Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Exam Examination, Fall 2020 @ DIU Blended Learning Center

Course Code: CSE322 (Day), Course Title: Computer Architecture & Organization

Level: 3 Term: 2 Section: All

Instructor: SA Modality: Open Book Exam

Date: Sunday 8 November, 2020 Time: 02:00pm-06:00pm

Four hours (4:00) to support online open/case study based assessment Marks: 25

Directions:

- **Students need to go through the CASE STUDY shown in this exam paper.**
- **Analyze and answer specific section based on your own thinking and work.**
- **Do not share as this will be treated as plagiarism by Blended Learning Center.**

Q.1	**a)**	Suppose, an Instruction has been given to CPU to compute 3 steps addition of an equation. Write and explain the internal structure of CPU and Cache memory for calculating 3 consecutive additions and Show the ALU gate level design and register level design for this addition (Give a short description and draw the circuit)	**5**
	b)	How the Data Representation process will be done if you are told to represent your own name and negation of your ID in processor?	**2**
Q.2	**a)**	You have read about the assembly language. There you found a term called "Assembler". In your computer which component is similar to this ancient component "Assembler"? How the present component of your computer is playing the role of "Assembler"? How will you explain the similarities? Write your answer with proper example and definition.	**4**
	b)	Analyze the scenario where the Computer and Human Brain works together and tries to play the board game of monopoly. Specify with your view what would be the drawback and benefit.	**2**
Q.3	**a)**	Do you know about any early computational mechanical devices which is now a days used as a toy for children? If yes, please mention the name of the device and describe about it.	**2**
	b)	There are 3 design levels and each design level there are many types of components. Can you classify the following components according to their design level? **Projector, NAND gate, Ripple-Carry, Pen drive, counter, Cache Memory**	**2**
	c)	Show that how any computer will add 35 and X? (Here X=last two digit of your ID). What hardware component will be used to perform this addition. Describe with proper diagram.	**2**

Q.4 **a)** Suppose you are given to develop a small device that will be used to perform "Sorting". Now show the design of your device by an Algorithm and flowchart, also describe your working procedure of your designed device in short **3**

b) If you want to seek the attention of processor of what should you do and How? Provide an example. **1.5**

c) What do you understand by "Synthesis" in CPU design? Explain with proper example. **1.5**