**C**  **B4C102**  **Pages: 2**

Reg. No._____  Name:_____

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**
FOURTH SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2017

Course Code**: IT202**
Course Name**: ALGORITHM ANALYSIS AND DESIGN (IT)**

Max. Marks: 100  Duration: 3 Hours

## PART A
### *Answer any 2 questions.*

1  a.  What is an asymptotic notion? Give the different notations used to represent the complexity of algorithms?  (10)

   b.  Write down the control abstraction for divide and conquer?  (5)

2  a.  Give the divide and conquer solution for binary search and analyze its complexity?  (8)

   b.  What is a recurrence relation? Solve $T(n) = 2T(n/2) + C$ using recurrence trees.  (7)

3  a.  How we can prove that Stressen's matrix multiplication is advantageous over ordinary matrix multiplication?  (10)

   b.  Solve the recurrence relation $T(N)=T(n-1)+1$ and $T(1) = \Theta(1)$ using iteration method.  (5)

## PART B
### *Answer any 2 questions.*

4  a.  Explain (i) State space tree  (9)

   (ii) Fixed tuple formulation

   (iii) Variable tuple formulation

   b.  Solve knapsack problem  n=3 m=20 $(P_1,P_2,P_3)$=25  (6)

5  a.  What is back-tracking? Give one problem that can be solved by back-tracking?  (5)

   b.  What is minimum spanning tree? Explain Prim's algorithm to find minimum spanning tree ?  (10)

6  a.  What is the relevance of Least cost search? Give the control abstraction for Least cost search.  (8)

   b.  Give the general Knap-sack problem. Suggest a method for solving it.  (7)

## PART C
### *Answer any 2 questions.*

7  a.  Describe Rabin-Karp algorithm for pattern matching  (12)

   b.  Differentiate between deterministic and non-deterministic algorithms?  (5)

   c.  What are approximation algorithms?  (3)

8  a.  Explain the backward approach in solving multistage graph problems.  (12)

b.   What are comparison trees? How it can be used to find the lower bound of     (8)
     ordered searching

9   a.   What are rendomized algorithms? Illustrate Las-Vegas randomized algorithm for     (10)
         performing quick sort on a set of integers.

b.   Explain vertex cover problem using an example. Suggest an algorithm for finding     (10)
     vertex cover of a graph.

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