the Pacific." Let us believe that the over-exactitude, and the excessive precision of a too prolonged flirtation with mathematics were the prime causes of such bad composition as "The reign of King John in England is not a very remarkable one is was as all other reigns, troubles." The Minister of Education is evidently to blame for the historical statements that "the Whig aristocracy means the conceitedness of the Whigs;" also "was the defeat from the power the Tories won the vicory hence the Name." "By the wars of the Roses the Tudor Period was established." "Reform Bill was a bill which enacted that the French canadians could make their own laws." It is equally manifest to every candid and unprejudiced mind that the arrogant Central Committee are responsible for the following delicate morsels of information: *The bearings of every possible harbor*, means "what the ships were laden with," also "noting how much the harbors would carry if there would happen to be shipping there, whether they would bear many ships of great burthen or not." *A salvo of ordnance*, means, "a kind of law" and also "shouts of praise." After what we have all suffered at the hands of this Central Committee, who does not sympathize with the poor little fellows writing in the confusion of confusion. "One day darkness black as pitch came over the scene something like a pine tree." The general state of departmental regulations is manifestly the cause of the candidate's assertion that "impetuosity = wisdom." It needs no demonstration to prove that the pernicious laws our legislators have placed on the statute-book, the wretched cobbling and tinkering they have practised on the school law, and their shabby treatment of the great cork-screw question, were enough to make any boy write "Montcalm was glad to be defeated." "Montcalm lost the Battle and had to pay Britain." Berry = "a King of fruit." Crew="a King of a wail." Troops of the line = "men engaged to fight in one line" = "that the troops were arranged in lines." These last statements show the evil of introducing party politics into educational matters. And the whole of these *bona fide* and *verbatim* specimens evidently prove that we teachers are entirely free from any carelessness in our work, that we persistently and successfully aim at clearness of thought, accuracy of expression, and the constructive comprehension by our pupils of all the facts we carefully deposit in their memories. A glance shows the disinterested spectator that we teach one thing at a time, and that we invariably concentrate such a focus of energy and enthusiasm on that one thing that it immediately becomes the pupil's own private possession. Any unprejudiced bystander may observe how successful we are hanging the pictured walls of memory with life-like, breathing portraits of fact and reality. The few occasional blunders that do turn up when our pupils are subjected to exact tests, are chiefly chargeable to those misguided Grangers who compelled our beloved legislators to induce the Education Department to curtail the long holidays. Down with the Grangers! Let every Convention "resolute" them into the limbo of forgetfulness! Verba et preterea nil!

Mathematical Department.

VICTORIA UNIVERSITY MATRICULATION, 1880.

Examiner.—J. A. McLellan, LL.D.

ALGEBRA—HONOR PAPER.

1. If $a=-b=-3c=1$ find the value of $(a+b)(a-b)(a-c)\div(a+c)(a+b)(c-1)$; and determine the value of $a+b-c+3a^{\frac{1}{3}}b^{\frac{1}{3}}c^{\frac{1}{3}}$ when $a^{\frac{1}{3}}+b^{\frac{1}{3}}-c^{\frac{1}{3}}=0$.

2. Divide, using detached coefficients,
$1+x^3+x^5+x^6+x^7$ by $1+x+x^2+x^3+x^4+x^5$; and
$5x^4+2$ by $3x^2-2x+3$ by Horner's method.

3. Find the value of $2x^5+401x^4-199x^3+399x^2-602x+211$ for $x=-201$; and show that $x^4+12x^3+5x^2-7$ is equal to $y^4+4y^3-43y^2+92y-67$, if $y=x+2$.

4. State the law of Indices, and prove it for positive integral Indices. Assuming the law to be general, interpret the expressions x^{-m}, $x^{\frac{m}{n}}$, when m, n are positive integers.

Simplify $\left(\frac{1}{64a^3b^3c^6}\right)^{-\frac{1}{3}}\div\frac{1}{8(a^2b^2c^4)^{\frac{1}{2}}}$.

5. Prove
$$\frac{1}{(a-b)(a-c)(x-a)}+\frac{1}{(b-a)(b-c)(x-b)}+\frac{1}{(c-a)(c-b)(x-c)}$$
$=1\div(x-a)(x-b)(x-c)$; also find the fractions which, when united by addition, shall give $2x\div(x^2-1)$.

6. Solve:

(1) $\frac{x^2-5}{x^2-6}+\frac{x^2-11}{x^2-12}=\frac{x^2-7}{x^2-8}-\frac{9-x^2}{x^2-10}$

(2) $8\sqrt{3x}+\frac{243+324\sqrt{3x}}{16x-3}=16x+3$.

7. Find the condition that x^2+px+q and x^2+p_1x-q may have a common measure. Find the H. C. F. of
$(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3$ and
$a^5(b-c)+b^5(c-a)+c^5(a-b)$.

8. Solve (1) $\frac{x+\sqrt{x^2-4}}{x-\sqrt{x^2-4}}=\frac{x}{4}$.

(2) $\frac{x^4+1}{(1+x)^4}=3\frac{1}{2}$.

(3) $\frac{1}{10}(x^4+y^4)=\frac{1}{3}(x+y)$, and $xy=8$.

9. Two lights of equal intensity are placed at a distance a from each other; find a point in this line a, at which the sum of the illuminations shall be a given quantity b, it being assumed that the intensity of illumination varies as the square of the reciprocal of the distance from the light.

10. If the pth term of a geometric series $=P$, and the qth term $=Q$, show how to determine the series.
Sum to infinity $1+3r+5r^2+\ldots\ldots$

11. Prove that the geometric mean between two quantities is a mean proportional between the arithmetic and the harmonic mean.
If a and g be respectively the arithmetical and geometrical mean between m and n, and h the harmonic mean between a and g, prove that $h=2(m+n)\div\left\{\left(\frac{m}{n}\right)^{\frac{1}{4}}+\left(\frac{n}{m}\right)^{\frac{1}{4}}\right\}^2$

12. Prove the Binomial Theorem for a positive integral exponent.
Determine the first negative coefficient in the expansion of $(1+3x)^{\frac{13}{3}}$.

SOLUTIONS.

1. $a+b=0$, $\therefore$ expression assumes the form, $\frac{0}{0}$. If, however, we strike out the common factor $(a+b)$ we get expression $=-3$.
$(a+b-c+3a^{\frac{1}{3}}b^{\frac{1}{3}}c^{\frac{1}{3}})=(a^{\frac{1}{3}}+b^{\frac{1}{3}}-c^{\frac{1}{3}})$
$(a^{\frac{2}{3}}+b^{\frac{2}{3}}+c^{\frac{2}{3}}-a^{\frac{1}{3}}b^{\frac{1}{3}}+a^{\frac{1}{3}}c^{\frac{1}{3}}+b^{\frac{1}{3}}c^{\frac{1}{3}})=0$.

2. $(1+0+1+1+1+1+1+0+1)\div(1+1+1+1+1+1+1)$ &c.
Answer $1-x+x^2$.

3	$5+0+0$	$+0+2$
$+2$	$+\frac{10}{3}-5$	$-\frac{50}{9}+\frac{25}{9}$
-3	$+\frac{20}{9}$	$-\frac{10}{3}$
	$\frac{5}{3}+\frac{10}{9}-\frac{25}{27}$	$-\frac{140}{27}+\frac{43}{9}$

$=\frac{5}{3}x^2+\frac{10}{9}x-\frac{25}{27}$ and remainder $-\frac{140x}{27}+\frac{43}{9}$.

3. $x-201=0$. Divide given expression by $x-201$ by Horner's method, the remainder is 10. Answer.
$x=y-2$ Divide the second expression continuously by $y-2$ as far as possible, using Horner's method. The successive remainders are: -7, 0, $+5$, $+12$, and final quotient 1. Hence 2nd expression
$=(y-2)^4+12(y-2)^3+5(y-2)^2-7$
$=x^4+12x^3+5x^2-7$.