MULTIMEDIA UNIVERSITY OF KENYA
UNIVERSITY EXAMINATIONS 2017/2018
FACULTY OF SCIENCE AND TECHNOLOGY
FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INDUSTRIAL CHEMISTRY AND BACHELOR OF SCIENCE IN ANALYTICAL CHEMISTRY

BCT 2102 COMPUTER APPLICATION I

DATE: MONDAY 20TH AUGUST 2018   **TIME: 2 HOUR**

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS FROM

QUESTION ONE: (30 MARKS) COMPULSORY

(a)   Explain the following terms/Concepts as used in computing: **(2 marks)**

   i.   Digital Divide;

   ii.   Internet of Things-"IoT".

(b)   Explain any three **performance related** considerations whenbuying a computer for use.   **(3 marks)**

(c)   Identify the application package CHINA WU YIConstruction Company can use to perform the following: **(2 Marks)**

   (i) Manage the records of all employees;

   (ii) Compute the wages of 1000 employees.

(d)   Using double dadd method, Convert 11001_2 to denary.   **(3 marks)**

(e)   Outline twokey salient characteristics ofthe 5th generational computers.   **(2 marks)**

(f)   Given the table below, match the correct input/ output device against area of application.

Computing I/O devices	Applications
Interactive whiteboard	Records to be entered in database
Braille Keyboard	Employees to be store for a long duration and secure
Optical Mark Recognition	Conference proceedings
Flatbed Plotter	To filter information exchanges on a network
Firewall	Penal shaded forms
COM devices	2017 candidates campaign posters

(6 marks)

(g) Happy, a first year economic student typed an email to send over the internet to a friend in Trinidad Tabago at a speed of 10,000Mbps. Calculate the maximum number of characters that can be sent per second if each character consists of 8 bits. **(2 Marks)**

1mb — 1000,000 bits

(h) Outline two advantages Kenya will derive from embracing fiber optic cabling technology. **(2 marks)**

(i) Explain two merits of bespoke software over off the shelve software. **(2 marks)**

(j) Explain the concept of smart cities, citing relevant examples on how ICT technologiescan leverage such cities. **(4 marks)**

(k) Write the following initials in full ASCII and EBCDIC **(2 marks)**

QUESTION TWO [20 Marks]

(a) (i) Explain the introduction of windows 8 OS by Microsoft to replace window 7. **(2 marks)**

(ii) Tom has just bought a new laptop and he is to install an operating system in his laptop. Other than cost state any three **performance related factors** he has to consider before buying the operating system. **(3 marks)**

(iii) Explain the popularity of android smartphones as opposed to Microsoft window based. **(2 marks)**

(b) Enumerate any three performance related factors to consider when buying an operating system for use. **(3 marks)**

(d) We can say the best operating systems must be multiuser, multitasking and graphical user interface. Explain these salient features of operating system giving one such OS.(3 marks)

(e) Table 1 shows the arrival time and required CPU burst time for three processes. Use it to answer the questions that follow.

Table 1

Process	Arrival time (ms)	CPU burst (ms)
A	0	9.
B	1	6.
C	4	2

Assuming that the operating system uses Shortest Remaining Time Next (SRTN) Scheduling scheme. With Aid of a Gantt chart,

(i) Calculate: **(7 Marks)**

    I.   average waiting time;

    II.   average turnaround time.

QUESTION THREE [20 Marks]

(a) Give two reasons for the use of hexadecimal number systems in computers.**(2 marks)**

(b) Perform the following conversion/operation: **(15 marks)**

   i. 1111011011_2 to base 16.

   ii. Add (-26) and (-43) using 10's complement

   iii. 56.34_{10} to binary

   iv. Subtract 2 from 6 using 2's complement.

   v. 3DEH to its equivalent octal.

(c) Fred, afresher in BCM saw a laptop along Moi avenue with the following specifications: intel core i5 @2.0 GHz ,4GB of RAM DDR3, 3MB of L3 cache, 15'' screen touch screen,2TB of internal hard disk, Wi-Fi, Bluetooth, 10/100/1000 Ethernet port, webcam, windows 10 starter, 1 year warranty. Calculate the total number of text pages to be saved in the hard disk if one page takes 4000 KB **(3 marks)**

QUESTION FOUR [20 Marks]

(a) Explain three demerits standalone computers as opposed to networked computer.

(3 marks)

(b) Using **Caesar cipher** encryption with key of 4, show how the word DATA COM can be encrypted before transmission.

(3 marks)

(c) Explain four positive impact of social media brought about by ubiquitous and or pervasive computing in the construction industry.

(4 marks)

(d) Discuss various ways in which the government of Kenya is leveraging ICT technologies to improve service delivery, efficiency, convenience and minimize corruption. (5 marks)

(e) With Aid of a diagram demonstrate how you can set a simple LAN network in your office which has none, showing all the network components you have used.(5 marks)

QUESTION FIVE [20 Marks]

(a) University X set up a Web site that student applicants could access, using their KCSE index number and other personal information, to find out if they were accepted for admission. X University officials discovered that some students accounts were accessed from computers in the Admissions Office at University Y. Many students apply to both X and Y University. It was suspected that Y University wanted to determine if students had been accepted by X University before making its own decisions. The personal information needed to access the X university site was in the students applications, available to the Y University Admissions Office.

(8 Marks)

(i) Identify if any, the type of computer crime in this case and who committed.

(ii) Analyze this case. Explain the social, ethical and legal issues from this scenario.

(iii) Outline a solution for university X to this problem.

(b) Outline two benefits of educational simulations in teaching (2 Marks)

(c) State two merits and two demerits of social media communication. (2 Marks)

(d) Nothing epitomizes modern life better than the computer. For better or worse, computers have infiltrated every aspect of our society. Today computers do much more than simply compute. Discuss the impact computers have on our lives and promises they hold for the future in your area of study.

(8 Marks)