UNIVERSITY OF GHANA

B.SC INFORMATION TECHNOLOGY, FIRST SEMESTER EXAMINATIONS: 2015/ 2016

CSIT 103: INTRODUCTION TO COMPUTING (3 CREDITS)

INSTRUCTION:

Answer all the Questions in Section A and any three (3) Questions from Section B. Use the Answer Booklet provided for both Sections.

TIME ALLOWED:

TWO AND A HALF (2½) HOURS

SECTION A (40 Marks)

Answer all the Questions in this section

A1. (a) (i) Why do computers use coding schemes to represent data? Explain how alphanumeric characters are represented. ***(3 marks)***

(ii) Show how the alphabets 's' and 'W' will be represented respectively by the computer in the ASCII-8 code. ***(3 marks)***

(b) Perform the following number systems conversions:

(i) -109.90625 signed number into binary ***(3 marks)***

(ii) 11010111000.1011000111011011110001 binary into hexadecimal

(3 marks)

(iii) -17 in decimal to 16-bit 2's complement ***(2 marks)***

A2. (a) Briefly mention the differences between peer-to-peer networks and the client/server networks. ***(3 marks)***

(b) Give **four** reasons why most companies prefer client/server networks to peer-to-peer networks. ***(4 marks)***

(c) List the **two** main types of network backbones that are usually used to link a Local Area Network to the Internet. ***(2 marks)***

A3. (a) What is the main function of an input device? ***(2 marks)***

(b) (i) List any **three** advantages of the use of the barcode input at the supermarket. ***(3 marks)***

(ii) Why is verification needed when biometric input is used? ***(3 marks)***

A4. (a) Briefly explain the CPU fetch and execute cycle ***(3 marks)***

(b) What is pipelining? Explain the benefits of employing pipelining by the CPU in its operations. ***(4 marks)***

(c) State the function of the instruction queue. ***(2 marks)***

SECTION B (60 Marks)

Answer ANY three (3) Questions from this section. All Questions carry equal marks.

B1. (a) (i) Differentiate between Input and Output devices and classify the following computer devices used in an IT firm as input, output or both input and output:

Network Cards, Digitisers, Plotters, Fax Machine, Broadband Modem, Stylus, Projectors, Microphone ***(6 marks)***

(ii) Briefly give the function of any **three** of the above devices. ***(6 marks)***

(b) Explain the mode of operation of the following:

(i) Automated Teller Machine (ATM) ***(4 marks)***

(ii) Digital Cameras ***(4 marks)***

B2. (a) (i) What is the main difference between operating systems and utility programs? ***(3 marks)***

(ii) Explain **three** main characteristics of real-time operating systems that make them unique from other operating systems. ***(6 marks)***

(iii) Give **two** examples of real-time operating systems. ***(2 marks)***

(b) (i) Briefly explain the following: Shareware, Open Source Software and Freeware. ***(6 marks)***

(ii) State how **each** of the above software may be used by computer users. ***(3 marks)***

B3. Write short notes on **each** of the following Computer Networking terms:

(i) Virtual Private Networks (VPN)

(ii) Enterprise Private Networks (EPN)

(iii) Storage Area Networks (SAN)

(iv) Metropolitan Area Network (MAN)

(5 marks each)

B4. (a) (i) Differentiate between primary storage and secondary storage. ***(2 marks)***

(ii) List and explain the reasons why the modern computer uses secondary storage devices in addition to primary storage. ***(9 marks)***

(b) (i) What is the purpose of the memory used in computer systems? **(2 marks)**

(ii) List the different types of RAM and explain with reasons the one which is usually used on computers. ***(7 marks)***

B5. (a) (i) Briefly explain the mode of operation of the CPU system clock and state the

unit of measurement for the CPU. ***(5 marks)***

(ii) Mention the **two** main types of registers that constitute the CPU register array and explain how the CPU makes use of each one.

(6 marks)

(b) (i) Explain how cache memory is used to improve the performance of computers without greatly increasing cost. ***(4 marks)***

(ii) What is a cache miss? Explain the actions that will be carried out by the CPU in order to process data when there is a cache miss.

(5 marks)