193D HIGH SCHOOL EXAMINATION

ELEMENTARY ALGEBRA

Wednesday, September 25, 1907—9.15 a.m. to 12.15 p.m., only

Answer eight questions, selecting at least two from each group. Give all operations (except mental ones) necessary to find results. Reduce each result to its simplest form and mark it Ans. Each complete answer will receive 12½ credits. Papers entitled to 75 or more credits will be accepted.

Group I 1 Factor *five* of the following: $b^3+3b^2c+3bc^2+c^3$, $27-a^3$, x^3+3x^2-2x+6, $x^{2n}+4x^ny^n+4y^{2n}$, $a^4-a^2b^2+16b^4$, x^7-y^7, $a^{12}+b^4$

2 Find the highest common factor (greatest common divisor) of $2x^3+5x^2-2x+3$ and $3x^3+2x^2-17x+12$

3 Solve by factoring $2x^2-3x-2=0$ [No credit allowed if solved by any other method.]

4 A is $\frac{2}{3}$ as old as B; 14 years ago A was $\frac{1}{2}$ as old as B. Find the present age of A and of B.

Group II 5 Define evolution, radical, entire surd, binomial surd, similar surds.

6 Expand by the binomial formula $\left(\frac{a}{2}-\frac{b}{3}\right)^4$, giving all the work for finding the coefficients.

7 Simplify $\sqrt{\frac{1}{3}}+\frac{1}{3}\sqrt{12}-\frac{2}{\sqrt{3}}$; $\frac{\sqrt{6}+2}{\sqrt{6}-2}$; $(2+\sqrt{3})(2\sqrt{3}-3)$

8 Solve $\frac{\sqrt{x+5}+\sqrt{x-7}}{\sqrt{x-2}}=2$

Group III 9 Solve $2x^2+\frac{4x}{3}+\frac{1}{6}=0$

10 Solve $\begin{cases} x^2+9y^2=37 \\ xy=2 \end{cases}$

11 The sum of the squares of three consecutive numbers is 110; find the numbers.

12 The diagonal of a rectangle is 29 feet; the sum of the sides of the rectangle is 82 feet. Find the dimensions of the rectangle.