Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641 043
Bachelor's Degree Examination –November 2017
III Semester

Class : II UG **Time :3 hours**
Major : Information Technology **Max. Marks: 100**

15BITC11 Data structures and Algorithms

Part-A **10 x 1=10**

Choose the correct answer

1. An _____ is a finite set of instructions .
   a) Algorithm b) Flowchart c) Pesudocode d) Program
2. The___called linear , in which the runtime complexity is proportionate to the size of n.
   a) O(1) b) O(n) c) $O(2^n)$ d)$O(n^3)$
3. In which notation operator comes between operand?
   a) Infix b) Prefix c) Postfix d) None
4. In polynomial manipulation, nodes consists of three field representing
   a) Coefficient, exponential and link b)Previous item link, data item, next itemlink
   c) Coefficient, data item and link d) None
5. When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return
   a) FAEKCDBHG b) FAEKCDHGB c) EAFKHDCBG d) FEAKDCHBG
6. A tree with a thread is called a_____.
   a) Decision tree b) TBT c) Game Tree d) Binary tree
7. A _____is a set of vertices and edges {*V*, *E*}
   a) Graph b) Matrix c) List d) Arrays d) none
8. The time taken by the algorithm, shortest path on a graph with n vertices is _____
   a) $O(n^2)$ b) O(m,n) c) O(m+n) d) $O(m^2)$
9. The _____technique is well suited when a data set can be divided into smaller subsets of data elements and each data set can be independently processed.
   a) divide & conquer b) dynamic programming c) greedy method d) pattern matching
10. _____ is a round trip path along n edges of G that visits every vertex once and returns to its starting position.
    a) least cost search b)graph coloring c)Hamiltonion cycle d) none

Part B **5 X 6=30**

Answer the following

Answer should not exceed 400 words or two pages

11. a) What is Recursion? Illustrate with an example . (or)
    b)Write a procedure of transpose a matrix using arrays and discuss its computing time.
12. a) Give definition of infix, prefix and postfix notation. (or)
    b)Discuss about Multiple stacks and Queues.
13. a) Define tree. Discuss about different types of trees.(or)
    b) What is a spanning tree? How to find minimum spanning tree.
14. a) What is a shortest path? Analyse its algorithm (or)
    b) Write short note on bubble sort with algorithm.
15. a) What is a Binary Search? Show with an example (or)
    b) How to find minimum cost of a travelling sales man problem?

Part C **5 x 12=60**

Answer the following

Answer should not exceed 800 words or four pages

16. a) Explain the steps for the development of algorithm.

(or)

b) What is an array? Discuss the operations performed on array with example.

17. a)Explain the operation performed on Stack (or)

b) Explain operation of linked stack and linked queue.

18. a) Write in detail about Garbage collections.

(or)

b) Discuss in detail about Binary tree Traversal.

19. a) Explain in detail how the Graphs are represented?

(or)

b) Explain in detail about Heap sort and Merge sort.

20. a) Explain in detail about knapsack problem in dynamic programming

(or)

b) Explain Backtracking with its algorithm with suitable example

****