48 credits, necessary to pass, 36

NOTE.—Give each step of solution, indicating the operations by appropriate signs. Use cancellation when possible. Reduce fractions to lowest terms. Express final result in its simplest form and mark it Ans.

1. Define (a) transposition, (b) simultaneous equations, (c) root of an equation. Give an example of each. 6

2. Write, in the following set of parentheses, without change of value, \( a-b+c-d-e-f \), regarded as three binomials:

\[
-\left[ -\left\{ -\left( \right) \right\} \right].
\]

3. Find, by division, the highest common factor and the lowest common multiple of \( x^2 - 6x + 8 \) and \( 4x^3 - 21x^2 + 15x + 20 \). (Express the lowest common multiple in the form of factors.) 6

4. Reduce to simplest form \( \frac{x}{x-y} - \frac{y}{x+y} \div \frac{x^2+y^2}{x^2+xy} \). 4

5. Solve \( 5(x+a) (x-a) - 2(x-b)^2 = 3(x+c)^2 \). 4

6. Find the principal which in \( b \) months at \( c \) per cent will amount to \( a \) dollars. 3

7. A piece of work can be done in \( c \) days if \( A \) and \( B \) work together; it can also be accomplished, if \( A \) work \( a \) days and \( B \), \( b \) days: find the number of days each alone could do the work. 5

8. Simplify \( (a) \left( \frac{2 \ a \ b^2}{3 \ x^c} \right) \cdot (b) \right) \sqrt[5]{-243 \ a^6 \ b^{12}}. \) 4

9. Solve \( (x-3) (x+3) = 6x - 14 \). 2

10. Solve \( x^3 + y^3 = -19 \) and \( x^2 - xy + y^2 = 19 \). 4

11. Show which is greater \( \sqrt[3]{3} \) or \( \sqrt[4]{4} \). 2

12. The distance around a rectangular field is 100 rods; the area is 589 square rods: find the length and breadth of the field. 4