B.E. / B.Tech. DEGREE EXAMINATION AUGUST 2021

Fourth Semester

Computer Science and Engineering

15UCS403- DESIGN AND ANALYSIS OF ALGORITHMS

(Regulation 2015)

Duration: 1:45 hrs   Maximum: 50 Marks

PART A

(Answer any Ten Questions 10 x 2 Mark = 20 Marks)

1.	State and explain Weighted Graphs	CO1- R
2.	What is the complexity bubble sort.	CO1- U
3.	What does dynamic programming have in common with divide-and-conquer? What is a principal difference between them?	CO3- U
4.	What is maximum flow problem?	CO4- R
5.	What is blocking pair in stable marriage matching problem.	CO5- U
6.	Sort the list E,X,A,M in alphabetical order by bubble sort. Show the result of each iteration.	(CO2-U)
7.	Define Dynamic Programming and list out its features.	(CO3-U)
8.	What is principle of optimality?	(CO3-U)
9.	Define feasible and optimal solution.	(CO3-U)
10.	Define lower bound and list the various methods to calculate it?	(CO4-U)
11.	State and explain Weighted Graphs	(CO4-U)
12.	What is the complexity bubble sort.	(CO4-U)
13.	What does dynamic programming have in common with divide-and-conquer? What is a principal difference between them?	(CO1-U)
14.	What is maximum flow problem?	(CO1-U)
15.	What is blocking pair in stable marriage matching problem.	(CO15-U)

PART – B

(Answer any Three Questions 3 X 10 = 30 Marks)

16.	Explain Quickser algorithm in detail with its complexity analysis.	CO1 - APP	(10)
17.	Write a pseudo code for merge sort algorithm for sorting the following list P,R,O,G,R,A,M in alphabetical order.	CO2 - APP	(10)

18. Maximize $Z = f(x,y) = 3x + 2y$
subject to:
$$2x + y \leq 18$$
$$2x + 3y \leq 42$$
$$3x + y \leq 24$$
$$x \geq 0 , y \geq 0 .$$

CO3 - U   (10)

19. Construct state space search tree for solving the four queen's problem by back tracking and write its algorithm.

CO4 - APP   (10)

20. Explain how the board's symmetry can be used to find the second solution to the four-queens problem

CO3 - App   (10)