# Vavuniya Campus of the University of Jaffna

First Examination in Information Technology - 2018

First Semester - September/October 2019

IT1113 Fundamentals of Information Technology (Theory)

Answer Four Questions Only

Time Allowed : Two hours

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1. Computers have become a basic need to perform various tasks in our day-to day life.

    (a) Write down any three real world application areas of a computer.          [15%]

    (b) Describe the classifications of computers based on their size and capability.   [25%]

    (c) State which factors make a computer to a powerful device.          [20%]

    (d) Explain how fifth generation computers overcome the first generation computers.

    [20%]

    (e) List down the important factors to be considered when buying a new computer.   [20%]

2. Computer architecture refers to the definition of basic attributes of hardware components and their interconnections in order to achieve certain specified goals in terms of functions and performance.

    (a) Central Processing Unit (CPU) contains a few special purpose temporary storage units known as registers. Briefly describe each of the following register types:

        i. Instruction Register (IR).

        ii. Memory Address Register (MAR).

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iii. Memory Data Recogniser (MDR). [15%]

(b) With the help of a diagram, describe the machine cycle phases. [25%]

(c) Brifely describe the memory write operation performed by the processor with the aid of a diagram. [25%]

(d) Explain the importance of bus in a computer system. What are the different types of buses usually found in a computer system? [15%]

(e) Discuss the concept of cache memory with the help of a diagram. What are the different types of cache found in a computer system. [20%]

3. Computers are used not only for processing of data for immediate use, but also for storing large volume of data for future use.

(a) Read-Only Memory(ROM) stores the data permanently. Briefly describe each of the following ROM types:

   i. PROM.

   ii. EPROM.

   iii. EEPROM. [20%]

(b) Write down two advantages and disadvantages of solid-state storage over hard disk drive. [20%]

(c) What do you understand by disk defragmentation? [20%]

(d) Briefly describe each of the following time periods, which are related to hard disk operations.

   i. Seek time.

   ii. Rotational latency.

   iii. Transfer time. [15%]

(e) Calculate the number of platters in a hard disk by using the following data.

   • Capacity : 491.52 GB.

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- 512 bytes/sector.

- 1000 sectors/track (on average).

- 80,000 tracks/surface.

- 2 surfaces/platter. [25%]

4. (a) What do you understand by computer networks? Describe the advantages of computer networks. [25%]

(b) Write down the advantages and disadvantages of any three network topologies. [25%]

(c) What do you mean by firewall in a computer? Explain three capabilities of firewall. [20%]

(d) Briefly describe the computer network architectures. [15%]

(e) Discuss the similarities and differences between the Internet and intranet. [15%]

5. (a) What do you understand by computer virus? Briefly describe each of the followings.

   i. Trojan Horse.

   ii. Worms.

   iii. Bombs. [20%]

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

(c) Describe about ergonomic keyboard. What is the advantage of toggle keys? [20%]

(d) Write down the boot process steps of a computer. [25%]

(e) Why do we need driver software? Give three examples for driver software. [15%]