

UNIVERSITY OF LONDON

GOLDSMITHS COLLEGE

Foundation Year Examination 2011

COMPUTING AND INFORMATION SYSTEMS

IS50004A (FY04)

Study Skills and Introduction to the Use of Computers

Duration: 1 hour 30 minutes

Date and time:

There are three questions in this paper. You should answer them all. There are 100 Marks available on this paper. The marks for each part of a question are indicated at the end of the part in [.] brackets.

Electronic calculators must not be programmed prior to the examination. Calculators which display graphics, text or algebraic equations are not allowed.

**THIS PAPER MUST NOT BE REMOVED FROM THE
EXAMINATION ROOM**

QUESTION 1

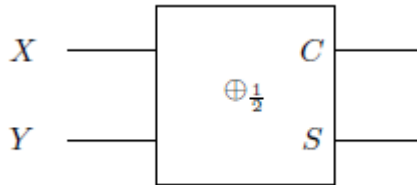
- (1) Given the 8-bit binary sequence 10010101_2 . Find its corresponding decimal (base 10), hexadecimal (base 16) and octal (base 8) values.

[8 Marks]

- (2) Explain the difference between half-adder and full-adder.

[6 Marks]

- (3) This diagram represents a half-adder $X + Y \rightarrow S; C$.

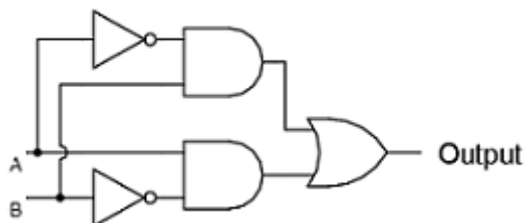


For this half-adder, where S represents the sum from the half-adder and C the carry, copy and complete the truth table below and hence, or otherwise, draw a circuit diagram for a half-adder.

X	Y	S	C
0	0		
0	1		
1	0		
1	1		

[13 Marks]

- (4) Given the following Logical circuit with two inputs A and B:



For this logical circuit copy and complete the truth table below.

A	B	output
0	0	
0	1	
1	0	
1	1	

What can you say about this circuit and the Exclusive-OR gate (XOR)?

[13 Marks]

QUESTION 2

(1) Which is stored as a binary file?

- (a) programs
- (b) pictures
- (c) sound
- (d) all the above

[4 Marks]

(2) Compare the following type of memories in terms of size, speed and cost.

- main memory
- magnetic disc
- optical disc
- cache memory
- cpu registers

[5 Marks]

(3) Explain why the cache memory is needed.

[5 Marks]

(4) Briefly describe the 4-layer TCP/IP or Internet model of network protocol architecture.

[8 Marks]

(5) Given the following IP address 135.108.48.16:80, find the class the network belongs to, the network address, the host address and the application

[8 Marks]

QUESTION 3

(1) Explain the role of an operating system.

[6 Marks]

(2) Draw the state diagram of a process from its creation to termination, including all transitions.

[6 Marks]

(3) One of the main functions of Operating Systems is memory management. Explain the concepts of swapping, simple paging and demand paging, and list their advantages and disadvantages.

[10 Marks]

(4) Describe in detail the network traffic sent from the

- web client; and
- web server

in a successful request for a web page using the Hypertext Transfer Protocol.

[8 Marks]