

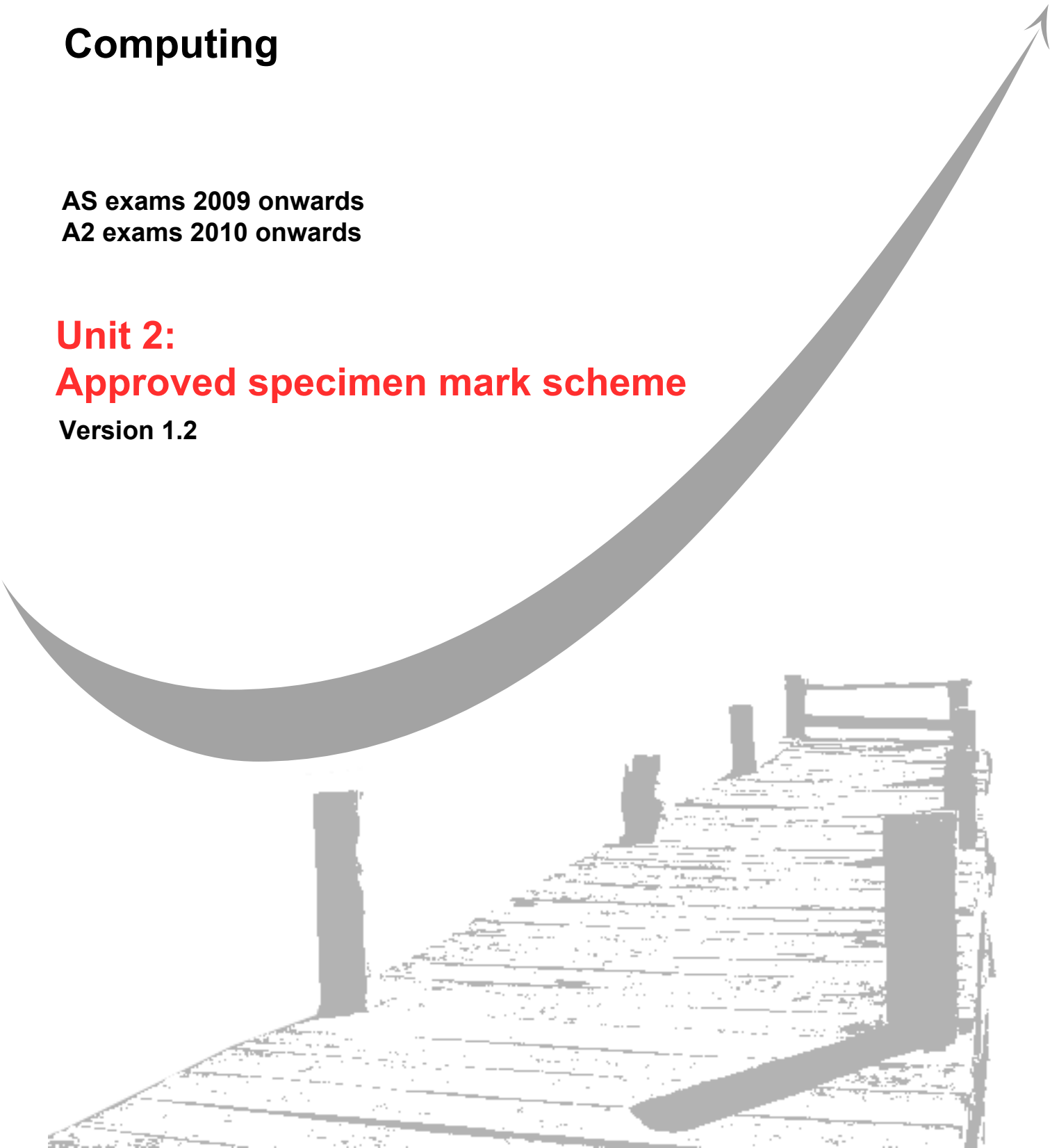
**GCE**  
**AS and A Level**

**Computing**

**AS exams 2009 onwards**  
**A2 exams 2010 onwards**

**Unit 2:**  
**Approved specimen mark scheme**

**Version 1.2**





## **General Certificate of Education**

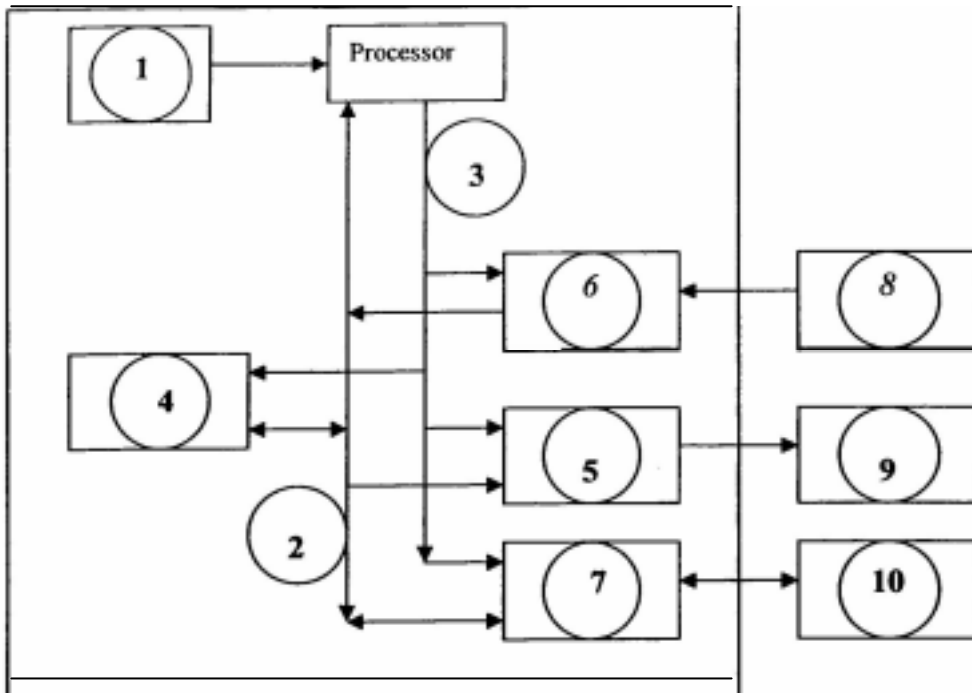
# **Computing**

**COMP2      Computer Components, The Stored  
Program Concept and The Internet**

# **Specimen Mark Scheme**



3



1 mark each for 1,2,3,4;

Max:

1 mark for both 5 & 9;

1 mark for both 7 and 10;

4

1

1

6

6

- 4 page printer;  
 drum coated with chemicals;  
 which become conductive when light shines;  
 laser writes image onto drum;  
 drum rotates;  
 charged parts attract toner;  
 paper has higher charge than drum;  
 toner transferred to paper;  
 paper heat-treated to fix image;  
 max 4

4

- 4 marks** Candidate demonstrates a clear understanding of how a laser printer produces results with reference to most, or all, of the points listed above.  
 Text is legible.  
 There are few, if any, errors of spelling, punctuation and grammar.  
 Meaning is clear  
 The candidate has selected and used a form and style of writing appropriate to purpose and has expressed ideas clearly and fluently.  
 Sentences and paragraphs follow on from one another clearly and coherently.  
 Appropriate, specialist vocabulary has been used.
- 3 marks** Candidate demonstrates an understanding of how a laser printer produces results with reference to some of the points listed above.  
 Text is legible.  
 There may be occasional errors of spelling, punctuation and grammar.  
 Meaning is clear.  
 The candidate has, in the main, used a form and style of writing which is appropriate for purpose, with occasional lapses and has expressed ideas clearly and reasonably fluently.  
 Candidate has used well-linked sentences and paragraphs.  
 Appropriate, specialist vocabulary has been used.

- 2 marks** Candidate demonstrates a limited understanding of how a laser printer produces results with reference to few of the points listed above.  
Text is legible.  
There may be some errors of spelling, punctuation and grammar, but not to cause problems in the reader's understanding.  
The candidate has used a form and style of writing which is not appropriate for purpose. Sentences and paragraphs, if used, may not always be well-connected. Information may sometimes stray from the point or be weakly presented.  
Limited use, if any, of appropriate specialist vocabulary.
- 1 mark** Candidate does not demonstrate a clear understanding of how a laser printer produces results with reference to very few of the points listed above.  
Text is legible.  
There are many errors of spelling, punctuation and grammar, which suggests a weakness in these areas.  
The candidate has used a form and style of writing which has many deficiencies.  
The candidate has not provided a description or strays from the point.
- 5 (a) (i)** Halve the time to perform an instruction; **1**  
A Instructions performed more quickly;
- (ii)** Increase the number of bits transferred at any one time from 16 to 32 **1**  
//Double the number of bits transferred at any one time;
- (iii)** Increase the number of memory addresses; **1**  
from  $2^{24}$  to  $2^{40}$  **1** **2**

Fetch	Memory data register	Holds current instruction which has been fetched from memory before passing it to CIR;
Decode	Current Instruction Register	Holds instruction while it is being decoded;
Execute	Memory Address Register	Holds address of location where result is to be stored / Holds 1002;

**3****Total 7**

6 (a) OR;

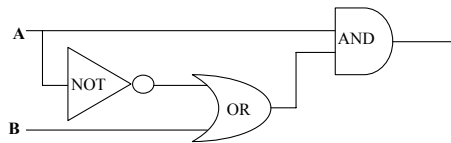
1

<i>Senses heat</i>	<i>Senses smoke</i>	<i>Alarm</i>
0	0	0
0	1	1
1	0	1
1	1	1

1 mark for senses smoke column filled in so that every combination with Senses heat column exists;  
1 mark for applying OR correctly;

2

(b)(i)



1 mark for each gate correctly linked to

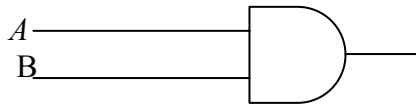
MAX3

(ii)

$$\begin{aligned}
 & \text{A AND (NOT A OR B)} \\
 & = (A \cdot A) + (A \cdot B) \quad ; \text{ by Distributive law} \\
 & = 0 + (A \cdot B) \quad ; \\
 & = (A \cdot B) \quad ;
 \end{aligned}$$

3

(iii)



1

(iv) The circuit for a simplified Boolean expression requires fewer components than a circuit for the un-simplified expression.

1

**Total 11**

- 7 Updating the look of a site is easier (If you change one style sheet, all related HTML pages will change);  
Pages download faster;  
Less coding;  
Look of pages all consistent;  
Fewer errors due to editing multiple pages;
- MAX 3 3**
- 8 (a) The Computer Misuse Act; **1**  
The Copyright, Design and Patents Act (1988); **1**  
The Data Protection Act (1998); **1**  
Regulation of Investigatory Powers Act 2000; **1** **4**  
*If two answers given – mark first response only*
- 9 (a) when a user pays the decryption code will be made available to them,  
Only authorised users can unlock the file;
- Max 1**
- (b) arguments for DRM:  
to ensure creators of music/film/software get paid for their work;  
to protect the copyright of artists/programmers;  
arguments against DRM:  
competing systems are not compatible; (For example, users of the  
Napster service cannot play a track on the iPod.)  
Changing music download providers or portable players could mean  
already purchased tracks are unusable.  
Because tracks have to be authenticated to play, they may also become  
unusable if a download company goes out-of-business;  
Digital download companies can lock consumers into their service;  
DRM is an imperfect technology. Hackers and software companies  
engage in a constant back-and-forth battle where any given system is  
broken, patched, and broken again; (Example DVD copy prevention  
was cracked in part by the then 15-year-old Jon Lech Johansen. )  
Art is often a collaborative process that builds off the work of others.  
For digital media, this is referred to as the “rip, mix, burn” culture.  
As music, film, and literature is increasingly expressed in digital  
form, many worry that restrictions on the use of this content will  
limit creativity;
- Max 2**

**2 marks** Candidate has provided a detailed argument in favour of, or against DRM, including two arguments in support of their opinion taken from the list above.  
Text is legible.  
There are few, if any, errors of spelling, punctuation and grammar.  
Meaning is clear  
The candidate has selected and used a form and style of writing appropriate to purpose and has expressed ideas clearly and fluently.  
Sentences and paragraphs follow on from one another clearly and coherently.  
Appropriate, specialist vocabulary has been used.

**1 mark** Candidate has stated whether he/she is in favour, or against, DRM and has presented one argument in support of their opinion taken from the list above.  
Text is legible.  
There are some errors of spelling, punctuation and grammar but the meaning is clear.  
The candidate has selected and used an appropriate form and style of writing.  
Sentences and paragraphs may not always be well-connected. Information or arguments may sometimes stray from the point or information may be weakly presented.

**10 (a)** to ensure the domain name is unique // to allocate a unique IP address to the domain **1**

**(b)** Domain Name Servers store databases of domain names and their allocated IP addresses;  
IP addresses can be looked up from DNS databases located on the Internet;

**Max 1**

**Total 2**

**11 (a)** Client workstation computers ;  
are provided with a service from some central server ;  
all processing required is done by the server ;  
the processing results are then returned to the client ;

**Max 3**

**(b) (i)** Set of rules about the way two devices communicate ; **1**

**(ii)** Alice uses SMTP to send her message;  
to the e-mail server of her ISP;  
The ISP looks at the Domain Name to find the servers accepting messages for that domain ;  
The Domain Name is (the second) part of the destination address;  
The message is delivered to the mail box of the user;  
Bob logs on through the Internet to his ISP;  
and collects his message using POP3;

**Max 5**

**Total 9**



- 4-5 marks** Candidate has provided a detailed explanation of how Alice's message can be picked up with reference to the main protocols involved demonstrating a clear understanding of this subject area.  
Text is legible.  
There are few, if any, errors of spelling, punctuation and grammar.  
Meaning is clear  
The candidate has selected and used a form and style of writing appropriate to purpose and has expressed ideas clearly and fluently.  
Sentences and paragraphs follow on from one another clearly and coherently.  
Appropriate, specialist vocabulary has been used.
- 2-3 marks** Candidate has provided a limited explanation of how Alice's message can be picked up with reference to some of the main protocols involved, demonstrating some understanding of this subject area.  
Text is legible.  
There may be occasional errors of spelling, punctuation and grammar.  
Meaning is clear  
The candidate has, in the main, used a form and style of writing which is appropriate for its purpose, with occasional lapses.  
The candidate has expressed ideas clearly and reasonably fluently. Candidate has used well-linked sentences and paragraphs. Information or arguments are generally relevant and well structured.
- 1 mark** Candidate has provided a weak explanation which does not demonstrate a clear understanding of the main protocols involved. Information may sometimes stray from the point or information be weakly presented and not be fluent.  
There may be some errors of spelling, punctuation and grammar.  
The candidate has used a form and style of writing which has many deficiencies.  
Sentences and paragraphs may not always be well-connected.