PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BCA DEGREE EXAMINATION DECEMBER 2019
(Second Semester)

Branch - COMPUTER APPLICATIONS

DATA STRUCTURES

Time: Three Hours   Maximum: 75 Marks

SECTION-A tlO Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (10 x 1 = 10)

1   What data structure is used for breadth first traversal of a graph?
    (i)   Queue   (ii) Stack
    (iii) List   (iv) None of the above

2   Which of the following methods can be used to find the nth Catalan number?
    (i)   Recursion   (ii) Binomial coefficients
    (iii) Dynamic programming (iv) All of the mentioned

3   Which of the following is not a noncomparison sort?
    (i) Counting sort   (ii) Bucket sort
    (iii) Radix sort   (iv) Shell sort

4   Which of/he following is not an in-place sorting algorithm?
    (i) Selection sort   (ii) Heap sort
    (iii) Quick sort   (iv) Merge sort

5   Which of these is an application of linked lists?
    (i)   To implement file systems
    (ii) For separate chaining in hash-tables
    (iii) To implement non-binary trees (iv) All of the mentioned

6   What is the time complexity to count the number of elements in the linked list?
    (i) 0(1)   . (ii) 0(2)
    (iii) O(logn)   (iv) None of the mentioned

    In breadth first search of graph, which of the following data structure is used?
    (i) Stack   (ii) Queue
    (iii) Linked list   (iv) None of the mentioned

8   A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?
    (i) Queue   (ii) Circular queue
    (iii) Dequeue   (iv) Priority queue

9   What is the number of edges present in a complete graph having n vertices?
    (i)   (n*(n+l))/2   (ii) (n*(n-l))/2
    (iii) n   (iv) Information given is insufficient

10 Which of the following statements for a simple graph is correct?
    (i)   Every path is   atrail
    (ii) Every trail is   apath
    (iii) Every trail is a path as well as every path is a trail
    (iv) None of the mentioned

SECTION - B (25 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks $(5 \times 5 = 25)$

i 1 a Describe space trade off.

OR

b Explain about pointer.

12 a Describe insertion sort.

OR

b Summarize the selection son.

13a How traversing a linked list?

OR

b How searching a linked list?

14 a Describe queue.

OR

b Summarize applications of stacks.

t

15 a Narrate binary tree traversing.

OR

b Explain about B-tree.

SECTION -C (40 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** Marks $(5 \times 8 = 40)$

16 a Elucidate multidimensional array.

OR

b Discuss about string operations.

17 a Enumerate merge sort.

OR

b Summarize searching and data modification.

18 a Discuss about two way list.

OR

b Examine how deleting from a linked list.

19 a Elucidate linked representation of queues.

OR

b Enumerate circular queue.

20 a Summarize applications of trees.

OR

b Discuss about WarshallN algorithm.

Z-Z-Z   END