

**B.Tech. – VIEP – COMPUTER SCIENCE AND
ENGINEERING (BTCSEVI)**

Term-End Examination

00313

June, 2018

**BICS-014 : DESIGN AND ANALYSIS OF
ALGORITHM**

Time : 3 hours

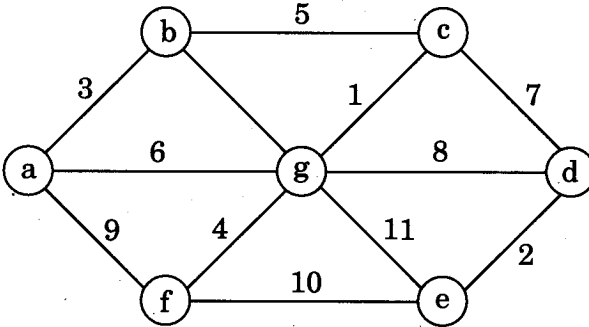
Maximum Marks : 70

Note : Attempt any seven questions. All questions carry equal marks.

1. (a) Write an algorithm to check whether an array $A[0 \dots n-1]$ is a min-heap or not. Determine the time complexity of this algorithm. 5
- (b) Write Merge sort algorithm to sort an array in ascending order. 5
2. (a) Discuss Master's method for solving recurrence relations. Give suitable example. 5

(b) Explain the potential method of amortized analysis with suitable example. 5

3. Write Kruskal's algorithm for Minimum cost spanning tree. Apply this algorithm on the graph given below : 10



4. Write Strassen's matrix multiplication algorithm. Determine its time complexity. 10

5. What is Eight Queens problem ? Discuss randomized solution for Eight Queens problem. 10

6. (a) Discuss probabilistic methods for the verification of matrix multiplication. 5

(b) Write Quick sort algorithm. How does it differ from Randomized Quick sort algorithm ? Determine average case time complexity of Quick sort algorithm. 5

7. (a) Describe the term Matroid with suitable example. 5
- (b) Discuss Cook's theorem with suitable example. 5
8. Write the iterative and recursive algorithm to find the greatest common divisor of two numbers (say m and n). Compare the space and time complexity of both algorithms. 10
9. Write Dixon's Integer factorization algorithm. Explain it with suitable example. 10
10. Write short notes on any *two* of the following : 10
- (a) Miller-Rabin Test for Primality Testing
 - (b) Universal Hashing
 - (c) Huffman Coding
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