

2024 SHS2 END OF SEMESTER EXAMS – MATHEMATICS [ELECTIVE] 2
ELECTIVE MATHEMATICS
PAPER 2
SECTION B [60 MARKS]

Answer all questions in this section

1. The binary operation Δ is defined on set R of real numbers by $m\Delta n = m^2 + n^2 - 2mn$
 - (i) Show that the operation Δ is commutative
 - (ii) Evaluate $\left(\sqrt{3} \Delta \frac{1}{\sqrt{12}}\right) \Delta \left(\frac{1}{\sqrt{12}} \Delta \sqrt{3}\right)$

2.
 - (i) Use binomial theorem to expand $(1 - 2x)^9$ in ascending powers of x up to the forth term.
 - (ii) Use your expansion to evaluate $(0.996)^9$ correct to four decimal places.

3.
 - (i) Express $\frac{x^3+x^2+2}{(x-1)(x^2+1)}$ as partial fraction.
 - (iii) Show that the equation $x^2 - 4x + 4 = 0$ has repeated real roots

