Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Exam Examination, Spring 2022

Course Code: CSE134 (Day), Course Title: Data Structure

Level: 1 Term: 3, Section: All

Instructor: All

Time: 1.30hr

Total Marks: 25

Part A: Code Visualization and draw 2+2

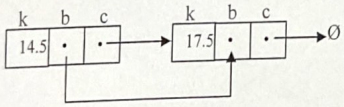
1. Draw the node and pointer represented by the following code.

```
struct Jeje{
    int a;
    float b;
    char c;
    struct Node *next;
};
typedef struct Jeje xexe;
xexe *baby , *fish,*cat;
baby = (xexe *) malloc( sizeof(xexe));
fish= (xexe *) malloc( sizeof(xexe));
cat = (xexe *) malloc( sizeof(xexe));
baby-> a = 7; baby ->b=1.5; baby ->c='A';
fish -> a= 10; fish ->b =3.5; fish ->c= 'B';
cat-> a= 13; cat->b =5.5; cat>c= 'C';
baby->next = cat; cat->next = fish;
fish>next = NULL;
```

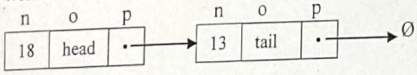
2. Consider an empty stack. Now do the following operations and draw your visualization: push(5), push(6), push(7), push(8), pop(8), push(15), push(45), pop(45), pop(15), pop(7), pop(6), pop(5), push(2) and last of all, draw the final stack.

Part B: Code Writing from Visual Map 5+4+3+3

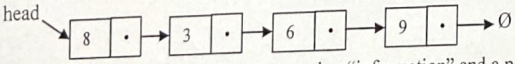
(a) Write a code for the following linked to insert a new node at the last of it:



(b) Write code for the following: (only required code for the Node)



(c) Consider the following link list:



The "Element" contains integer data member "information" and a pointer member "link". Write the function for the following operations.

(1) Find a data item in the list.

(2) Insert a new node at the Nth(any) position of the list.

PART C: Stack Application 3+3

(a) Convert the following:

1. Convert Expression M- (X*Z+ (W*R^S)*T)/N to postfix.
2. Convert Expression -+*^XQRS/*TU+VK to infix.