The University of the State of New York

213TH HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Monday, June 14, 1915—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 the first eight questions and two of the others. 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.

1 Find the prime factors of *each* of the following: [12]

$27-64x^3$; $10x^2-7x-6$; $ax^2-cx+ax-c$

2 When $a=2$, $b=3$, $c=-4$, find the value of the following:

$(3a^2-c^2)(a+c)\sqrt{(7a+c)(4b-a)}$ [8]

3 Solve $x^2-4x-1=0$; find the roots correct to *two* places of decimals. [12]

4 Solve $\sqrt{x+16}-\sqrt{x}=2$ [10]

5 *a* Simplify $\sqrt{48}-2\sqrt{45}+10\sqrt{\frac{1}{5}}-\sqrt{\frac{1}{3}}$ [5]

b Simplify $(3\sqrt{5}-2\sqrt{2})(2\sqrt{5}+4\sqrt{2})$ [5]

6 Solve $\begin{cases} ax=b(y-2) \\ y-x=\frac{a^2+b^2}{ab} \end{cases}$ [12]

7 Solve $\begin{cases} 2x+y=1 \\ 3x^2+12x+4y=8 \end{cases}$ [12]

8 A man has oats enough for x horses for y days; how long will the oats last m horses? [4]

9 If the greater of two numbers is divided by the less, the quotient is 2 and the remainder is 1. If the less is increased by 20 and this result is divided by the greater increased by 3, the quotient is 2. Find the numbers. [10]

10 What must be the value of m in order that

$$2x^2-3x^3+21x+x^4+3m$$

may be exactly divisible by x^2-3+x? [10]

11 *a* What value of x will make $(6x-5)(2x-3)$ equal to 13 more than $(3x+2)(4x-1)$? [6]

b How many dimes taken from a dollars will leave $10x$ cents? [4]