PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Second Semester)

Branch – COMPUTER SCIENCE

DATA STRUCTURES

Time: Three Hours   Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks   (5 x 1 = 5)

1   What is the term for inserting into a full queue known as?
(i)   overflow   (ii)   underflow
(iii) null pointer exception   (iv) program won't be compiled

2   What would be the solution to the given prefix notation?
$+ 9 * 3 / 8 4$
(i)   14   (ii) 15
(iii) 18   (iv) 12

3   2-3-4 trees are B-trees of order 4. They are an isometric of _____ trees.
(i)   AVL   (ii) AA
(iii) 2-3   (iv) Red-Black

4   Heap can be used as _____
(i)   Priority queue   (ii) Stack
(iii) A decreasing order array   (iv) Normal Array

5   What is meant by physical size in a dynamic array?
(i)   The size allocated to elements
(ii) The size extended to add new elements
(iii) The size of the underlying array at the back-end
(iv) The size visible to users

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks   (5 x 3 = 15)

6   a   Briefly explain about matrices.
                    OR
    b   Discuss about structures.

7   a   Illustrate on merge sort.
                    OR
    b   Give the working principles of hashing.

8   a   Explain singly linked list.
                    OR
    b   Elucidate on traversing a list.

9   a   Discuss in detail about recursion.
                    OR
    b   Describe about dequeue operations.

10 a   Elucidate on binary tree traversal.
                    OR
    b   Illustrate on insertion of node in BST.

SECTION -C (30 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 x 6 = 30)

11 a Explain arrays and its types.

OR

  b Illustrate on pointers with necessary theory.

12 a Discuss about quick sort with suitable example.

OR

  b How do the binary search work? Explain.

13 a Explain dynamic memory allocation with necessary theory.

OR

  b Discuss about doubly linked list.

14 a Comment on infix – postfix conversion with example.

OR

  b Describe types of queues with suitable instances.

15 a Explain the operations of AVL tree.

OR

  b Discuss about heap sort in detail.

Z-Z-Z   END