



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (COMPUTER SCIENCE AND SOFTWARE ENGINEERING)

SCT 100: FUNDAMENTALS OF COMPUTING

DATE: Monday, 26th July, 2010

TIME: 8.00 a.m. – 10.00 a.m.

INSTRUCTIONS:

This examination is divided into Sections A, and B. Section A is **Compulsory**. Answer any **TWO** questions in Section B.

All questions carry equal marks (20 marks)

SECTION A (Compulsory)

Question One

- a) Briefly define the following terms as used in fundamentals of computer systems
(use a sketch to illustrate where necessary)

- | | |
|--------------------------|----------|
| i. Microcomputers | (1 mark) |
| ii. Application software | (1 mark) |
| iii. Operating Systems | (1 mark) |
| iv. Disk Defragmentation | (1 mark) |
| v. Computer network | (1 mark) |
| vi. Computer Security | (1 mark) |

- b) The premise that our society is different from what it would have been without the computer revolution is generally accepted. In your opinion is our society better than it would have been without this revolution? Give an example in your discussion **(2 marks)**
- c) The central processing unit is said to be the “brain” of the computer. Why do you think this is so? **(2 marks)**
- d) The historical development of the modern computer has gone through five generations. State the main electronic components used to distinguish each generation of computers? **(2 marks)**
- e) Magnetic tapes are one of the first secondary storage media to be used in computers. Why are they still necessary as part of a modern computer system? **(2 marks)**
- f) Using concise examples discuss two main benefits resulting from the increased power of modern computers. **(1 mark)**
- g) Cache memory can be used to increase the amount of work done by a computer in a given time. Explain the function of cache and how it achieves its aim. **(1 marks)**
- h) At the lowest level data operates in bits. Which are basically electrical signals. Use the knowledge you learnt about data and its transmission to convert this decimal numbers to binary
- i. 45
 - ii. 2130
- (2 marks)**
- i) As use of the computer and especially of the Internet becomes common place, cyberphobia and technophobia will be a thing of the past. However, still shrouded in this mystery is the word ‘Computer Virus’.

- i. In your opinion what is meant by a Computer Virus? Give TWO possible sources of a virus (1 mark)
- ii. What the abbreviation **CIA** stand for in computer security (2 marks)

SECTION B (Attempt Any Two)

Question Two

The functional components of a computer system include the Input, Central Processing Unit, Secondary Storage and the Output.

- a) What are the three components, which make up the Central Processing Unit? (3 marks)
- b) Describe the features which distinguish processors terms of performance. (3 marks)
- c) Briefly describe the functions of the Arithmetic and Logic Unit in the CPU. (2 marks)
- d) Explain the purpose of each of the following registers:
 - i. Memory Data Register (2 marks)
 - ii. Program Counter (2 marks)
- e) By use of a diagram show the functional components of a computer system including data flows, control flows and the flow of program instructions. (8 marks)

Question Three

- a) List and discuss any FOUR (4) consideration you would use when a computer software (4 marks)
- b) List and discuss any four benefits of using a data base (4 marks)
- c) What are four types of data held in a spreadsheet cell (4 marks)

- d) Discuss any Four(4) features of a word processor (4 marks)
- e) Discuss TWO (2) reasons why organizations are going for Enterprise Resource Planning (ERP) software (4 marks)

Question Four

- a) Lack of bandwidth is a constant problem with many data communication networks! What is meant by the term **bandwidth** and why is it important? (4 marks)
- b) Explain the difference between analogue and digital signals giving an example for each. (4 marks)
- c) Explain why it is necessary to use a modem to transmit a digital signal via a standard telephone network. (2 marks)
- d) Buffering is often used to help match speed differences in some communication networks. Explain the term and how this process works. (3 marks)
- e) A network can be described in term of its physical or logical layout. With the aid of diagrams, discuss the features of the bus and tree topologies, providing the advantages and disadvantages of each. (3 marks)
- f) When perfected Voice input will obviously lead to the demise of the keyboard! Make up **TWO** convincing arguments one for and against this idea. (4 marks)

Question Five

- a) Auxiliary or backing storage devices are normally described as Mass Storage devices. What is **Mass Storage**? Give two examples of such devices. (4 marks)
- b) Explain the terms “**Data Transfer**”; “**Access Time**” and “**Direct Access**” with regard to Computer disks. (6 marks)

- c) A computer system needs both primary and secondary storage in order to function efficiently. Provide the rationale for secondary storage, giving at least 4 (FOUR) advantages it provides. **(6 marks)**
- d) What are the main differences between Hard disks and Floppy disks? **(4 marks)**