

Roll No.

Total No. of Questions : 13]

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J-3595[S-1451]

[2037]

B.Sc. (BI) (Semester - 6th)

DATA STRUCTURE ALGORITHMS & COMPILERS (B.Sc. (BI) - 603)

Time : 03 Hours

Maximum Marks : 75

Instruction to Candidates:

- 1) Section - A is **compulsory**.
- 2) Attempt any **Nine** questions from Section - B.

Section - A

Q1)

(15 × 2 = 30)

- a) What is data structure?
- b) What is meant by complexity of algorithm?
- c) Define stack and what are operations performed on it?
- d) What is Tower of Hanoi problem?
- e) What is the difference between grounded header list and circular header list?
- f) What is the complexity of binary search tree?
- g) Define binary tree and what are its types?
- h) What is the difference between preorder and in-order traversing?
- i) What is connected graph?
- j) How many edges are there in a complete graph with n nodes?
- k) What is the complexity of insertion sort?
- l) What is the advantage of binary search algorithm?
- m) What is the task of loader?
- n) What are different system programs and how they differ from application programs?
- o) What are the advantages and disadvantages of compilers and interpreters?

P.T.O.

Section - B

(9 × 5 = 45)

- Q2)** Translate infix expression into its equivalent postfix expression
(A-B) * (D/E)
- Q3)** What are priority Queues? Explain different representations of priority queues.
- Q4)** Discuss the advantages of two way list over one way list.
- Q5)** Explain the concept of garbage collection.
- Q6)** What is linked list? How it is represented in the memory.
- Q7)** Explain the traversing of binary tree using stacks.
- Q8)** Explain the Huffman's algorithm for path lengths.
- Q9)** Describe briefly searching and inserting operations in graphs.
- Q10)** Write short note on insertion sort and selection sort.
- Q11)** Differentiate linear and nonlinear data structure techniques.
- Q12)** Explain different phases of compiler.
- Q13)** Explain local and global optimization.

