University of the State of New York.

SPECIAL ACADEMIC EXAMINATION.

PLANE GEOMETRY.

SATURDAY, March 8, 1890—Time, 9:30 A. M. to 12:30 P. M., only.

36 *credits, necessary to pass,* 27.

1. Define angle; parallel lines; proposition; demonstration; curved lines; perimeter; incommensurable ratio..... 7

2. State two theorems directly involved in proving that if two triangles have three sides of the one equal respectively to three sides of the other, they are equal in all their parts..... 2

3. Prove that diagonals of a parallelogram bisect each other. 2

4. Prove that similar triangles are to each other as the squares of their homologous sides 3

5. Prove that the line joining the middle points of the sides of a triangle is parallel to the base..... 2

6. Prove that when two chords intersect in a circle the angle thus formed is measured by one-half the sum of the intercepted arcs..... 3

7. Make the following constructions and show that each construction meets the conditions required:

(*a*) Given a base line, to construct upon it an equilateral triangle 2

(*b*) Given a circle to find its centre 2

(*c*) To inscribe a circle in a given triangle 2

8. Give formulas for finding the following measurements: area of a regular polygon; circumference of a circle; area of a circle; area of a trapezoid..... 4

9. Give the ratio of the circumference to the area of a circle whose radius is unity 4

10. What is the width of the ring between two concentric circumferences whose lengths are 440 feet and 330 feet..... 3

11. In a circle whose diameter is 20 feet the middle of a chord 8 feet long is how far from the center?..... 3