Total No. of Questions : 8]

SEAT No. :

P4018

[Total No. of Pages : 2

[5155] - 266
M.E. Computer Engineering
APPLIED ALGORITHMS
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Answer any Five questions.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All questions carry equal marks.***
5) ***Assume suitable data if necessary.***
6) ***Use of calculator is allowed.***

Q1) a) State whether following equalities are correct or incorrect and prove it. **[5]**

i) $10n^2 + 5n + 6 = \Omega(n^4)$

ii) $4n^4 - 6n = \theta(n^2)$.

b) Define and discuss the different characteristics of algorithm with suitable example. **[5]**

Q2) a) Explain in detail Theta and Omega notation with example. **[5]**

b) Explain the Best, Average, and Worst case of Merger sort and Insertion sorting algorithm. **[5]**

Q3) a) Describe single source shortest path Algorithm in graph. **[5]**

b) Write about the application of Greedy approach. **[5]**

Q4) a) Explain Prim's Algorithm for minimum spanning tree. **[5]**

b) What is convex hull? Explain how convex hull is computed. What is its time complexity? **[5]**

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Q5) a) Explain the Red-Black Trees. **[5]**

b) Write the Approximation Vector cover Algorithm. **[5]**

Q6) a) Write recursive binary search algorithm and determine its time complexity by recurrence. **[5]**

b) What are the basic properties of Line, Intersection of Line and Line Segment? **[5]**

Q7) a) Describe the standard form for the LPP. **[5]**

b) Explain simplex method of LPP with example. **[5]**

Q8) a) Write short note on Epsilon Approximation. **[5]**

b) Explain Exception, Moments and variance with example. **[5]**

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