b) What is a B-tree? Write down the properties of a B-tree. Illustrate your answer with an example.

8. Write short note:

a) Parallel algorithm

b) NP completeness

c) Reliability design

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Total No. of Questions :8] *[Total No. of Printed Pages :4*

Roll No .....

CS-228

B.E. IV Semester

Examination, June 2017

Choice Based Credit System (CBCS)

Analysis and Design of Algorithm

Time : Three Hours

Maximum Marks: 60

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) What are the differences between Big-Oh (O), Omega (ω) and Theta (θ) notations?

b) Is there any difference among algorithm, pseudocode and program? Explain.

2. a) Apply binary search to find 123 in a list:

45, 96, 105, 121, 145, 192, 199, 205, 245, 275, 123, 850, 905.

b) Sort the following list using quick sort:

36, 95, 42, 12, 08, 66, 72, 55

3. a) How divide and conquer technique can be applied to binary trees? Also write algorithm for divide and conquer.

   b) Explain strasseni's matrix multiplication with the help of an example.

4. a) What is spanning tree? Write Kruskals algorithm with an example to find minimal spanning tree.

   b) A Knapsack capacity is 100. The weights and values of five objects are as follows:

   Weight Wi : 10 20 30 40 50

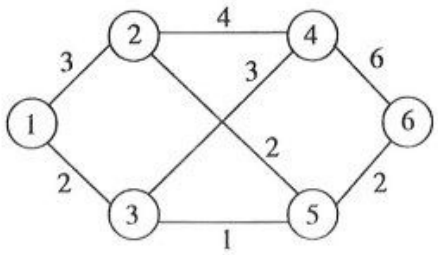
   Value Pi : 20 30 66 20 60

   Solve the Knapsack problem using Greedy strategy and find the maximum profit that can be obtained.

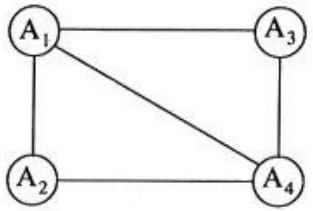
5. a) Use the Floyd-worshall algorithm and find all pain shortest paths for the following adjacency weighted matrix.

$$\begin{bmatrix} 0 & 4 & \infty & 3 \\ \infty & 0 & 2 & 1 \\ 5 & 3 & 0 & \infty \\ 1 & \infty & 2 & 0 \end{bmatrix}$$

   b) Solve the following multistage problem using both forward and backward reasoning.



6. a) Colour the following graph using a vertex colourin algorithm. What is the minimum number of colour required?



   b) Solve the TSP using branch and bound technique:

	A	B	C
A	∞	2	3
B	5	∞	3
C	2	4	∞

7. a) Show preorder, inorder and postorder for the followin tree: