HISTORY.

NOTE.—*Candidates will take any* FOUR *questions in British History and any* TWO *in Canadian.*

I.

BRITISH HISTORY.

1. What caused the "Wars of the Roses"?

Give an outline of their history, naming and locating the principal battle fields and explaining the results of the wars. (4+8)

2. What led to the conflict between the Crown and the Parliament, which began in the reign of James I? Give as full an account as you can of the results. (6+6)

3. Sketch the history of Walpole's administration. (12)

4. Name and give an account of three of the most important reforms since the reign of George III, explaining the importance of each. (4×3=12)

5. Write as fully as you can on any three of the following, explaining the interest England had in each of them:

The Eastern Question.
The American Civil War.
The Seven Years' War.
The Crusaders. (4×3=12)

6. Give as full an account as you can of any three of the following:

William Pitt, the Elder.
Gladstone.
Marlborough.
Simon de Montford.
Tennyson.
Milton. (4×3=12)

II.

CANADIAN HISTORY.

1. Sketch the early settlement of Canada under the following heads:

Jacques Cartier.
Champlain.
The Company of One Hundred Associates. (4+6+4)

2. State the cause and the results of the Canadian rebellions. 6+8)

3. Write full notes on any four of the most important events in Canadian History since Confederation, explaining why each is important. (14)

ALGEBRA.

Solutions by S. A. MITCHELL Queen's Col.

(Continued.)

4. Find a rationalizing factor for $\sqrt{a}+\sqrt{b}+\sqrt{c}$, where the surds are dissimilar; and show that it can be put under the form $E\{(a-b-c)\sqrt{a}\}+2\sqrt{abc}$; where E denotes the sum of the three symmetrical expressions of which the one in $\{\ \}$ is the type.

4. $(\sqrt{a}+\sqrt{b}+\sqrt{c})(\sqrt{a}+\sqrt{b}-\sqrt{c})=a+b-c+2\sqrt{ab}$ and $(a+b-c+2\sqrt{ab})(a+b-c-2\sqrt{ab})=(a+b-c)^2-4ab$, which is rational

$\therefore (\sqrt{a}+\sqrt{b}-\sqrt{c})(a+b-c-2\sqrt{ab})$ is the Multiplier required.

Upon multiplying out this gives $\sqrt{a}(a+b-c)+\sqrt{b}(b-c-a)+\sqrt{c}(c-a-b)+2\sqrt{abc}$ or $\Sigma\{(a-b-c)\sqrt{a}\}+2\sqrt{abc}$.

5. (*a*) Prove that the least value of the function ax^2+bx+c, with x variable, is got by putting for x one-half the sum of the roots of the equation $ax^2+bx+c=0$.

(*b*) Find the quantity which exceeds the square of its third part by the greatest quantity possible; and find the excess.

5. (*a*). Let $ax^2+bx+c=y$

Then $x=\frac{1}{2a}(-b+\sqrt{b^2+4ay-4ac})$

This expression for x will be real as long as the quantity under the surd is positive, *i.e.* so long as $4ay-(4ac-b^2)$ is positive. The least value of y is then, when the surd becomes zero, and in this case $x=-\frac{b}{2a}$. But this is one half the sum of the roots with its sign changed.

(*b*). Let x denote the quantity.

Then $x-(\frac{1}{3}x)^2=$ as great as possible.

$\therefore$ Put $(\frac{1}{3}x)^2-x=0$ and half the sum of the roots with sign changes is $\frac{9}{2}$ or $4\frac{1}{2}$.

$\therefore 4\frac{1}{2}$ is the quantity.

and $\frac{9}{2}-(\frac{1}{3}\frac{9}{2})^2=\frac{9}{4}=2\frac{1}{4}$ is the excess.

6. (*a*) When $lb_1+mb_2+nb_3=lc_1+mc_2+nc_3=0$, find three expressions in b_1, c_1, &c., which shall have to one another the ratios $l:m:n$.