers (CISC) are two types of processor.

(a) Describe what is meant by **RISC** and **CISC processors**.

RISC

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CISC

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[4]

(b) Identify **two** differences between RISC and CISC processors.

1

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2

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[2]

16 A virtual machine is used to emulate a new computer system.

Describe **two** benefits and **one** limitation of using a virtual machine for this purpose.

Benefit 1

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Benefit 2

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Limitation

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