

UNIVERSITY OF EDINBURGH
COLLEGE OF SCIENCE AND ENGINEERING
SCHOOL OF INFORMATICS

Computer Literacy 1

Degree Examination

Date: 15 December 2005
Time: 09:30 – 11:00 (one and a half hours)
Place: Playfair Library

Board of Examiners
Chair: M.R. Jerrum
External Examiner: Robert Irving

Instructions to Candidates

Attempt **ALL** questions in part 'A' and **ONE** question from part 'B'.

Marks for questions are indicated in brackets after each question. Each question is worth 20 marks and the total for the exam is 100.

Candidates in the third or later year of study for the degrees of MA(General), BA(Relig Stud), BD, BCom, BSc(Social Science), BSc(Science) and BEng should put a cross (×) in the box on the front cover of the script book.

Part "A"

Answer ALL questions from this section

1. (a) Describe three of the key stages and developments that have led to modern Computing & Information Technology. [3 marks]
 - (b) Where might you find *caches* and what do they do? [3 marks]
 - (c) List the factors you would consider when choosing a laptop computer. [3 marks]
 - (d) In what ways does the *file system* support use of a computer? [2 marks]
 - (e) Explain two of the ways in which computer graphics can aid understanding. [4 marks]
 - (f) Describe three problems that have to be overcome before two computers can exchange data over a point-to-point link. [3 marks]
 - (g) Give an example of
 - i. a bus network
 - ii. a tree network. [2 marks]
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- 2 (a) What is VoIP ? [2 marks]
 - (b) My home network supports several wired PCs plus a laptop with WiFi. From my laptop at home I can double-click on an icon representing a file within the School of Informatics and load it into Word. Identify as many hardware and software components as you can that exist between Word on my home PC and the file in Informatics. Choose two network components and explain what they do. [6 marks]
 - (c) What is a 'beta release' ? [1 mark]
 - (d) What do you understand by the term "phishing"? How is it done? [2 marks]
 - (e) As well as content, designers of a successful Web site need to consider its *Function, Style* and *Structure*. Choose any one of these and explain how doing it well or badly will affect a web site. [4 marks]
 - (f)
 - i What barriers prevent people from feeling confident in shopping over the Internet? [3 marks]
 - ii Give an example of one legal and one technical mechanism that protect on-line customers. [2 marks]

- 3** (a) What is a Motherboard, and what does it contain? [4 marks]
- (b) Describe or illustrate the key functions of
i Data mining
ii A Geographical Information System (GIS) [4 marks]
- (c) What are Classified Directories, and what are they good for? How are they related to Subject Gateways? [3 marks]
- (d) What is a bit? What is a byte? How many different possibilities can a byte express? [3 marks]
- (e) Name some active research topics in Natural Language Processing and explain why they are important. [3 marks]
- (f) What factors limit the experience of desktop videoconferencing as opposed to a real-world conversation? [3 marks]
- 4** (a) Name and describe the 3 levels of the ‘layers of abstraction architecture’ used by most DBMSs. [4 marks]
- (b) What is ‘physical data independence’? Give an example. [3 marks]
- (c) Describe a primary difference between Turing Machines (TMs) and von Neumann architecture. [3 marks]
- (d) What is the Church-Turing Thesis, and what does it tell us about the computational power of a Universal Turing Machine (UTM)? [4 marks]
- (e) What is syntax, and what is semantics? Provide an example of each type. Which is processed by a computer, and why? [4 marks]
- (f) What do you understand by the term ‘defensive programming’? [2 marks]

Part "B"

Answer ONE question only from this section

- B1.** “It’s a jungle out there”. This statement could very well describe the Internet. Describe, with reasons, the personal and technical issues one needs to be aware of before attaching a computer to the Internet and using Internet services. [20 marks]
- B2.** The IT Society is a double-edged sword. Discuss how the law, the markets, the nature of computers, networks and norms of behaviour combine to create opportunities and threats to our way of life, and how these can be kept in balance. [20 marks]
- B3.** Between the worlds of e-science, e-business and ordinary life there are many ‘models’ of how computers can be used together. These include Grid computing, pervasive computing, distributed computing, client-server working, middleware, peer-to-peer working, wired and wireless communication and so on. Compare and contrast some of these technologies using what you know of IT, illustrating your answer with suitable examples. [20 marks]
- B4.** Is Artificial Intelligence (AI) a realistic possibility? Distinguish between ‘weak’ and ‘strong’ AI, and discuss the feasibility or otherwise of the latter. In your answer consider the major achievements of AI so far and the major obstacles in its path. [20 marks]