Mid Semester Examination

School of Computer Engineering

KIIT UNIVERSITY, BHUBANESWAR

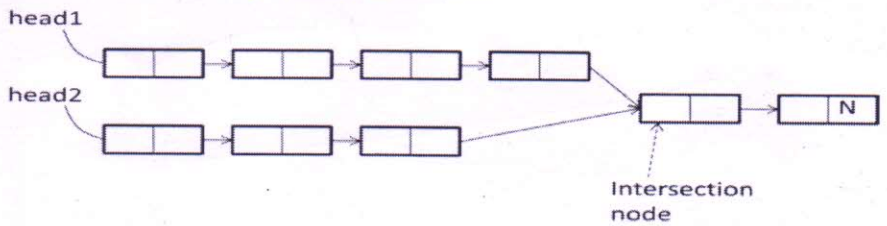
Time: 2hrs **Full Mark: 50**

[ANSWER FIVE QUESTIONS INCLUDING QUESTION NUMBER 1]

1. Answer all the questions [2 X 5]
   a. Find the equivalent postfix expression of the following infix expression using STACK.
   a * ((b – c) * (d / e ^ f) - g) / h
   b. Find time complexity of the following code segment.

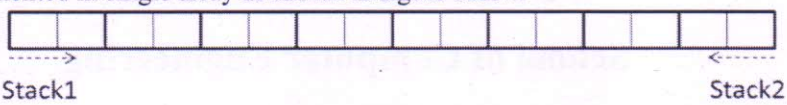
```
for (i=1 ; i<=n ; i=i*2){
    for (j=n ; j>=1 ; j=j/2){
        Statement_1;
    }
}
```

   c. Let a pointer called ***head*** is pointing to the first element of a doubly circular linked list. Write a function to reverse the content of the list by traversing each node only once.
   d. Write down the overflow and underflow condition of a circular queue implemented as an array.
   e. Let a two dimensional array having row range (40:70) and column range (50:100). The whole array is stored in row major order. If the address of location (41, 60) is ***x*** and address of location (70, 95) is **y**, and then find the address of location (65, 80).
2. (a) How to represent a polynomial expression using linked list. Write pseudo code/ function code to add two polynomials. **[7]**
   (b) Compare and contrast single and double linked list. **[3]**
3. (a) What is sparse matrix? How to effectively represent sparse matrix? Write pseudo code/ function code to transpose a sparse matrix. **[7]**
   (b) Write down the pseudo code/ function code to implement insertion and deletion operation in a queue using two stacks. **[3]**
4. (a) Write pseudo code/ function code to find intersection node's data present in the two linked list, where intersection node is represented as follows. **[7]**



(b) What is abstract data type (ADT)? Write down the representation of stack ADT. [3]

5. (a) Write pseudo code/ function code to perform PUSH and POP operation of two numbers of stacks implemented in single array as shown in figure below. [7]



(b) Write in detail the application of stack and queue ADT. [3]

6. (a) Write pseudo code/ function code to implement the functionalities of output restricted double ended circular queue using an array. [7]

(b) Evaluation of the following postfix expression. [3]

5 3 2 * + 7 9 / 4 * 2 / - 6 + 2 -

***** BEST OF LUCK *****