TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING/BUILDING &
CONSTRUCTION ENGINEERING

SMA 2174: INTRODUCTION TO COMPUTER SCIENCE

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2013
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (Compulsory)

a) An information system is to be installed in a bus station. There will be a number of terminals for use by passengers who will be able to make enquiries about times of buses and the stops that they will make on the journey. The terminals will be in the open air. The terminals will be networked with a server in the main office. State a peripheral hardware configuration for this system giving reasons for your answer. **(8 marks)**

b) A shopkeeper uses a stand-alone computer for producing:
  (i) Order forms for sending to suppliers
  (ii) Records for sales and purchases as evidence for the taxation authorities
  (iii) Leaflets advertising special offers

The computer has a head drive, a CD-RW drive and a DVD drive. State a different use, by the shopkeeper for each of these three storage media. In each case say why it is appropriate for that use. **(6 marks)**

c) An examination centre holds data about the candidates at that centre. The data held is:
    (i)   4 digit candidate number
    (ii)   Candidate name
    (iii)   Gender
    (iv)   Date of birth
    (v)   Number of subjects entered

There are 100 candidates entered by the centre, the expected size of the size of the file is 7.5 Kbytes. State a suitable medium for storing a back-up copy of the candidate file, giving a reason for your answer. **(6 marks)**

d) Amina is an architect. She desires to buy a laptop that she can use for his architectural work. Explain how you would advice Amina on the system performance issues. **(6 marks)**

e) A firm offers a service to potential customers whereby the firm's representative calls at the customer's house and produces an image of what the proposed building improvements will look like. Explain how this service carried out. Include reference to the hardware and software required. **(4 marks)**

Question Two

a) Differentiate between a bit and a byte **(2 marks)**

b) Give **TWO** reasons why the binary number system is utilized for modern electronic digital computers. **(2 marks)**

c) Most operating systems include several programs that can be used to manage, protect data and improve the performance of the computer. Briefly discuss any FOUR management maintenance programs (processes) that windows OS provide to keep the computer in top working condition. **(8 marks)**

d) State the importance of the following tools: **(8 marks)**
    (i)   Control panel
    (ii)   Windows firewall
    (iii)   Disk manager
    (iv)   Windows explorer

Question Three

a) Name the major technologies that distinguish the computer generations (i.e. 1st to 5th)
(5 marks)

b) A supermarket has a number of points of sales (POS) terminals. State TWO input devices and one output device that would be found at each POS terminals, describing what they are used for.
(5 marks)

c) Briefly explain the following categories of programs with an example of each:
    (i)   Word processor
    (ii)   Spreadsheet
    (iii)   Database system
    (iv)   Presentation package

(v) CAD package **(10 marks)**

Question Four

a) A multinational organization has offered to donate computers to your organization. The Board of Governors has requested you to advice on the operating system to be used by providing answers to the following questions.

(i) What is an operating system? **(2 marks)**

(ii) Briefly explain any **THREE** functions of an operating system **(6 marks)**

b) A member of the board has heard of windows file systems.

(i) Define windows file system **(2 marks)**

(ii) Bring out clearly the **TWO** types of file systems supported by windows and recommend with supporting the best the organization can adopt. **(4 marks)**

c) Perform the following conversion:

(i) 45 base 8 to decimal system **(3 marks)**

(ii) Using **TWO** compliments subtract 5 from 3 and express your answer in decimal form. **(3 marks)**

Question Five

a) Using a well-labeled diagram, illustrate the functional components of a computer system. **(8 marks)**

b) A company has a workforce of around 2000. Some work in the office using the computer system for administrative tasks, while others use the computer system on the production line for giving details of orders that need to be manufactured. Select appropriate peripheral hardware and software for these two application areas, giving reasons for your choices. **(12 marks)**