

B.E. Information Technology (CBCS Pattern) Third Semester
3BEIT03 - Data Structure

P. Pages : 2

Time : Three Hours



GUG/W/18/11508

Max. Marks : 80

- Notes :
1. Same answer book must be used for each question.
 2. All questions carry marks as indicated.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) What is Data structure ? Give the classification of data structure in details. 8
- b) What is Binary searching ? Explain with a suitable example. 8

OR

2. a) What is quick sort ? Explain with a suitable example. 8
- b) What is one dimension array ? Write a complete program to insert an element in an array at a given position. 8
3. a) Explain double linked list. Write a complete program to delete an element at a given position in double linked list. 8
- b) Explain Linked List. Give the advantage and disadvantage of Linked List. 8

OR

4. a) What is memory allocation ? Explain in details any three types of memory allocation function. 8
- b) Explain two way linked list. Give advantage and disadvantage of two way linked list and its application. 8
5. a) Write a program to implements push and pop operation on stack. 8
- b) Convert the following expression into prefix using stack 8
exp : $\rightarrow 5 * 6 * 2 + * 12 * 4 / -$

OR

6. a) Convert the following 8
 - i) From infix to prefix
 $a - b / (c \wedge d) + (e * f)$
 - ii) From infix to postfix
 $a \& \& b \parallel c \parallel ! (c > f)$
- b) What is priority queue ? Explain in details. 8

7. a) Explain following terminologies - 8
- i) Node ii) Dept
- iii) Degree of Node iv) Forest
- b) Draw the tree from following list of elements. 8
3, 5, 11, 8, 4, 1, 12, 7, 2, 6, 10

OR

8. a) Explain threaded binary tree with example. 8
- b) Explain B⁺ tree in details. 8
9. a) Explain prims algorithm to find minimum cost spanning tree with suitable example. 8
- b) Explain the following terms : 8
- i) Adjacent Matrix
- ii) Adjacency list
- iii) Multi List

OR

10. a) Explain Breadth First Traversal with suitable example. 8
- b) What is Graph ? What are the different type of graph and gives its application. 8
