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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Fourth Semester

IT16401 – PARADIGMS OF ALGORITHM DESIGN*(Information Technology)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. What are the qualities of good algorithm?	1	R
2. Define hashing.	1	R
3. Differentiate divide and conquer and dynamic programming concept.	2	AN
4. What is the worst case and best case time complexity of quick sort?	2	U
5. Differentiate branch & bound and backtracking algorithm.	2	AN
6. Define minimum spanning tree.	2	R
7. What is the objective of travelling salesman problem?	2	U
8. What do you mean by NP completeness?	3	R
9. Define genetic algorithm.	4	R
10. Differentiate SIMD and MIMD process models.	5	AN

PART B - (5 X 16 = 80 Marks)

11. (a) Analyze the best and worst case scenarios for insertion sort algorithm (16) 1 AN
with an example.

(OR)

- (b) Analyze the parameters required for evaluating algorithms and (16) 1 AN
explain the order of growth and various notations.

12. (a) Apply the divide and conquer approach strassen's matrix (16) 2 AP
multiplication and do the analysis.

(OR)

- (b) Find the optimal sequence to multiply the chain of 4 matrices $A_1 * A_2 * A_3 * A_4$ with dimensions $p_0=5, p_1=4, p_2=6, p_3=2$ and $p_4=7$. (16) 2 AP
13. (a) Explain minimum spanning tree and derive MST using prims algorithm from a suitable example. (16) 2 AP
- (OR)**
- (b) Explain how back tracking is applied to solve Hamiltonian circuits problem with a suitable example. (16) 2 AP
14. (a) Write and explain the travelling salesman approximation algorithm with an example. (16) 4 AP
- (OR)**
- (b) Explain in detail polynomial, NP, NP complete and NP hard problems with suitable example. (16) 4 AP
15. (a) State PRAM model and explain the CREW PRAM model in detail. (16) 5 U
- (OR)**
- (b) (i) Explain the SIMD and MIMD architecture in detail. (10) 5 U
- (ii) Write down the real time application of genetic algorithm. (6) 5 U