2024 SHS2 END OF SEMESTER EXAMS – MATHEMATICS [ELECTIVE] 2

ELECTIVE MATHEMATICS

PAPER 2

1.Write down the expansion of $(1 + X)^n$, where n is a rational number, as far as the term X^3. Use your expansion to approximate $\sqrt{104}$ to three decimal places.

2.A laboratory technician requires two types of X and Y of chemicals. Each type of chemical requires the use of the reagents A, B and C. The following table gives the information needed.

Reagent	Type X	Type Y	Volume of reagents available (cm^2)
A	2	1	16
B	1	2	11
C	1	3	15

(a) If the technician makes x cm^3 of type X and y cm^3 of type Y, write down **all** the inequalities in x and y.

(b) Represent graphically the set (F) of all the points (x, y) which satisfy simultaneously your inequalities and shade the appropriate region.

(c) Suppose the technician makes GH¢ 30.00 profit if he manufactures one unit of type X and GH¢50.00 profit on manufacturing type Y, find how many of each chemical the technician should make in order to maximize profit.

3.Evaluate $\frac{\log_{\frac{1}{2}} 8}{\log_{\frac{1}{4}} 32}$

4. Simplify $(\frac{X^b}{X^c})^{\frac{1}{bx}}$ x $(\frac{X^c}{X^a})^{\frac{1}{ca}}$ x $(\frac{X^a}{X^b})^{\frac{1}{ab}}$

5. If 5- $\frac{\log (2n+1)^{(\frac{1}{3}n+1)}}{log\ (2n+1)^2}$ = 0, find the value of n