CLASS: BTECH   SEMESTER: VI
BRANCH: CP&P/MECH/PROD/ECE   SESSION: SP/2023

SUBJECT: CS206 DESIGN AND ANALYSIS OF ALGORITHM

TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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			CO	BL
Q.1(a)	How do you measure the efficiency of an Algorithm?	[2]	CO-1 CO-5	BT-4
Q.1(b)	Determine the best and worst conditions for the insertion sort algorithm's complexity?	[3]	CO-1 CO-3	BT-3
Q.2(a)	Define recurrence relation?	[2]	CO-1	BT-3
Q.2(b)	Solve the recurrence relation using back substitution method	[3]	CO-1 CO-3	BT-4

$$T(n) = \{1 \; if \; n = 2$$
$$T(\sqrt{n}) + 1 \; if \; n > 2\}$$

			CO	BL
Q.3(a)	Solve using master theorem: $T(n) = 4T(n/2) + n^2 log^2 n$	[2]	CO-1	BT-2
Q.3(b)	Explain quicksort with an example?	[3]	CO-2	BT-5
Q.4(a)	What do you know about the divide-and-conquer algorithm?	[2]	CO-2	BT-2
Q.4(b)	Briefly describe the maximum subarray problem using the divide-and-conquer method.	[3]	CO-2 CO-4	BT-3
Q.5(a)	What is the main idea of Transform and Conquer?	[2]	CO-3	BT-3
Q.5(b)	Construct an AVL tree having the following elements: H, I, J, B, A, E, C, F, D, G, K, L	[3]	CO-2 CO-4	BT-5

::::::28/02/2023::::::M