48 credits, necessary to pass, 36.

1. Explain the difference between similar and dissimilar terms, and give an example of each. ........................................... 4

2. Explain the difference between arithmetical subtraction and algebraic subtraction, and give an example of each. .......... 4

3. Simplify the following expression:

\[(x + y) (x^3 - y^3) \left[ x^2 - y (x - y) \right] \] ....................... 3

4. Find the prime factors of each of the following: \(2x^8 + 16x^7 + 32x^6\); \(x^2 - 10x + 21\); \(a^6 - b^6\) ............................................. 6

5. Define equation; transposition; elimination; quadratic equation. What is meant by the degree of an equation? ............... 5

6. Solve \(x/a + x/b + x/c = d\) ........................................... 2

7. Solve, using elimination by comparison:

\[5x - 12y = 7\]
\[10x - 9y = 4\] .................................................. 3

8. What number is that which being multiplied by 7 gives a product as much greater than 20 as the number itself is less than 20? .................................................. 2

9. What fraction is that which becomes \(\frac{1}{2}\) when its numerator is increased by 1 and its denominator diminished by 1; but which becomes \(\frac{3}{4}\) when its numerator is doubled and its denominator increased by 5? (Give statement without solution) ............... 3

10. Expand \((a + b)^8\) and give the principle by which the coefficients and exponents of the successive terms are determined ............................................. 3

11. Find the cube root of \(x^6 - 3x^6 + 5x^3 - 3x - 1\) ............ 3

12. Form the quadratic equation whose roots are \(-5\) and \(7\) 2

13. Simplify \(\sqrt{3} \times \sqrt[3]{2} \times \sqrt[4]{4}\) ........................................... 2

14. \(x^2 + y^2 = 35\)
\(x + y = 5\) .................................................. 3

15. An excursion party had $2.00 to pay, but before the bill was paid 10 of the party went away, and those that remained had each to pay 10 cents more; find how many were in the party at first. 3