

# University of the State of New York

75TH EXAMINATION

## SOLID GEOMETRY

MONDAY, Jan. 19, 1891—1:15 to 4:15 P. M., only

*40 credits, necessary to pass, 30*

1. Define (*a*) a right prism ; (*b*) a trihedral angle ; (*c*) the measure of a dihedral angle ; (*d*) similar polyhedrons ; (*e*) cylinder of revolution ; (*f*) projection of a line on a plane. 6
2. Prove that if two planes cut each other their intersection is a straight line. 3
3. Prove that if a straight line is perpendicular to a plane, every plane passed through the line is perpendicular to the first plane. 4
4. Prove that two rectangular parallelepipeds, having equal bases are to each other as their altitudes. (2 cases.) 8
5. Prove that if a pyramid is cut by a plane parallel to its base, (*a*) the edges and altitude are divided proportionally ; (*b*) the section is a polygon similar to the base. 6
6. Find the radius of a sphere whose surface has the same numerical value as the circumference of a great circle of the sphere. 3
7. The diameter of a cylinder is 14 feet and its altitude 8 feet ; find the altitude of an equivalent right prism whose base is 4 feet square. 5
8. The altitude of a right cone equals the diameter of its base ; find the ratio of the area of the base to that of the lateral surface. 5