University of the State of New York

77TH EXAMINATION

ALGEBRA

MONDAY, June 8, 1891—9 : 15 A. M. to 12 : 15 P. M., only

48 *credits, necessary to pass,* 36

NOTE.—Give each step of solution, indicating the operations by appropriate signs. Use cancellation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it *Ans.*

1. Define (*a*) transposition, (*b*) simultaneous equations, (*c*) root of an equation. Give an example of each. 6

2. Write, in the following set of parentheses, without change of value, $a-b+c-d-e-f$, regarded as three binomials :

$$-\Big[\ -\Big\{\ -\big(\quad\big)\ \Big\}\ \Big]\ .$$ 4

3. Find, by division, the highest common factor and the lowest common multiple of x^2-6x+8 and $4x^3-21x^2+15x+20$. (Express the lowest common multiple in the form of factors.) 6

4. Reduce to simplest form $\left(\frac{x}{x-y}-\frac{y}{x+y}\right)\div\frac{x^2+y^2}{x^2+xy}$. 4

5. Solve $5(x+a)\ (x-a)-2(x-b)^2=3(x+c)^2$. 4

6. Find the principal which in b months at c per cent will amount to a dollars. 3

7. A piece of work can be done in c days if A and B work together; it can also be accomplished, if A work a days and B, b days: find the number of days each alone could do the work. 5

8. Simplify (*a*) $\left(\frac{2\ a\ b^2}{3\ x^c}\right)^{2n}$, (*b*) $\sqrt[5]{-243\ a^6\ b^{12}}$. 4

9. Solve $(x-3)\ (x+3)=6x-14$. 2

10. Solve $x^3+y^3=-19$ and $x^2-xy+y^2=19$. 4

11. Show which is greater $\sqrt[3]{-3}$ or $\sqrt[4]{-4}$. 2

12. The distance around a rectangular field is 100 rods; the area is 589 square rods: find the length and breadth of the field. 4