University of the State of New York

211TH HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Monday, June 15, 1914—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 elementary algebra. The minimum time requirement is five recitations a week for a school year.

Answer 10 questions, selecting eight from group I and two from group II. Credit will not be granted unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient. Each answer should be reduced to its simplest form.

Group I

1 Simplify $\left(\frac{x-2}{x-3}-\frac{x+3}{x+4}\right)\div\left(\frac{1}{x+1}+\frac{7}{x-3}\right)$ [10]

2 Find the square root of $1+6x+5x^2-12x^3+4x^4$ [10]

3 Solve $\frac{x+y}{3}-\frac{x-y}{4}=11$

$\frac{x+y}{2}-\frac{x-y}{3}=8$ [10]

4 *a* Write any *two* pairs of numbers that satisfy the equation

$x+\frac{y}{3}=y-2$ [4]

b What value must m have in order that

$9x^2-30x-4x^4+m$

may be exactly divisible by $5-2x^2-3x^4$ [6]

5 Factor r^3+r^2-9r-9 [6]; $5y^2+3y-2$ [4]

6 *a* Write an expression involving x and y of three unlike terms, each term being of the third degree. [5]

b What value of x makes $2x-3$ equal to $3x-5$? [5]

7 *a* Simplify $\frac{1}{3}\sqrt{90}-4\sqrt{\frac{1}{8}}-\frac{\sqrt{2}}{\sqrt{5}}$ [5]

b Simplify $\sqrt{\frac{2}{3}}\times\sqrt[3]{\frac{3}{4}}$ [5]

8 If x denotes the number of years of John's age now, what does $x-7$ denote [1]? What does $x+4$ denote [1]? What does $x+4=2(x-7)$ denote [3]? From the equation find John's age at the present time [5].

9 Solve $\frac{2x^2+5}{10}=x+1$ [10]

10 Solve $\frac{\sqrt{a}}{\sqrt{x-a}}-\frac{\sqrt{x+2a}}{2\sqrt{a}}=0$ [10]

11 *a* Twenty-six persons pay d dollars each as dues to a society; the expenses of the society are s dollars. How many dollars are left in the treasury? [5]

b Express in feet the sum of a yards 6 feet and c inches. [5]

Group II

12 A classroom has 36 desks, some of which are single and some double; the seating capacity of the room is 42. How many desks of each kind are there? [10]

13 A merchant has tea worth 50¢ per lb and also tea worth 65¢ per lb; how many pounds of each must he use to make a mixture of 12 lb worth 60¢ per lb? [10]

14 In an orchard containing 2800 trees, the number of trees in each row is 10 less than twice the number of rows; how many trees are there in each row? [10]

15 Find two numbers whose sum is c such that b times the first exceeds a times the second by d. [10]