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P. Pages : 2

Time : Three Hours

**NIR/KW/18/3577**

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.

1. a) What is triangulation? Describe the following. 7
a) Angular triangulation.
b) Point-Set triangulation.

- b) Explain line segment intersection in view of computational geometry. 7

OR

2. a) Discuss two fields of application of computational geometry highlighting why classical geometry can't be applied in such field. 7
b) Explain Doubly connected Edge list. 7

3. a) What is orthogonal range searching? Explain one dimensional range searching. 7
b) Discuss linear programming with prune and search in detail. 6

OR

4. a) Discuss half plane intersection in view of computational geometry. 7
b) What is trees? Explain higher dimensional range trees. 6

5. a) Define the following terms: 7
i) Duality.
ii) Levels and discrepancy.

- b) Explain point location & trapezoidal maps. 6

OR

6. a) What is Voronoi diagram? What is the significance of the Voronoi diagram. 7
b) Explain application of randomized incremental algorithm. 6

7. a) What is priority search trees? Explain with suitable example. 7
b) How to compute the Delaunay triangulation. 6

OR

8. a) Difference between data structure and Geometric data structure. 5
b) Explain data structure and application of internal trees and segment trees. 8
9. a) Define binary space partition trees. Explain with suitable example. 7
b) Explain BSP trees with diagram. 6

OR

10. a) What is the role of painter's algorithm? Explain in brief. 7
b) Discuss the advantages and dis-advantages of BSP trees over Kd-trees. 6
11. a) Explain the significance of multi-level partition trees. 7
b) Write short note on simplex Range searching. 7

OR

12. a) Explain cutting trees. 7
b) Give definition and block diagram of quadtrees for point set. 7



~ Walt Disney

