RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Information and Communication Technology
First Year - Semester I Examination – September/October 2019

ICT 1201 – FUNDAMENTALS OF COMPUTER SYSTEMS

Time: Two (02) hours

Instructions to Candidates:

1. This paper contains **FOUR (04)** questions in **THREE (03)** pages.
2. Answer **ALL** the questions.

1.

a) When you study computer evolution you can identify five (05) computer generations. Briefly explain each generation including the information about main technology used and two characteristics of each generation. **(8 Marks)**

b) Computers can be classified according to their size and the processing power. Describe the types of computers classified under this category by giving one (01) feature and one (01) example for each. **(4 Marks)**

c) A computer is an electronic device that processes data and convert them into information that is useful to people.

i. Describe the basic components of a computer by giving a proper diagram. **(6 Marks)**

ii. Central Processing Unit (CPU) is considered as the brain of the computer. Give three (03) examples for functions of the CPU. **(3 Marks)**

iii. Explain the use of CPU registers for the functioning of the computer. **(4 Marks)**

(Total: 25 Marks)

2.

a) **"In digital computers, analog quantities must be converted into digital quantities before processing."** Justify the above statement. **(5 Marks)**

b) Convert the following numbers into the given base. (Show all the steps of conversions.)

i. 1110101_2 to hexadecimal

ii. $1AF_{16}$ to octal

iii. 33_{10} to binary

iv. 703_8 to decimal

(8 Marks)

c) Today computer programs are being used in almost every field.

i. Define the term **"computer program".** **(3 Marks)**

ii. Distinguish the major differences between **machine level languages, assembly level languages** and **high level languages.** **(3 Marks)**

iii. Language Processors / Translators are used to convert high level language to machine level language. What are the two types of translators? Compare and contrast those translators by using two (02) facts.

(6 Marks)

(Total: 25 Marks)

3.

a) Developing a program involves steps similar to any problem solving task. Mention the five main steps of the programming process. **(5 Marks)**

b) Draw a flow chart for the following scenario.

Read an employee name (NAME), overtime hours worked (OVERTIME), hours absent (ABSENT) and then determine the bonus payment (PAYMENT) by using following chart. **(7 Marks)**

Bonus Schedule	
OVERTIME – (2/3) * ABSENT	Bonus Paid (PAYMENT)
If >= 40 hours	$ 50
If >= 30 hours	$ 40
If >= 20 hours	$ 30
If < 20 hours	$ 20

c) The set of electronic program instructions is called as a software.

i. System software is a type of computer program that is designed to run a computer's hardware and application programs. Briefly explain three examples for system software. **(3 Marks)**

ii. Define the term **software suit**. Give two disadvantages of them. **(4 Marks)**

iii. Explain three characteristics of a good software. **(6 Marks)**

(Total: 25 Marks)

4.

a) **"Computer ethics are set of moral principles that regulate the use of computers".** Write down three (03) such principles we need to follow when we use computers. **(3 Marks)**

b) **"Operating system can be act as a resource manager".** Briefly explain this statement. **(6 Marks)**

c) A computer network consists of two or more computers (and typically other devices such as printers, external hard drives and etc.), that are linked together by using a transmission media.

i. Transmission media can be categorized in to two forms. Briefly explain those categories by giving two examples for each. **(6 Marks)**

ii. Differentiate the terms **Intranet and Extranet.** **(4 Marks)**

iii. **"Ring topology perform better than bus topology under heavy traffic."** Justify this statement. **(6 Marks)**

(Total: 25 Marks)

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