NagpurStudents

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" IT'S HARD TO BEAT A PERSON
WHO NEVER GIVES UP. "

Babe Ruth, American professional baseball player

Elective - II : Computational Geometry

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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. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) Discuss the computational Geometry basics. **5**

b) Explain line segment intersection and Doubly connected edge list. **8**

OR

2. a) What is triangulation? Describe following **7**

i) Angular triangulation

ii) Point-set triangulation.

b) Differentiate between **6**

i) Plane and 3-D line

ii) Convex and concave in content of computational geometry.

3. a) Explain liner programming with prune and search in detail. **6**

b) Discuss the half plane intersection in view of computational geometry. **7**

OR

4. a) What is trees? Explain higher dimensional range trees. **7**

b) Differentiate between incremental linear programming and Randomized linear programming. **6**

5. a) Describe voronoi diagram. Explain Duality of voronoi diagram. **7**

b) What is point location and trapezoidal maps? Explain in detail. **7**

OR

6.	a)	Explain Randomized Incremental algorithm.	**7**
	b)	Explain in detail	**7**
		i) Duality and	
		ii) Levels and discrepancy.	
7.	a)	Explain the data structure for priority search trees used in geometric functions.	**7**
	b)	Write a note on triangulation of planar point sets.	**6**

OR

8.	a)	Define Delaunay triangulation. Explain the computations of it.	**7**
	b)	Explain priority search tree with suitable example.	**6**
9.	a)	What is convex hulls? How to compute complexity of convex hulls in 3-space.	**7**
	b)	Define binary space partition trees with suitable example.	**6**

OR

10.	a)	Explain painter's algorithm in computational geometry.	**6**
	b)	What is BSP trees? Explain how to construct it with suitable example.	**7**
11.	a)	Write short note on Quadtrees for point set.	**7**
	b)	Explain simplex Range searching and cutting trees.	**7**

OR

12.	a)	Explain algorithm for weak and strong visibility?	**7**
	b)	Explain multilevel partition trees.	**7**

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High expectations are the key to everything.

~ Sam Walton

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