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Computational Geometry Ist Sessional Test 2011-12 (ECS042)

CSE Final Year

MM:30 TT:1H

Note: Attempt all questions, each question carry equal marks.

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| **Q1. Attempt any Three Parts: (10X3)** |
| **(a)** Differentiate classical & computational geometry. |
| **(b)** Discuss convex & concave in context of Computational Geometry.  |
| (c) Discuss two fields of application of computational geometry highlighting why classical geometry can’t be applied in such field?  |
| (d) Define convex hull. Determine convex hull with an example. |
| (e) Explain Jarvis’s march for convex hull with help of a suitable example. |

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| **Q2. Attempt any Three Parts: (10X3)** |
| **(a)** Discuss Algorithm SLOWCONVEXHULL(P) where *Input:* A set *P* of points in the plane. *Output:* A list L containing the vertices of CH(*P*) in clockwise order.  Also discuss its time complexity. |
| **(b)**Discuss the incremental algorithm of CONVEXHULL(P). Also discuss its time complexity. |
| (c) Prove that The convex hull of a set of n points in the plane can be computed in O(nlogn) time.  |
| (d)Discuss the Application Domain of CG in Robotics, and Geographic information systems. |