

B.C.A. - II (CBCS Pattern) Semester-IV
UBCAT403 - Paper-III : Algorithm and Data Structures

P. Pages : 2

Time : Three Hours



GUG/W/24/11977

Max. Marks : 40

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and labelled diagram and use supporting data whenever necessary.
 3. Avoid vague answer and write specific answer related to questions.

Either:

1. a) What is the tower of Hanoi problems? Write down all the moves involved in moving three disks from source to destination peg. Show all the moves pictorially. 4
- b) Define Array. Explain its types & declaration. 4

OR

- c) Write an algorithm to find power of a number using recursion. 4
- d) Explain the advantages and disadvantages of recursion. 4

Either:

2. a) Differentiate between circular and priority queues. 4
- b) Write an algorithm to remove element from a queue. 4

OR

- c) Explain Basic operations on stack. 4
 - d) Translate by inspection & hand each infix expression into its equivalent prefix and postfix. 4
- i) $A / B \wedge C + (D * E) - (A * C)$ ii) $(A + B \uparrow D) / (E - F) + G$

Either:

3. a) Draw sketch of list when following operation performed on a singular list. 4
- b) Write an algorithm to delete the linked list. 4

OR

- c) Define linked list? Explain different operations on linked list. 4
- d) Explain the memory representation of Double linked list. 4

Either:

4. a) Set of letters which is inserted in an empty binary tree. 4
: S, T, B, I, C, U, A, E.
- b) Write an algorithm to search a node in a binary search tree. 4

OR

- c) Define and explain the following terms. 4
a) In degree of graph
b) Out degree of graph
c) Sink node
d) Source node
- d) Explain Expression tree in data trees along with uses. 4
5. All questions are compulsory.
- a) Write a short note on merging. 2
- b) Define stack? Explain. 2
- c) Explain the need of linked list. 2
- d) Explain operations on Binary tree? 2
