The Open University of Sri lanka
B.Sc. Degree Programme – Level 03
Department of Mathematics and Computer Science
Final Examination 2012/2013
CPU1140 : Fundamentals of Computers

Duration:**Two hours only (2 hrs)**

Date:11.06.2013 Time:09.30 am – 11.30 am

Answer FOUR (04) Questions ONLY

Q1.

a. List **four** (04) **limitations** of **computers**.
b. Classify **personal computers** by the **size** and describe the use of each. (State at least 4 types).
c. **ALU** is a part of the CPU. Describe the function of ALU.
d. "***Compairing to the first generation, fourth generation computers have evolved in many ways***." Do you agree with the statement? Discuss your answer.
e. Explain the **data flow** and **control flow** of **computers** with the help of a diagram.

Q2.

a. **Pointing input devices** can be categorized into 3 groups. Name the groups and give **two** (02) examples for each group.
b. What do you understand by **biometric authentication devices**? Give **two** (02) example devices.
c. Briefly describe **four** (04) **advantages** of **LCD monitors**.
d. Explain how **cache memory** assures faster access to data for the **CPU**.
e. "***Personal computers have various types of ports. Internally for connecting disk drives, display screens, key boards; externally for connecting modems, printers, mics and other peripheral devices.***" Discuss the use of ports for communication within a computer internaly and externaly. Use examples.

Q3.

a. List **six** (06) types of **operating systems** and briefly describe each of them.

b. What is a **utility software**? Give **three** (03) examples.

c. Briefly describe the following Programming software

   i. Source Code

   ii. Text Editor

   iii. Object Code

   iv. Programming language

d. Compair **traditional compiler** and **interpriter**. (03 points)

e. A **DBMS** includes a modeling language, data structures, database query language, and a trasaction mechanism. Discuss how a DBMS helps to control the organization, storage, management and retrival of data in an organization.

Q4.

a. Convert the following **decimal** numbers to **binary** numbers.

   i. 234_{10} ii. 351.25_{10}

b. Convert the following **binary** numbers to **decimal** numbers.

   i. 110110_2 ii. 1101.101_2

c. Solve the following calculations.

   i. $11011_2 + 1011_2$

   ii. $25_{10} - 17_{10}$ (use Two's Complement)

   iii. $1101_2 \times 101_2$

   iv. $1110110_2 / 1011_2$

d. Convert the following **decimal** numbers into **octal** and **hexadecimal**.

   i. 270_{10} ii. 481_{10}

e. Briefly describe the following.

   i. ASCII iii. EBCDIC

   ii. BCD iv. UTF

Q5.

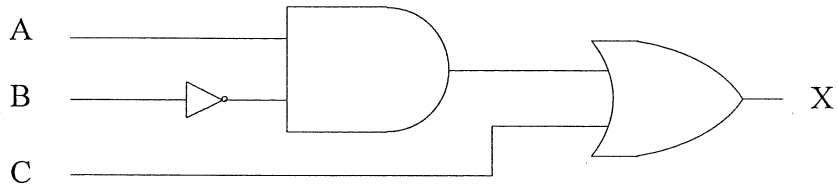
a. What is known as **duality principle** in **boolean laws**. Give an example.

b. **Simplify** the following **boolean expressions** (State the rule used to simplify each step)

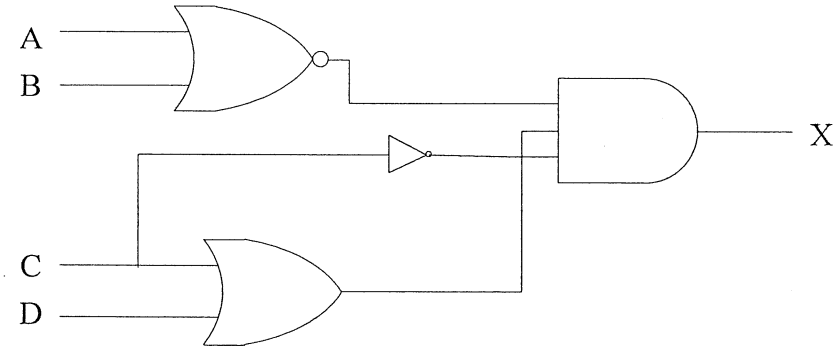
   i. (A + B' + C') (A + B'C)

   ii. (AB) + (A'B) + (AB')

c. Draw the **Truth Table** for the following circuit.



d. **Simplify** the following Circuit. (Clearly show each step)



e. **Substitute** all the gates in the simplified circuit in the section (d) above using **NAND** gates and **simplify** the circuit again, if necessary.

Q6.

a. Classify computer networks based on the **topology**. Give **three** (03) examples with diagams.

b. Compare **peer-to-peer networks** and **client server networks**. (Four (04) points)

c. Briefly explain the following.

   i. Packet switching

   ii. Internet protocol suit

   iii. Static IP

   iv. Dynamic IP

d. Explain why people are interested in **computer networks** based on the **uses** of the networks to them?

e. ***"Up until the early 1990's the Internet was largely populated amoung academic, government and industrial researchers. One new application named WWW changed all that and brought millions of new non-academic uesrs to the Internet."*** Discuss the statement.