

18 University of the State of New York.


28th Advanced Academic Examination.


HIGHER ALGEBRA.

June, 1887—Time two and one-half hours only.

44 credits, necessary to pass, 33.


1. Define and illustrate by an example each of the following :
imaginary quantity; quadratic surd; proportion; arithmetical
progression; converging series 5
2. Add $\frac{1}{2}\sqrt[3]{54} + 5\sqrt[3]{128} + \frac{1}{2}\sqrt[3]{16}$ 3
3. Simplify $(x^m \times x^n)^p$ 1
4. State the rule for multiplying different powers of the same
quantity, and give the reason for the rule..... 2
5. Find the square root of $23 + 6\sqrt{10}$ 3
6. Solve the equation $\sqrt{x+8} - \sqrt{x+3} = \sqrt{x}$ 3
7. The difference between two numbers is to the less as 4 to 3,
and their product multiplied by the less is 504. Find the
numbers 2
8. Seven numbers are in arithmetical progression. The sum of
the first and fifth is 16, and the product of the fourth and seventh
is 160. Find the numbers 3
9. Find the sum of n terms of the progression 2, 5, 8, 11.... 2
10. Find three numbers in geometrical progression such that their
sum shall be 14 and the sum of their squares shall be 84 3
11. Expand into a series by the binomial theorem $(x - y^{\frac{2}{3}})$,
giving 6 terms of the series 3
12. In an Infinite series find to 3 terms the value of x in terms
of y if
$$y = 1 + x - 2x^2 + x^3, \text{ etc.} \dots\dots\dots 3$$
13. Define logarithm, mantissa, characteristic. How may any
numerical root be extracted by means of logarithms?..... 4
14. Find the equation having the roots $+2, -2, -3$ 2
15. Solve the equation $x^3 + 6x^2 - 13x + 24 = 0$ 5


 Carefully read and obey the following directions :

 Do you now, at the close of this examination, conscientiously declare that you had no previous knowledge of the questions to be proposed, that you have neither given to any other scholar, nor received from any source, explanation or other aid in answering any of them. If so, write *in the next line after the end of your set of answers*, near the right side of the paper, the words

"I do SO declare."

and underneath *subscribe your name*.

 Every set of papers lacking this *full declaration* and *signature*, however satisfactory, in other respects, will be rejected, on the presumption that the required declaration could not conscientiously be made.

 Fold your MS. in proper form for filing, and indorse the last leaf with the name of the institution, your own name, the subject, and the date of the examination.