Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Exam Examination, Spring 2021 @ DIU Blended Learning Center

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

Level: 3 Term: 2 Section: All

Instructor: ZTS Modality: Open Book Exam

Date: Thursday 11 March, 2021 Time: 09:00am-11:30am

Two and half hours (2:30) 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 the following operation: i) c = a+b ii) e = c+d. Write and explain the internal structure of CPU and Cache memory for calculating the given operation. (Give a short description and draw the circuit)** **5**

b) Show the system structure and system behavior for NAND Gate. **3**

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. **5**

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? **2**

Projector, NAND gate, Adder, Pen drive, counter, Cache Memory

Q.3 **$F = \sum m(1,3,5,7,9,11,13,15)$**

a) Minimize the function using Q-M method. **5**

b) Find Implicant, Prime Implicant (PI) and Essential Prime Implicant (EPI) for the given function using K Map. **3**

c) What do you understand by "Synthesis" in CPU design? Explain with proper example. **2**