The University of the State of New York

214TH HIGH SCHOOL EXAMINATION

SOLID GEOMETRY

Monday, January 17, 1916—9.15 a. m. to 12.15 p. m., only

Write at top of first page of answer paper (*a*) name of school where you have studied, (*b*) number of weeks and recitations a week in solid geometry.

The minimum time requirement is two recitations a week for a school year or four recitations a week for half a school year.

Name the author of the textbook you have used in your study of solid geometry.

Answer seven questions, including three from group I and two from each of the other two groups.

Assign 12 credits to each question in group I and 18 credits to each question in groups II and III.

Group I

Answer three questions from this group.

1 Prove that the sum of any two face angles of a trihedral angle is greater than the third face angle.

2 Prove that the lateral area of a cylinder of revolution is equal to the product of the circumference of the base and the altitude.

3 Prove that a plane perpendicular to a radius of a sphere at its outer extremity is tangent to the sphere.

4 Prove that the area of a spheric triangle is to the area of the sphere as its spheric excess is to eight right angles.

Group II

Answer two questions from this group.

5 Prove that if two trihedral angles have two face angles and the included dihedral angle of the one equal to two face angles and the included dihedral angle of the other, the trihedral angles are congruent.

6 *a* How many points are necessary to determine a plane (1) parallel to a given line, (2) perpendicular to a given line?

  b A plane isosceles triangle can have its equal sides of any length. Discuss as to a spheric isosceles triangle on a given sphere.

  c What is the locus of points in a plane at which a given straight line, not lying in the plane, sub-