

The Open University of Sri Lanka
Faculty of Natural Sciences
B.Sc. Degree Programme



Department	: Computer Science
Level	: Level 03
Name of the Examination	: Final Examination
Course Title and – Code	: Fundamentals of Computers – CSU3315
Academic Year	: 2021/2022
Date	: 30.10.2022
Time	: 09.30 am – 11.30 am
Duration	: 02 Hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **SIX (06) main** questions in **03** pages. Each question has **FIVE (05) sub** questions.
3. Answer **FOUR (04)** questions **ONLY**. All questions carry equal marks.
4. Answer for each main question should commence from a new page.
5. Draw clear diagrams where necessary.
6. Involvement in any activity that is considered as an exam offense will lead to punishment.
7. Use blue or black ink to answer the questions.
8. Clearly state your index number in your answer script.

Q1).

- a. *“Computers have essential characteristics to a greater or lesser extent, depending on their type and application”*. Comment on this statement.
- b. *“The generations of computers are characterized by the major technological development. As new technology was emerging, it was being used in the making of computers”*. Do you agree with this statement? Discuss your answer.
- c. Categorize computers based on the size and power. Briefly describe each category with suitable examples.
- d. List down five (05) components of a computer and discuss their function.
- e. Explain the role of cache memory in accessing data and non-interrupted functioning of CPU.

Q2).

- a. What are the five (05) steps carried out when operating a mechanical mouse?
- b. Briefly describe the usage of the following input devices.
 - i. 3Dconnexion
 - ii. Joystick
 - iii. Think pad
 - iv. Foot mouse
 - v. Light-pen
- c. What do you understand by composite devices? Briefly explain four (04) composite devices.
- d. List down the characteristics of display units and briefly describe one of them.
- e. What is a computer port? Describe four (04) different ports using diagrams.

Q3).

- a. *“Though computer hardware and software are two different components, both have an inter-relationship”*. Do you agree with this statement? Discuss your answer.
- b. What is the role of an Operating System in a computer? Discuss three (03) basic tasks provided by an Operating System.

- c. Write short notes on the following topics.
- i. Assembler
 - ii. Debugger
 - iii. Text editor
 - iv. IDE
 - v. Object code
- d. *“Different programming languages have been created so far and new languages are created every year”*. Comment on this statement with the aid of generations of programming languages.
- e. What is Media Development Software? Give four (04) examples.

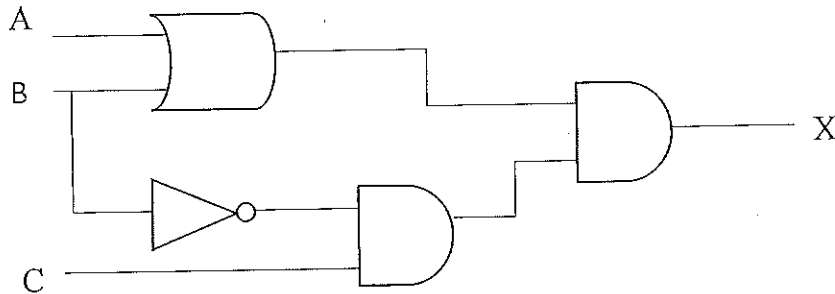
Q4).

- a. *“A fundamental knowledge in number systems is necessary to understand the language of computers”*. Briefly discuss this statement using an example.
- b. Convert the following numbers:
- i. 753_{10} into Hexadecimal.
 - ii. 57.125_{10} into Binary.
- c. Solve the following calculations using 8-bit representation.
- i. $15_{10} - 13_{10}$ using One's complement
 - ii. $16_{10} - 12_{10}$ using Two's complement
- d. Solve the following calculations in Binary.
- i. $10101010 / 101$
 - ii. 1101001×110
- e. What is character representation? Briefly describe a standard that is used in character representation.

Q5).

- a. Briefly explain the application of Boolean Algebra in digital computing.
- b. *“Boolean expressions can be simplified based on specific laws and axioms, where every law has two expressions that describe a principle”*. Discuss this statement using examples.

- c. Derive the Boolean equation for the following logic circuit and simplify it using Boolean algebraic rules. (Clearly show each step)



- d. Draw the simplified logic circuit and draw the truth table for the simplified logic circuit.
 e. Using universal NAND gate, re-draw the simplified circuit in part d.

Q6).

- a. *"It is important to understand why people are interested in computer networks and what those can be used for."* Comment on this statement.
- b. What are the two roles provided by nodes in computer networks? Briefly explain those using suitable diagrams.
- c. Briefly describe the usage of the following communication media.
 - i. Unshielded Twisted Pair cable
 - ii. Shielded Twisted Pair
 - iii. Category 5 cable
 - iv. Coaxial cable
 - v. Fibre Optic cable
- d. What are the five categories of Network Topology? Briefly explain one of them using a diagram.
- e. *"Internetworking contains multiple variants that are interconnected to each other, depending on who administers and who participates in them."* Briefly discuss this statement using a suitable diagram.
