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: CSE331 (Day), Course Title: Compiler Design

Level: 3 Term: 3 Section: PC-C

Instructor: MSZ Modality: Open Book Exam

Date: Tuesday 3 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.**

1. Consider the following equation and describe the working procedures of the steps mentioned below on that equation: **6**

$$E = m * g * h + \left(\frac{1}{2}\right) * m * v * v$$

a. Lexical Analyzer
b. Intermediate Code Generator
c. Code Optimizer
d. Final Code Generator

2. Consider the following Finite Automata:

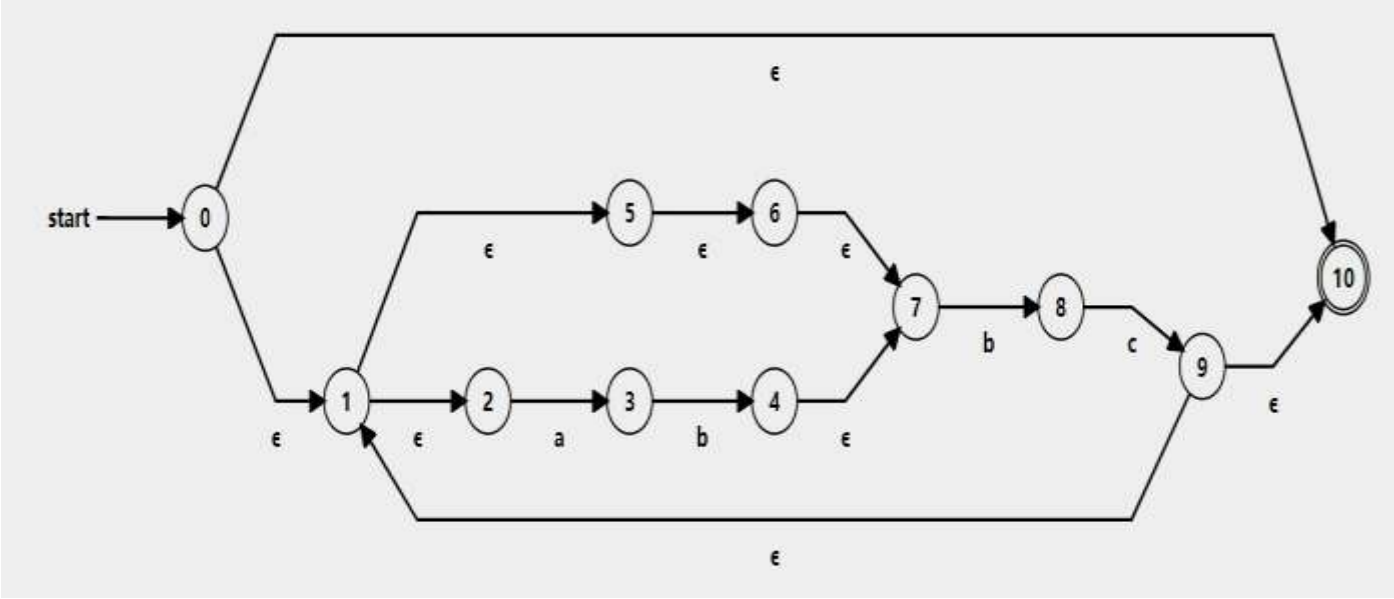

Figure. 1

a. Give the formal definition of the Finite Automata of Figure 1. **2**

b. Is the Finite Automata of **Figure. 1** a NFA? Give reasons behind your decision. If it is a NFA then write down the subset construction table for converting it to DFA and draw the DFA. **7**

3. Consider the following CFG:

X→XYX|0|1|Z
Y→ ZX|0|1
Z→Ɛ|0|1

a. Now derive the string "11111000101110" using LMD and RMD from the grammar. **3**

b. Draw the parse tree. **1**

c. Is the grammar ambiguous? **2**

4. Consider the following **C** language code:

```
#include<stdio.h>
int main{
innt a[2]={2,4,6},b=1;
sum=a[b]+b
prntf("Result is %f, sum)
return b;
}
```

Identify the specific error from the following code and write down the names of the errors of the code. **4**