University of Vavuniya

First Examination in Information Communication Technology - 2020

First Semester - May/June 2022 (held in August 2022)

TICT1114 Essentials of Information Communication Technology

(Theory)

Answer Four Questions Only

Time Allowed: Two hours

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1. (a) Compare and contrast "Infromation Technology(IT)" and "Information Communication Technology(ICT)". [10%]

   (b) Give the four types of computers and specify two applications for each of them where they are in use. [20%]

   (c) Briefly describe each of the following terms in the context of communication technology:

      i. Telecommunication

      ii. Online [10%]

   (d) Discuss the following four main ages which are divided the history of IT.

      i. Pre-mechanical

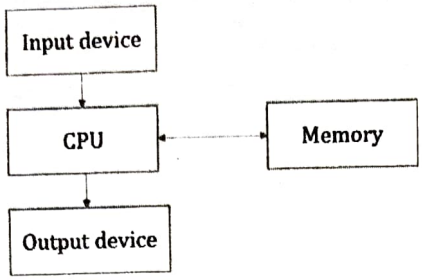
      ii. Mechanical

      iii. Electromechanical

      iv. Electronic [20%]

[This question continues on the next page.]

(e) Describe the functions performed by the computer using the below figure.



[20%]

(f) Describe how the society has changed its attitude due to ICT using suitable examples. [20%]

2. (a) What is meant by pointing devices and state five examples of them. [15%]

(b) Several registers are used to keep the values temporarily during processing. State the purpose of four different types of registers. [20%]

(c) Briefly describe the usage of each of the following devices:

i. Joystick

ii. Speech recognition

iii. Optical Mark Reader

iv. Magnetic Ink Character Recognition

v. Optical Character Recognition [20%]

(d) Briefly explain each of the following terms, which are related to hard disk operations:

i. Platters

ii. Tracks

iii. Sectors [15%]

[This question continues on the next page.]

(e) Consider a disk with the characteristics given below to answer the following questions:

- 10 surfaces
- 27,000 tracks per surface
- 512 sectors per track
- 512 bytes per sector

i. How many sectors are available per cylinder?

ii. What is the total size (i.e, capacity) of this disk? [30%]

3. (a) Represent the respective number system for each of the following question numbered from (i) to (vi).

Decimal Number	Binary Number	Octal Number	Hexadecimal Number
-	(i)	102.030	-
(ii)	1101.101	(iii)	-
34.75	(iv)	-	(v)
(vi)	-	-	4A8B

[30%]

(b) Solve the following arithmetic operations in binary number system:

i. $101111_2 + 010111_2$

ii. 00110101_2 - 00011101_2

iii. 00101001_2 x 00000110_2 [15%]

(c) Determine the decimal number corresponding to the 8421 BCD code 10000111.00110100. [05%]

(d) Make duality for x'y + xy' and design the circuit diagram. [10%]

[This question continues on the next page.]

(e) Consider the following scenario:

The three young graduates Bandara, Thivaharan, Anvar have a system in their company to minimize conflict. For all minor decisions, they want to use a circuit that will determine when a majority of the three of them has voted for a proposal. Essentially, they want a box with three inputs that will produce a 1 at the output whenever two or more of the inputs are 1.

i. Construct the truth table for the above scenario. [10%]

ii. Find the logical expression using the truth table constructed in part(i). [10%]

iii. By simplifying the logical expression derived in part(ii), draw a possible logic diagram using gates. [20%]

4. (a) Explain why non-impact printers are useful with suitable examples [15%]

(b) Name the two parts of central processing unit(CPU) and explain the main functions of them. [20%]

(c) List down the characteristics which are influenced on the performance of CPU. [15%]

(d) State the main operations accomplished using CPU cycle and briefly explain each of them using the aid of an example. [20%]

(e) What is meant by *Cache hit* and *Cache miss*? [10%]

(f) List down the different types of ports and state the devices which are connected with them. [20%]

5. (a) Compare and contrast Star and Mesh topologies. [15%]

(b) Describe what is Local Area Network(LAN) and list down the components of LAN. [15%]

(c) Every device has exactly two neighbours for communication in a network topology. A failure in any cable or device breaks the loop and can affect the entire network.

i. Identify the topology mentioned above.

ii. Prefer the better network topology and describe it. [20%]

[This question continues on the next page.]

(d) Describe what are the contents available in an email address using an example. [20%]

(e) Briefly describe each of the following:

i. Search engines

ii. Clients and Server [10%]

(f) How do you identify your computer is affected by a virus? Describe how to protect your computer from computer virus. [20%]