Graphic Era
HILL UNIVERSITY
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University under section 2(f) of UGC Act, 1956

Mid Term (Odd) Semester Examination October 2024

Roll no... 2310[illegible] .....

Name of the Course (Semester): B. Tech CSE (III), B. Tech CSE Integrated (VII)
Name of the Paper: Data Structure with 'C' Paper Code: TCS 302/IBTCS 302
Time:1.5 hours Maximum Marks:50

INSTRUCTIONS TO STUDENTS

Note:

(i) This question paper contains five questions with alternative choice.
(ii) All questions are compulsory.
(iii)Each question carries **two** parts **a or b.** Attempt either parts **a** or **b** of each question.
(iv)Total marks assigned to each question are ten.

Q1. **(10*1,CO1,CO2)**

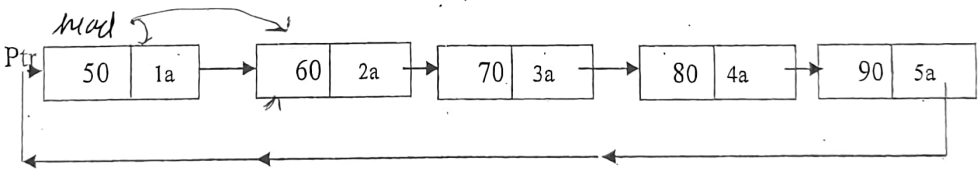
A. Assume that you have a single linked list. Write a C functions to find the 2nd smallest node in the linked list.

OR

B. Evaluate the following postfix expression using stack show (all the steps)
8, 2, +, 3, -, 6, 4, 3,*, +,* (Here comma is used as separator only).

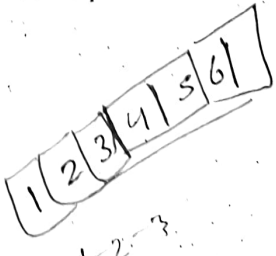
Q2. **(10*1, CO1,CO3)**

A. Consider a Circular linked list with a pointer, Ptr. Write a C function to delete the node pointed by pointer Ptr, in the linked list.



OR

B. What do you mean by a dynamic array? Write a 'C' function to create a dynamic array and input N elements in it then check whether the sequence of elements is in A.P or not. **Ex.** Input: 1,2,3,4,5,6 is in A.P.

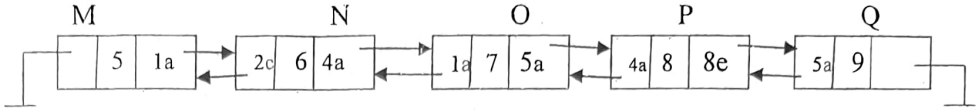


Q3. **(10*1,CO1,CO2)**

A. Compare two data structures used one for linear and other for direct access also describe which will be used where?

OR

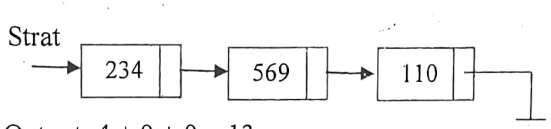
B. Assume that you have a double linked list, with five nodes, nodes are pointed by the following pointers ,M,N,O,P and Q.



Write steps to delete the node pointed by pointer P.

Q4. **(10*1, CO1,CO2)**

A. Assume that you have a single linked list with address start, stores a number in each node; write a C function to add least significant digits of all numbers present in the linked list. e.g.



m = 2

Output: 4 + 9 + 0 = 13

OR

B. Assume that you have a single linked list. Write a C function to convert that single linked list into a circular linked list.

Q5. **(10*1, CO2,CO3)**

A. Write notes on the followings: **(2.5*4=10)**

(i) Static memory allocation.
(ii) Classification of data structure.
(iii) ADT
(iv) Functions to allocate dynamic memory.

OR

B. Assume that you have a single linked list. Write a C function to return the value of the n^{th} node (given by the user) from the start of the linked list.