UNIVERSITY OF NORTH BENGAL

B.Sc. Programme 4th Semester Examination, 2021

DSC4-COMPUTER SCIENCE

DATA STRUCTURES

Full Marks: 40

ASSIGNMENT

The questions are of equal value.
The figures in the margin indicate full marks.

Answer any *two* questions   20×2 = 40

1. (a) Show the effect of PUSH and POP operation on to the stack of size 10. The stack contains 10, 20, 22, 26, 28 and 30, with 30 being at top of the stack. Show diagrammatically the effect of PUSH 46, PUSH 48, POP, POP and POP. Sketch the final structure of Stack after performing the above said operations.   10

   (b) Define Prefix, Infix and Postfix expression. Convert the following infix expression to its equivalent postfix form using stack: $A + B - C * D / E + F$.   10

2. What do you mean by Array? Describe the storage structure of array. Also explain various types of array in detail. Write the advantages and disadvantages of Array.   20

3. What is queue? Why it is known as FIFO? What are the various operations of queue? Explain with algorithm. Define dequeue and priority queue.   20

4. (a) Define stack. Explain PUSH and POP operation in stack. Write an algorithm to implement stack using array.   10

   (b) Define linked list. Discuss how an array is different from linked list. Discuss Singly, Doubly and Circular linked lists with example.   10

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