

Examinations Department

108th examination

ALGEBRA

Wednesday, March 15, 1893—9:15 a. m. to 12:15 p. m., only

100 credits, necessary to pass, 75

NOTE—Give each step of solution. Reduce fractions to lowest terms. Express final result in its simplest form and mark it *Ans.*

- 1 Define *exponent, coefficient, numeric equation, pure quadratic equation, radical quantity.* 10
- 2 Simplify $a - 2 [-a + \{b - (c + 2b) - 2a\} + 3c - b]$. 8
- 3 Factor $abx^2 + (a^2 + b^2)xy + aby^2$; 6
 $6x^2 - 13xy + 6y^2$; 6
 $x^4 + x^2y^2 + y^4$. 6
- 4 Solve $\begin{cases} x^2 + xy + y^2 = 49 \\ x + y = 8; \\ 2x^2 + abx = c. \end{cases}$ 10
 8
- 5 Find the value of the following expression when $x=4, y=8, a=3, b=5$: 6
 $(4x^{\frac{1}{2}} - a^{-1}(y^{\frac{1}{3}} + \sqrt{x+b}))^3$.
- 6 Sold an article for a dollars gaining thereby b per cent on the cost; what was the cost? 10
- 7 One half the sum of two numbers is equal to one and one half times their difference; twice the larger number exceeds three times the smaller by 12; find the numbers. 10
- 8 Expand by the binomial formula, giving all the operations for finding coefficients: $(\frac{a}{2} + 3b)^5$. 10
- 9 Simplify $(\frac{\sqrt{18} \times \sqrt{12}}{\sqrt{27}})^3$; 6
 $(\sqrt{x} - \sqrt{y})^2$. 4