KIMATHI UNIVERSITY COLLEGE OF TECHNOLOGY
University Examinations 2012/2013 Academic Year
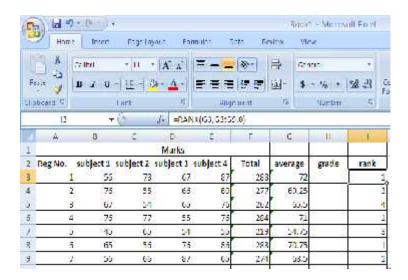
SECOND YEAR SEMESTER I EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING

SMA 2174: INTRODUCTION TO COMPUTER

DATE: 14th August 2012   **TIME: 8:30 AM-10:30 AM**

Instructions: Answer Question 1 and Any Other Two.

Question One (30 Marks)

a)

i) For each of the computer generations listed state the technology used in their electronic component **[4 marks]**

Computer generation	Electronic component technology
a. 1st Generation	
b. 2nd Generation	
c. 3rd Generation	
d. 4th Generation	

ii) State the computer generation in which the following memory technologies were applied **[3 marks]**

Memory technology	Computer generation
a. magnetic core memory	
b. Electrostatic storage tubes,	
c. acoustic delay lines (mercury or nickel)	
d. Semiconductor memories	
e. Magnetic drums (and disks?)	

b) To improve processing efficiency, a variety of techniques such as *pipelining* and *multiprocessing* were invented in the third generation of computers.

    i).   What is Pipelining   **[1 mark]**
    ii).   What is Multiprocessing   **[1 mark]**

c) Concurrent running of several programs requires that all programs be in memory simultaneously. Thus the development of techniques for concurrent processing was matched by the development of *memory management* techniques such as *dynamic memory allocation* and *virtual memory*

    i).   What is memory management?   **[2 marks]**

    ii).   What is dynamic memory allocation?   **[2 marks]**

    iii).   Distinguish between cache memory and virtual memory   **[4 marks]**

d) Simon's one-and-a-half-year-old computer is running slower than usual. He takes his computer to a repair shop to find out the problem. Jenny is the technician in charge. She scans Simon's computer with an antivirus program, and cleans up and defragments the hard disk. The computer now runs a little faster. Explain what the problem was with the computer.   **[3 marks]**

e)
    i)   Define an operating system   **[2 marks]**

    ii)   State any FOUR Functions of an operating system   **[2 marks]**

    iii)   State THREE advantages of multiprogramming operating system   **[3 marks]**

f) Describe the use of each of the following application software to an electrical engineer   **[3 marks]**
    I.   Word processors
    II.   Spreadsheet programs
    III.   Database management system

Question Two (20 Marks)

a) Distinguish between a Disc Operating System(DOS) and a windows operating system with regard to: user interface, number of users supported, number of tasks supported, and the file system **[4 marks]**
b)
    i)   Explain the meaning of the following DOS commands   **[3 marks]**
        I.   DIR *.EXE
        II.   COPY *.* A:
        III.   COPY myfile1.txt+myfile2.txt

    ii)   Identify and distinguish two commands that can be used to create files in DOS   **[3 marks]**

c) Study the excel worksheet bellow hence answer the questions that follow

d) Given the grading system 0-39 = E, 40-49 = D, 50-59=C, 60-69=B and over 70 =A, write a formula that you would enter in cell G3 and autofill to cell G9 to return the appropriate grade for the students average marks. **[2 marks]**

e) The rank column indicate that students numbers 1, 4 6 and 7 are position one despite them having different average marks. State the course of this error and how it can be rectified.
[3 marks]

f)
    i) Explain the importance of binary number system to computers **[2 marks]**
    ii) Write the acronyms ASCII and EBCDIC in full and explain their Application in computers
[3 marks]

Question Three (20 Marks)

a)
    i) The optical storage media have presently dominated the secondary storage device market in comparison to the magnetic tapes. Outline any FOUR attractive unique features of optical storage systems that have lead to this scenario **[2 marks]**
    ii) When a magnetic disk is formatted, the Operating System creates four areas on its surface Identify and state the purpose of each of the four areas **[6 marks]**
    iii) Explain how data is stored on the surface of magnetic and optical disks. **[4 marks]**

b) Explain how a character is sent from the keyboard to the computer **[4 marks]**

c)
    i) State the relevant text style format that needs to be applied to a document text to enable automatic generation of a table of content. **[1 mark]**
    ii) State THREE advantages of an automatic table of content in a document **[3 marks]**

Question Four (20 Marks)

a) A technician has just finished assembling a new computer. When the computer is powered up for the first time, the POST discovers a problem that requires configuration of the BIOS.

    i). Write the acronyms BIOS and POST in full hence explain their purpose in a computer **[5 marks]**
    ii). How does the BIOS indicate the error? **[2 marks]**

    iii). What happens to the boot process when the error is detected during POST **[2 marks]**

    iv). At which point must a key be pressed to start the BIOS setup program? **[1 mark]**

b) State any SIX differences between static RAM (SRAM) and Dynamic RAM (DRAM) **[6 marks]**

c) Data is only as valuable as our ability to access and extract meaning from it; and we cannot extract meaning from it without organizing, storing, and analyzing it effectively. This is the role of a database.
    i) Identify the database objects in Microsoft access that can be used to **[2 marks]**

          I. Organize and store data
          II. Analyze data
    ii) State the meaning of a key field and explain it s importance in a database application.
[2 marks]

Question Five (20 marks)
a)
    i). Perform the following computation **[2 marks]**

$$1110_2$$
$$x\ 1011_2$$

    ii). Convert Decimal 62 to:
        I. Binary **[2 marks]**
        II. Octal **[2 marks]**
        III. Hexadecimal **[2 marks]**

b) Explain how the following conversions are carried out giving one example in each case

    i).   Octal to binary: **[3 marks]**
    ii).   Binary to Octal **[3 marks]**
    iii).   Binary to Hexadecimal **[3 marks]**