

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)  
MCA DEGREE EXAMINATION DECEMBER 2018  
(First Semester)

**Branch - COMPUTER APPLICATIONS**

**DATA STRUCTURES**

Time: Three Hours

Maximum: 75 Marks

**SECTION -A (30 Marks)**

Answer **ALL** questions  
**ALL** questions carry **EQUAL** Marks ( 5 x 6 = 30)

- 1 a Discuss about sparse matrix and its representations in detail.  
OR  
b Write a program to implement stack operations.
- 2 a Write a program to implement Selection Sort.  
OR  
b Write the binary search algorithm. Evaluate time and space complexity of the above algorithm.
- 3 a Transform the expression  $((a+b)+c*(d+e)+f)*(g+h)$  to postfix using stack.  
OR  
b Describe about Traversing in a list.
- 4 a Describe about three binary tree traversal techniques.  
OR  
b Summarize the applications of non-linear Data Structures.
- 5 a Write a note on Tree Operations.  
OR  
b Compare and contrast different file structures.

**SECTION -B (45 Marks)**

Answer any **THREE** questions  
**ALL** questions carry **EQUAL** Marks ( 3 x 15 = 45)

- 6 Elucidate on string processing operations.
- 7 Sort the following numbers using insertion sort and bubble sort  
78, 21, 14, 97, 87, 62, 74, 85, 76, 45, 84, 22.
- 8 Discuss the types of Queues and its operations with suitable example.
- 9 Explain about Depth First Traversal and Breadth First Traversal techniques with examples.
- 10 Describe different types of hashing techniques in detail.