University of Vavuniya

First Examination in Information Technology - 2021

First Semester - March 2023

IT1113 Fundamentals of Information Technology

Answer Four Questions Only

Time Allowed: Two hours

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1. (a) Briefly describe the evolution of computers, indicating the technologies in each generation. [20%]

   (b) Identify a special device needed to perform each of the following tasks:

   i. Play computer games.

   ii. Read bank cheques.

   iii. Show a video or an image on a big white screen.

   iv. Store photos and videos on the camera. [20%]

   (c) Name *five* computer ports and list peripheral devices that can be connected through each of them. [20%]

   (d) Write the names of *two* popular computer processor manufacturers. [10%]

   (e) Draw a flow chart, to read two numbers, X and Y, perform an arithmetic operation (addition, subtraction, multiplication, division, and modulus) based on the user input, and then display the result. Indicate the input elements, processing elements and output to be stored clearly. [30%]

2. (a) Explain how the sign (negative or positive) of an integer is represented in sign-magnitude representation with the aid of examples. [10%]

(b) Convert the following 2's complement binary numbers into corresponding decimal format:

i. 11100011

ii. 00011010 [20%]

(c) Perform the following operation in 2's complement arithmetic using 8 bits:

i. 2610 – 1510

ii. -2910 + 2310 [20%]

(d) Briefly describe the format of single-precision floating point number representation using IEEE 754 floating-point standard. [10%]

(e) Find the equivalent IEEE 754 floating-point standard (32-bit) representation of the following decimal numbers:

i. 347.625

ii. 639.6875 [20%]

(f) Find the equivalent decimal numbers for the following IEEE 754 standard 32-bit floating-point representations:

i. 1 01111100 11000000000000000000000

ii. 0 01111100 11000000000000000000000 [20%]

3. (a) Define the terms "bit", "byte", and "word" in the context of computer systems. [10%]

(b) Arrange the following in ascending order:

i. 2GB, 6000KB, 5TB, 0.4TB, 1000b, 6000GB, 2000B, 200MB

ii. 5000b, 5KB, 8TB, 2MB, 0.1TB, 8GB, 200MB [20%]

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

i. $11010111_2 + 11100101_2$

ii. $111001_2 - 101111_2$

[This question is continued on next page]

iii. 11001_2 * 11011_2

iv. 1001000_2 / 110_2 [20%]

(d) Complete the below table by representing the given numbers in each row as per the table header:

Decimal	Binary Number	Octal Number	Hexadecimal Number
67.625	(i)	(ii)	(iii)
(iv)	**101111.11**	(v)	(vi)
(vii)	(viii)	**234.64**	(ix)
(x)	(xi)	(xii)	**3D.4**

[50%]

4. (a) Draw a block diagram of a computer system and explain the central processing unit. [20%]

(b) List *five* important characteristics of high-quality information. [15%]

(c) Recommend *five* essential features of a home PC user should consider when purchasing a *visual display unit* (monitor). [15%]

(d) Suggest a suitable type of printer for each of the following needs and justify your answer:

i. High quality, black & white, fast printing

ii. Economical color printing.

iii. Economical black & white text printing

iv. Large engineering drawing printing. [20%]

(e) Briefly explain the concept of cache memory. [10%]

(f) Compare and contrast random access memory (RAM) and read-only memory (ROM). [20%]

5. (a) List and describe the *five* primary functions of Operating Systems. [20%]

[This question is continued on next page]

(b) Write the DOS commands for the following operations:

i. to list the contents of a folder

ii. to create a folder named IT1113

iii. to show the present working folder

iv. to move up to the parent folder [20%]

(c) What is meant by the term "The Internet" and what are its advantages? [20%]

(d) Write a short note on each of the following computer networks:

i. LAN

ii. MAN

iii. WAN [20%]

(e) Find the total number of connections in a fully-connected mesh-network that has 10 nodes. [20%]