Program: **Cyber Security**

Curriculum Scheme: Rev2019

Examination: SE   Semester :IV

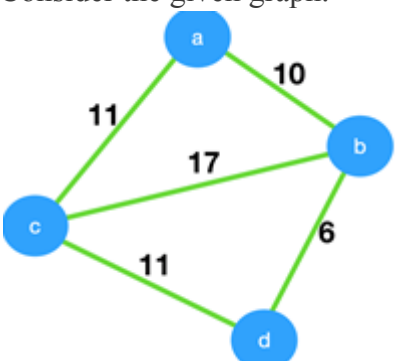Course Code:CSC402   Course Name: Analysis of Algorithm

Time: 2 hour 30 minutes   Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Solve the following recurrence using Master's theorem. T(n) = 16T (n/4) + n
Option A:	T(n) = O(n)
Option B:	T(n) = O(log n)
Option C:	D : both 1and 2
Option D:	T(n) = O(n^2)

2.	What is the time complexity for given code. (2M)
	 for(i=1; i<n; i=i+2)
	 {
	 for(j=0;j<n;j++)
	 {
	 statement;
	 }}

Option A:	O(n^2)
Option B:	O(log n)
Option C:	O(n)
Option D:	O(√n)
3.	What is the condition for proper edge coloring of a graph?
Option A:	Two vertices having a common edge should not have same color
Option B:	Two vertices having a common edge should always have same color
Option C:	No two incident edges should have the same color
Option D:	No two incident edges should have different color
4.	As part of the maintenance work, you are entrusted with the work of rearranging the library books in a shelf in proper order, at the end of each day. The ideal choice will be
Option A:	Quick sort
Option B:	Merge sort
Option C:	Insertion sort
Option D:	Bubble sort
5.	What is the average case time complexity of merge sort?
Option A:	O(N Log N)
Option B:	O(n*n)
Option C:	O(Log N)

Option D:	O(Log Log N)
6.	Choose the correct statement from the following.
Option A:	branch and bound is more efficient than backtracking
Option B:	branch and bound is not suitable where a greedy algorithm is not applicable
Option C:	branch and bound divides a problem into at least 2 new restricted sub problems
Option D:	backtracking divides a problem into at least 2 new restricted sub problems
7.	**What is the objective of the knapsack problem?**
Option A:	To Get Maximum Total Value In The Knapsack
Option B:	To Get Minimum Total Value In The Knapsack
Option C:	To Get Maximum Weight In The Knapsack
Option D:	To Get Minimum Weight In The Knapsack
8.	**What approach is being followed in Floyd Warshall Algorithm?**
Option A:	Greedy Technique
Option B:	Dynamic Programming
Option C:	Linear Programming
Option D:	Backtracking
9.	What is the pre-processing time of Rabin and Karp Algorithm?
Option A:	Theta(m2)
Option B:	Theta(mlogn)
Option C:	Theta(m)
Option D:	Big-Oh(n)
10.	Consider the given graph.
Option A:	23
Option B:	28
Option C:	27
Option D:	11

Q2	Solve any Two Questions out of Three 10 marks each
A	Write a Algorithm for finding minimum and maximum using divide and conquer and derive its complexity.
B	Write a kruskal's algorithm and show its working by taking a suitable example of the graph with 5 vertices.
C	Solve the sum of a subset of problems using the following N=6 W={3,5,7,8,9,15} M=20 and also write the algorithm for it.

Q3.	Solve any Four Questions out of Six 5 marks each
A	Differentiate between P and NP
B	Explain the recurrence and various method of to solve the recurrence
C	Write a short note on Rabin Karp algorithm.
D	Explain 8 Queen problem with Example
E	Explain assembly line Scheduling with Example
F	Write a note on Floyd Warshall Algorithm.

Q4.	
A	Solve any Two 5 marks each
i.	Explain Dynamic programming with example.
ii.	Write a short note on Strassen's matrix multiplication
iii.	What is backtracking approach ? How it is used in Graph Coloring ?
B	Solve any One 10 marks each
i.	Write a short note on Job sequencing with deadlines.
ii.	Find Longest Common Subsequence for Following strings : X = ababcde Y = bacadb