



RAJARATA UNIVERSITY OF SRI LANKA

FACULTY OF APPLIED SCIENCES

BSc (Information & Communication Technology) Degree

First Year Semester I Examination May/June 2016

ICT 1201 – FUNDAMENTALS OF COMPUTER SYSTEMS

Answer All Questions

Time: TWO (2) hours

Q1. a) Underline the correct answer.

1. *The Difference Engine is a steam driven calculating machine of room size. It was invented by*

- | | |
|--------------------|--------------------|
| A) Blaise Pascal | C) Charles Babbage |
| B) Wilhelm Leibniz | D) John Mauchly |

2. *Analytical Engine was programmable using punch cards. Punch cards were invented by*

- | | |
|--------------------|--------------------------|
| A) Charles Babbage | C) Blaise Pascal |
| B) Wilhelm Leibniz | D) Joseph Marie Jacquard |

3. *What was the first programmable digital computer made in the United States?*

- | | |
|-----------|----------------|
| A) ENIAC | C) UNIVAC |
| B) Mark I | D) IBM Stretch |

4. *UNIVAC stands for*

- | | |
|---------------------------------|--------------------------------|
| A) Universal Automatic Computer | C) Unique Automatic Computer |
| B) Universal Array Computer | D) Unvalued Automatic Computer |

5. *A computer that would store computer instructions in a CPU is called Stored Programme Computer. The inventor of that concept is?*

- | | |
|---------------------|----------------------|
| A) John Mauchly | C) J. Presper Eckert |
| B) John von Neumann | D) Ada Byron |

6. The basic operations performed by a computer are

- | | |
|-------------------------|-------------------------|
| A) Arithmetic operation | C) Storage and relative |
| B) Logical operation | D) All the above |

7. All Computers must have

- | | |
|-----------------|---------------------|
| A) ALU | C) Primary Storage |
| B) Control Unit | D) All of the above |

8. What is the main difference between a mainframe and a super computer?

- A) Super computer is much larger than mainframe computers
- B) Super computers are much smaller than mainframe computers
- C) Supercomputers are focused to execute few programs as fast as possible while mainframe uses its power to execute as many programs concurrently
- D) Supercomputers are focused to execute as many programs as possible while mainframe uses its power to execute few programs as fast as possible.

9. The brain of any computer system is

- | | |
|-----------|-----------------|
| A) ALU | C) CPU |
| B) Memory | D) Control unit |

10. CD-ROM is a

- | | |
|-------------------------|--------------------|
| A) Semiconductor memory | C) Magnetic memory |
| B) Memory register | D) None of above |

TOTAL (1 X 10) marks

b) Fill in the blanks with suitable word/ word phrases.

1. Based on the number of processors computers can be classified into two types. They are Computers andComputers.
2. The complete collection of different instructions that are understood by a CPU is called
3.is the program a personal computer's microprocessor uses to get the computer system started after you turn it on and makes sure all the other chips, hard drives, ports and CPU function together.
4. One 1) Gigabyte is equal to Kilobytes.
5. In a computer, memory management operations are performed by the

TOTAL (2 X 5) marks

Q2.

- a) In history, five computer generations can be identified based on the underlying technology used to build the computer. Briefly explain each computer generation. Include information about the main technology used, time frame, characteristics and examples. (6 marks)
- b) i. Give two factors which we can use to classify computers. (1 mark)
 ii. What are the types of computers classified based on size and the compatibility? Briefly explain features of each. (5 marks)
- c) i. What are the three main components of the Central Processing Unit? (1 mark)
 ii. Why do we need a memory hierarchy in computer systems? (2 marks)
- d) i. What is the usage of POST? (1 mark)
 ii. Compare Primary Memory with Secondary Memory. (4 marks)

TOTAL (20 marks)

Q3.

- a) Convert into decimal format
 i. 11101100_2 (2 marks)
- b) Convert into octal format
 i. 1100100011101_2 (2 marks)
- c) Add the following two binary numbers and give the result in binary as well as in decimal.
 $11000000_2 + 10001000_2$ (2 marks)
- d) Subtract the following two binary numbers and give the result in binary as well as in decimal.
 $0011101_2 - 0001111_2$ (2 marks)
- e) Represent the following decimal numbers in binary using 8 bit sign-magnitude representation.
 i. +36
 ii. -36 (2 marks)
- f) Represent the following decimal numbers in 8 bit two's complement representation.
 i. -38
 ii. -85 (2 marks)
- g) What is the decimal representation of this 8-bit two's complement integer:
 $1001\ 1111_2$ (2 marks)
- h) Perform the "binary addition algorithm" on the following 8-bit two's complement numbers. Is the result correct or not?

$$\begin{array}{r} 1011\ 1101 \\ + 1110\ 0101 \\ \hline \end{array}$$
 (2 marks)

- i) Represent decimal value 56 using BCD code. (1 mark)
 - j) Represent decimal value 48 using Excess 3 code. (1 mark)
 - k) Convert $(10001010)_{XS-3}$ to BCD. (2 marks)
- TOTAL (20 marks)**

Q4.

- a) i. What is a computer programme? (2 marks)
 - ii. What is the difference between Compiler and the Interpreter? (2 marks)
 - iii. Briefly explain three characteristics of a good programming language. (3 marks)
 - b) What is the major difference between Machine Language, Assembly language and High Level Languages? (3 marks)
 - c) i. What are the two major types of Software? (2 marks)
 - ii. Give three characteristics of a good software. (3 marks)
 - d) i. What is a "Software Suit"? What are the advantages of it? (2 marks)
 - ii. Give two examples for each of the following software types.
 - I. Antivirus
 - II. Browsing
 - III. E-mail
- (3 marks)

TOTAL (20 marks)

Q5.

- a) i. What is an Operating System? (2 marks)
- ii. Give two examples. (2 marks)
- b) i. What are the two major requirements of an OS? (2 mark)
- ii. What are the four major functions of an OS? (2 marks)
- c) Give two examples for mobile Operating Systems? (2 marks)
- d) Compare Windows vs. Linux Operating System. (6 marks)
- e) What is a "Patent"? (2 marks)
- f) What is the difference between Piracy and Privacy? (2 marks)

TOTAL (20 marks)