Day

Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination **Semester: Summer 2019**
Course Code: CSE 112
Course Title: Computer Fundamentals
Course Teacher: ALL

Time: 1.5 hours **Full Marks: 25**

Answer any five (including Question 6) of the following six questions. That means answering Question 6 is **mandatory**. Figures in the right-hand margin indicate full marks.

1. a) Describe any four of the five basic operations of a computer system. 2
   b) What is a system? Why is a computer called a system? Draw a diagram of basic organization of a computer system. 3

2. Convert the following numbers into other number systems: 5
   i. $1001.1001_2 = (?)_{10}$
   ii. $352_{10} = (?)_{16}$
   iii. $70.01_8 = (?)_{10}$
   iv. $567_8 = (?)_{16}$
   v. $111010111_2 = (?)_8$

3. Perform the following operations: 1.5 + 1.5 + 2
   i. $10100110_2 - 11001001_2 = ?$
   ii. $1011_2 \times 1011_2 = ?$
   iii. $10100110_2 \div 1010_2 = ?$

4. a) Using 4-bit 2's complement representation, subtract 5_{10} from 3_{10}. 3
   b) Find the complement of 76_8. 2

5. Let us consider a 16-bit normalized floating point representation, where 8 bits are used for the mantissa and 8 bits for the exponent. Now, show how the number 0.000005_{10} would be stored in memory. Then calculate the range of numbers (magnitude) that may be stored using this mode of representation. 3 + 2

6. *Write the answer to the following questions in a single sentence.*
   a) What is the brain of a computer system? 1
   b) How many bits are required to represent the number 32_{10} in binary? 1
   c) How many bytes are equal to 1 Megabyte (MB)? 1
   d) For an *n*-bit machine, what is the range of unsigned integer numbers it can handle? 1
   e) In the normalized floating point mode, what is the range of the values of mantissa? 1