Reg. No. : ....

Name : ....

Fourth Semester B.Sc. Degree Examination, July 2018
FDP Under CBCSS
Complementary for Statistics and Mathematics
CS 1431.2/CS 1431.3
DATA STRUCTURES AND ALGORITHMS
(2013 to 2015 Admissions)

Time : 3 Hours   Total Marks : 80

SECTION – A

Answer **all** questions. **Each** question carries **one** mark.   **(10×1=10 Marks)**

1. Define Data structure.

2. What is malloc() ?

3. What is a matrix ?

4. Expand FIFO.

5. Which is the most frequently accessible element of the stack ?

6. What do you mean by dynamic implementation of stack ?

7. What is the condition for circular queue to be empty ?

8. What do you mean by doubly linked list ?

9. What is node ?

10. What is sorting ?

SECTION – B
(Short Answer)

Answer **any eight** questions. **Each** question carries **two** marks.   **(8×2=16 Marks)**

11. What is an Array ?

12. What is the address of a particular element in a one-dimensional array ?

13. What is direct recursion ?

P.T.O.

14. What is Stack ?

15. What are the basic operations on queue ?

16. What is circular queue ?

17. What is the use of NULL pointer ?

18. What is the structure of polynomial node ?

19. What do you mean by efficiency of sequential searching ?

20. What is breadth-first search ?

21. What is merge sort ?

22. What is insertion sort ?

SECTION – C

(Short Essay)

Answer **any six** questions. **Each** question carries **four** marks.   **(6×4=24 Marks)**

23. What are the limitations of linear arrays ?

24. Discuss the representation of sparse matrix.

25. What are the disadvantages of recursion ?

26. Briefly explain the stack implementation.

27. Convert the expression A + [(B + C) + (D + E) *F]/G into postfix.

28. Discuss the advantages and disadvantages of doubly linked lists.

29. Express (A + B) * C in binary tree.

30. Briefly explain shell sort.

31. Write an algorithm for selection sort.

SECTION – D

(Long Essay)

Answer **any two** questions. Each question carries **15** marks.   **(2×15=30 Marks)**

32. Explain the classification of data structure.

33. Write the algorithms for PUSH and POP operations in stack.

34. Discuss the insertion and deletion operations on linked list.

35. Explain binary tree traversal.