

THE OPEN UNIVERSITY OF SRI LANKA
B.Sc. DEGREE PROGRAMME
DEPARTMENT OF COMPUTER SCIENCE
FINAL EXAMINATION- 2017/2018
CPU1140/CSU3315-FUNDAMENTALS OF COMPUTERS



DURATION: 02 HOURS

Date: 13.09.2018

Time: 09.30 a.m.-11.30 a.m.

Answer FOUR questions ONLY.
Each question carries equal marks.

Q1)

- I) What is a Computer?
- II) The characteristics of computers have made them so powerful and universally useful.
 - a) State four capabilities of a computer and briefly explain two of them.
 - b) State four important factors that should be considered regarding the computer environment. Briefly explain two of them.
- III) Each generation of a computer is characterized by a major technological development that fundamentally changed the way computers operate, resulting more efficient and reliable devices.
 - a) State the technologies used in five generations of computers.
 - b) Briefly explain why fourth Generation computers are more advantageous than Third Generation computers.
- IV) Draw a diagram to illustrate the architecture of a computer and briefly explain the function of each unit.

Q2)

- I) In a computer, storage is the place where data is held in an electromagnetic or optical form for access by a computer processor.
 - a) Name the two types of storage devices and give an example for each type.
 - b) Discuss the differences between RAM and ROM based on **functionality, volatility and changeability**.
- II) State four characteristics of a display and briefly describe two of them.
- III) "LCD monitors are more advantageous than CRT monitors". Comment on this statement.
- IV) A pointing device is an input interface that allows a user to input spatial data to a computer.
 - a) Pointing input devices can be categorized into 3 groups. Name the 3 groups.
 - b) Give two examples for each group.

Q3)

- I) Name four types of Operating Systems and give an example for each type.
- II) Programming software usually provides tools to assist a programmer in writing computer programs & software using different programming languages in a more convenient way.
 - a) Describe briefly about **High- Level Programming Languages** and **Low- Level Programming Languages**.
 - b) Compare and contrast Interpreter and Compiler.
- III) Briefly describe the following terms.
 - a) Source Code
 - b) Object file
 - c) Compiler
 - d) Interpreter
- IV) Discuss how CAD can help in engineering activities.

Q4)

- I) What are the restrictions of the binary scheme?
- II) The computers use binary numbers, and therefore use binary digits in place of decimal digits.
 - a) Convert the following decimal numbers into binary.
 - 1. 44.25_{10}
 - 2. 67.225_{10}
 - b) Convert the following decimal numbers into binary and use two's complement representation to perform the operation, using 8-bit representation.
 - $97_{10} + (-27_{10})$
- III) Convert the following octal numbers into hexadecimal numbers.
 - a) 23466
 - b) 23445
- IV) Subtract the following using BCD representation.
 - a) 566-34
 - b) 4523-344

Q5)

- I) Draw the truth tables for the following logic gates.
 - a) NAND
 - b) NOR
 - c) EX-OR
 - d) EX-NOR
- II) Draw the logic circuit for the following Boolean expression.
$$X=AB + A(B+C) + B(B+C)$$
- III) Simplify the above Boolean equation using Boolean Laws.
- IV) Construct the logic circuit for the simplified Boolean equation you obtained in question "III" above.

Q6)

- I) A computer network is a group of interconnected computers that are able to communicate with one another.
 - a) Why do we need computer networks? Give three examples.
 - b) Give three examples of communication media.
- II) Classify the computer networks based on the topology. Draw the diagram to illustrate each topology.
- III) Briefly explain the difference between an intranet and an extranet.
- IV) Answer the following questions related to the Uniform Resource Locator.
 - a) State the components of an URL.
 - b) Identify and name the parts of the following URL.

https://www.electronics-tutorials.ws/boolean/bool_6.html

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